RIGA TECHNICAL UNIVERSITY

Aigars Ceplītis

RHIZOMATIC NARRATOLOGY IN 360° STEREOSCOPIC SPHERICAL CINEMA

Doctoral Thesis

RTU Press
Riga 2025

RIGA TECHNICAL UNIVERSITY
Liepāja Academy
Centre of Humanities and Arts

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RHIZOMATIC NARRATOLOGY IN 360° STEREOSCOPIC SPHERICAL CINEMA

Doctoral Thesis

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RTU Press
Riga 2025

Ceplītis, A. Rhizomatic Narratology in 360° Stereoscopic Spherical Cinema. Summary of the Doctoral Thesis. – Riga: RTU Press, 2025. – 272 p.

Published in accordance with the decision of the Promotional Council "RTU P-17" of 2 December 2024, Minutes No. 04030-9.18.2/1.

DOCTORAL THESIS PROPOSED TO RIGA TECHNICAL UNIVERSITY FOR PROMOTION TO THE SCIENTIFIC DEGREE OF DOCTOR OF SCIENCE

To be granted the scientific degree of Doctor of Science (Ph. D.), this Doctoral Thesis has been submitted for defense at the open meeting of the RTU Promotion Council "RTU P-17" on March 27, 2025, at Riga Technical University, Ķīpsalas iela 6, Room 117.

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I hereby declare that the Doctoral Thesis submitted for review to Riga Technical University for the promotion to the scientific degree of Doctor of Science (Ph. D.) is my own. I confirm that this Doctoral Thesis has not been submitted to any other university for the promotion to a scientific degree.

Aigars Ceplitis ……. (signature)
Date: 21 October 2024

The Doctoral Thesis has been written in English. It consists of 7 chapters, 80 figures, 30 tables, and 12 appendices; the total number of pages is 233, not including appendices. The Bibliography contains 337 titles.

ABSTRACT

The entertainment industry's digital technology advancements have brought about the era of Cinematic Virtual Reality (cVR), showcasing its ever-increasing complexity and diversity. With the presence of technological innovations such as Insta360 Titan, OZO, Jaunt, and KanDao Obsidian Pro, the capture and display of 360° ultra-high-definition video that aims to offer an immersive physical and visual experience on both big screens and portable devices is gradually becoming accessible to the everyday consumer. Notwithstanding the advancements, the current **360° stereoscopic spherical cinema (3DSC)** filmmaking still parrots the narrative and aesthetic schemas of flat 2D films, and, in doing so, it binds the medium into an inelegant representation, unfit for the new digital setting. Because 360° film production inevitably gravitates towards the breakdown of authoritarian structures, it produces a novel narrative and visual regime that departs from classic spectatorship and moves towards an **episodic neuro-visceral immersion (ENVI),** where, as warranted by XR technologies, its residual, **platial experientiality**, is best served when a narratological approach is applied. This dissertation therefore undertakes comprehensive and rigorous research at the intersection of narratology and immersive technologies, as it aims to push the boundaries of both fields beyond what has been characterized as "emerging vectors of narratology" to form a specialized sub-field of narrative studies focused on Cinematic VR. The overarching goal is to propose a 3DSC narratological typology that can aid both industry professionals and academics in developing effective stereoscopic immersive narratives not contingent on specific VR technology. Additionally, the typology is tested within **rhizomatic space** to substantiate whether the communal template of spectatorship provides a foundation upon which social, aesthetic, political, and human interactive models can be built and whether the cVR format itself encapsulates rhizomatic qualities inherent to the medium of 360° film.

DEDICATION

This dissertation is dedicated to those resilient souls navigating the shadows of scarcity amidst the complexities of neoliberal enterprise and civic coercion.

ACKNOWLEDGMENT

Words cannot express my deepest gratitude to my key mentors, Dr. Christopher Hales and Dr. Nigel Newbutt, without whose guidance, encouragement, and bright spirits I could not have undertaken this journey. Additionally, this endeavor would not have been possible without the generous support from the former RISEBA University of Applied Sciences Rector, Dr. Tatjana Vasiljeva, and the current one, Dr. Irina Seņnikova, the vice-rector Dr. Valters Kaže, as well as the former Dean of the Faculty of Media and Creative Technologies, Assistant Professor Janis Holsteins, and Administrative Assistant Inese Makusheva.

I am also grateful to Dr. Rasa Smite and Dr. Ilva Skulte for the ongoing late-night feedback sessions and moral support. My love extends to Signe Pucena and Sabrina Durling-Jones for bringing light into my life. Thanks should also go to the librarians, research assistants, and study participants from the university who have impacted and inspired me. Finally, I am grateful to the talented students of Riga Technical University's Liepaja Academy MPLab and RISEBA who have been an essential element of this work.

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LIST OF ABBREVIATIONS

360º video	360-degree Spherical Video
3DSC	360° Stereoscopic Spherical Cinema
AFT	Auricularization Field Test
AVCT	Audiovisual-Cognitive Time
AVCD	Audiovisual Cognitive Dissonance
AR	Augmented Reality
AI	Artificial Intelligence
Cinematic VR	360° Spherical Video (general term, monoscopic mode)
Cine-VR	360° Spherical Video (updated term, monoscopic mode)
cVR	Abbreviation for Cinematic VR used in the Thesis
CGT	Constructivist Grounded Theory
DoF	Degrees of Freedom
hCtA	Haptic Call to Action
FCP	Filming Compositional Device
HMD	Head-Mounted Display
HsFX	Hyperstereo Effect
FoV	Field of View
FPS	First-Person Shooter
GT	Grounded Theory
IEQ	Immersive Experience Questionnaire
IF	Immersive Factor Questionnaire
INF	Immersion/ Narratological Factors Questionnaire
IEQ	Immersive Experience Questionnaire
IFCVR	Interactive Fiction in Cinematic Virtual Reality
IJ	Immersive Journalism
MR	Mixed Reality
OFT	Ocularization Field Test
POI	Point of Interest
TSPW	Tilt-Shift Proximity Warning
PEE	Probabilistic Experiential Editing Theory
PQ	Factor Structure of the Presence Questionnaire
SPFC	Summarized Spatial Frames Container
VRISE	Virtual Reality Induced Sickness Effects
XR	Extended Reality

CHAPTER I: RATIONALE OF RESEARCH

1.1. Objectives of the Research

1.1.1. Actuality of the Topic

In 1947, one of the founders of the prevailing school of editing and film grammar, the legendary Russian film director Sergei Eisenstein, was asked what was his view on stereoscopic cinema. His answer was as contemplative and exquisite, as it was simple and prophetic:

> "Asking this question, I think, is as senseless as asking me if I believe that two comes after one, or that snow melts in spring, or that trees are green in summer and apples ripen in autumn. It is as naive to doubt that the stereoscopic film is the tomorrow of the cinema as it is to doubt that tomorrow will come." (Eisenstein, 2004:77)

We have come long way to the vision he had espoused, with stereoscopic cinema hailed and forgotten, and to be brought to light again by means of two separate developments, albeit superficially unrelated, but one sustaining another throughout decades: virtual reality (VR) and stereoscopic cinema (3D cinema). While the latter medium has been hyped to enter a golden age of independent film production due to lower costs and the establishment of common formats that include dual-digital, single-strip 35mm, and DCI-compliant digital projection at film festivals and IMAX theaters, its slumping popularity has not deterred the film industry from claiming that the heyday of stereoscopic film projection is not over, but is being reborn as the future standard in projections at 4D movie theaters (Jones, 2020). Meanwhile, a temporary declining interest in 3D films may par partially due to the developments and popularity of its cousin, the 360° *spherical* video, often referred to as Cinematic VR (CVR) or Cine-VR (cVR) (Williams *et al.*, 2021), which allows the viewer to move about in a virtual space with three of six degrees of freedom from a fixed position "surrounding them in an immersive photorealistic environment where they truly feel like they are there—inside the movie alongside the other character" (Wohl, 2017:12-14). Notwithstanding the use of a particular terminology (and the dissertation stays with Cinematic VR, while updating its abbreviation to cVR), the upshot of such an experience over 3D cinematic is one and the same: to break down the physical and psychological barriers between the viewer and the narrative, such as in *Submerged* (2024), a 17-minute short film set in a World War II submarine that utilizes 180°. It is the first scripted 3D VR film for Apple Vision Pro, creating a highly immersive experience that blurs the lines between film and theater, which may pave the way for future developments in VR filmmaking (Stein, 2024) and more affordable VR headsets.

Such a collapse of the boundaries is even more significant in 2024 when technological advances of VR in various fields, such as education, training, entertainment, medicine,

architecture, military, and the auto-motive industry, to name a few, offer an increased image quality and performance (Zaralli, 2024:37-38), thus, expanding its appeal to the wider audiences. And while the hype of 2016 “to change filmmaking in our lifetimes” (Dolcourt, 2016:4) had initially plateaued, cVR is back on track to massively expand (Stein, 2024); with the introduction of Apple Vision Pro and 18K-resolution cinematic cameras (Heaney, 2024), the entertainment industry is driving the growth of the VR market (Orrall, 2024). Not only is the cross-discipline VR usage increasing (Li *et al.,* 2022; Uskali *et al*., 2020:22; Amrhein, 2022), but cVR is also predicted to be the next logical step in the evolution of cinema, as Nick Kraakman (2018) foresaw years ago. It is at this point that the difference between computer-generated VR and 360° filmmaking becomes most apparent.

While some argue that 360° video is not a VR experience because "in order to have a truly VR experience, the virtual world must be rendered in real-time and it has to be interactive" (Cone, 2015), the opposing camp maintains that cVR *is* a VR experience because it meets a number of crucial VR conditions: it is pre-rendered and it has a passive interactivity (there is some input from the viewers). Furthermore, the opposing camp highlights the loss of interactivity as being a good thing because the audience is not only a horrible storyteller (Jones, 2015), but also because the audience is expected to have some degree of pre-existing authorship and appreciation for not being able to "interact completely with the characters" (Moody, 2017:44). What is missing in the discourse, however, is that even the best VR computer-generated stories are limited in what they can do. The current level of technology, at the time of writing the Thesis, does not provide VR-capable graphics that can approach the photorealism of the ultra-high resolution that 360° 3D video cameras deliver (Bowditch and Williams, 2021:81; Gerhard and Norton, 2023). In addition, the new kind of "presence" that 360° video content may provide seems to overrule previous laws of cinematic storytelling (Vosmeer *et al*., 2017:231). Not only is VR still a technology with no uniform definition of its core essence, guidelines, and standards in VR content creation (Kelling *et al*., 2020:123; Kostyk *et al.,* 2022:213; Cannavò *et al*., 2023:2), but also the desirable features for the mental experience of VR (Doerner *et al.,* 2022:11), its interactive element is an oxymoron with the kind of design conventions on which it depends: there are only a minimum of storylines that one may pre-author. If one adds to this the lack of any coherent and widely agreed-upon screen grammar that codifies the rules of 360° film production (Bowditch and Williams, 2021:82; Fisher *et al.,* 2022:673), the core issue in 360° filmmaking becomes not just a lack of interactivity, but also the structural elements of its narrative design.

When one looks into history, it took about thirty years to finalize the first ground rules of screen grammar, starting with Louis Lumière’s *Employees Leaving the Lumière Factory* (1895), Edwin S. Porter’s *Life of an American Fireman* (1903), and Sergei Eisenstein *Battleship Potemkin* (1925), and it might take just as long, if not longer, to establish a new screen grammar for the 360° film narrative. For instance, Palmer Luckey, founder of Oculus VR hailed VR films at the 2016 Web Conference, stating:

> “Telling stories in Virtual Reality is very different than telling stories through traditional films or even video games—it’s

> going to be a long time until Virtual Reality storytelling is nearly as refined as film. Decades." (Bucher, 2017:2)

True to his word, even in 2024, his projection is still relevant, as the empirical research on cVR in academia remains insufficient (Jones, 2019:323; Cannavò *et al*., 2023:1), its grammar is still in its early development (Marañes *et al*., 2020; Uskali *et al*., 2020:43-44; Vera and Gutiérrez, 2023), and the knowledge of how to construct a long-form narrative for a 360° film is still in the investigational stage (Moody, 2017:43; Damas and de Gracia, 2022:342-343; Fisher *et al*., 2022:673). Most attempts to produce stories beyond fifteen minutes accentuate the narrative and technical problems inherent in the medium, and, while there are a few notable exceptions such as *The Hidden* (2019), shot in 3D by Vanishing Point Media group, which has garnered a number of film festival awards, or *The Soloist VR (*2022) that follows Alex Honnold as he solo climbs some of the world's most breathtaking slippery mountain peaks, most of the longer formats, be it *Abandoned Power Plant, Charleroi, Belgium* (2019), fourteen minutes in length, or *JFK Memento* (2023), the 36-minute chronicle of JFK's assassination, may be regarded as narratologically uneven.

The issue at hand is their narrative design, technical issues, and the physical fatigue that some audience members might experience because wearing a head-mounted display (HMD) is not feasible for long periods of time (Kemeny *et al.,* 2020). Some virtual reality experiences can produce negative health effects on audiences (Stanney *et al*., 2021; Stadler and Chardonnet, 2024:15), and these residual effects may be difficult for even the most skilled screenwriters to overcome, let alone take into account when editing for cVR.

Editing of 360° videos is primarily done on desktop computers, making them a *langue étrangère* (Kjær *et al.*, 2017:4) and resulting in ineffective guidance for the audience's attention. It frequently parrots the narrative and aesthetic schemata of flat 2D films, and in doing so, it binds the medium into an inelegant representation, unfit for the new digital setting.

Because the fundamental raison d'être of VR technologies is to attain some form of psychosomatic immersion (Ceplitis, 2017; Fuchs, 2017:9), Cinematic VR has a predisposition to create an unresolved tension between interactivity and dramatic structure whenever the immersed audience enters a fictional world as either a witness or a protagonist (Ceplitis, 2016; Wohl, 2017:18; Dooley, 2017:165; Cao *et al*., 2019; Ryan, 2022).

There are, however, a few who:

> "believe that a rich narrative is still possible, and it's more a matter of subtly guiding the viewer's point of focus with carefully spatialized sound, choreography, and lighting cues (as well as through traditional editing). To these creators, VR is simply an expansion of traditional cinema, but one where familiar rules (and tools) still apply." (Wohl, 2017:18)

Notwithstanding, such a view can be misleading. Just as not all games can be built on narrative experiences, despite a broad range of storytelling possibilities in them (Zhang, 2022:371), narration in cVR, in its current form, is in conflict with immersive experiences (Bekhta, 2017:105-107; Ryan, 2018:94; Riggs, 2019:88; Deck, 2019), where it is less of a

diegetic tool and more about letting the audience *discover* a story (Bucher, 2017:7; Nash, 2017; Ryan, 2022), (Fisher *et al*., 2022:674). This conflict between the ability to be keenly engaged with a narrative and having an immersive experience of *now* also appears to reside in the natural makeup of human neural circuitry (Rey and Alcaniz, 2011; Gamez-Djokic *et al*., 2015; Riva *et al*., 2019:8; Akbal, 2023:110), which, incidentally, cVR is only beginning to study (Jones and Osborne, 2022; Coutinho, 2022:6).

1.1.2. Object of the Study

To address the inherent structural and narratological challenges that Cinematic Virtual Reality (VR) in 3D encounters, this practice-led dissertation focuses on 360° stereoscopic spherical cinema (3DSC) and the narrative processes involved in its dramatic construction.

It is crucial to emphasize that the term 3DSC is employed with precision throughout this dissertation, maintaining semantic integrity without redundancy. This distinction between 360° (viewing angle from a central point) and "spherical" (projection geometry) is fundamental in VR/360° video terminology: while 360° video captures omnidirectional views in azimuth, not all such media uses spherical projection, such as 6-Degree-of-Freedom (6-DoF) panorama systems and Cave Automatic Virtual Environment (CAVE) installations, which may enable full 360° viewing angles without employing spherical geometry, thereby demonstrating the ontological distinction between these technological elements within the broader spectrum of immersive technologies.

The research methodology herein endeavors to explore and elucidate the multifaceted interrelationship between technological constraints and narrative potentialities specific to 3DSC. Through systematic examination of the medium's distinctive phenomenological properties, the dissertation aims to substantiate the evolving theoretical discourse surrounding immersive narratological constructs. Its primary objective encompasses the formalization of a structural *lingua franca* indigenous to 3DSC, with particular emphasis on the various hierarchical stratifications of **episodic neuro-visceral immersion (ENVI),** assessed under a variety of 360° stereoscopic narrative configurations.

The author of the Thesis considers ‘episodic neuro-visceral immersion’ to be a prolonged state of narrative engagement where cognitive, emotional, and physical states fuse to trigger a strong sense of spatial presence and experientiality rooted in personal and self-other differentiation. While 'visceral' refers to the instinctive sensory input flow of haptic-like feeling, 'episodic' underscores the intermittent, yet, coherent essence of 3DSC viewing, where audience engagement oscillates between intense states and less immersive ones due to prolonged VR exposure risks, such as cybersickness, necessitating breaks. The core argument of this Thesis is that achieving neuro-visceral immersion, sustained episodically for extended periods of time, depends on adherence to the typology of articulate narrative codes and structures, rather than on technical and guiding mechanisms deployed. Because an important component of effective 3DSC experience is the shortening of the subjective distance between the viewer and the virtual space, often yielding a sensation of inhabiting it by means of a

strong sense of physical presence, a great deal of academic discourse in both computer-generated virtual reality and cVR has been technology-driven rather than being addressed within the framework of narratology. However, as this dissertation shows, virtual reality technologies, as a narrative agency, have limitations. While VR tracking devices with haptic feedback may certainly increase one's sense of presence, it will not immediately translate into an enjoyable psychological and physical experience for the viewer (Murray, 2020:14-21). By foregrounding cVR's technology-centered approach, with its overly specific input and output, it may become inconducive to immersion. The reasons for this are many.

For one, most HMDs available on the market have a restricted field of view (FoV) of around 110°, although some devices offer larger FoVs, requiring computational power and manipulation of interactions that are not natural by default (Stadler and Chardonnet, 2024:14). Second, the cybersickness effects that the VR system may induce are a highly complex phenomenon where mitigation strategies act more like patches and do not provide definitive protocols to solve this issue (Stadler and Chardonnet, 2024:15), which negatively affects the sense of presence in virtual environments.

An integral part of this dissertation is not only connecting and amending the narrative models of Gérard Genette, Seymour Chatman, Manfred Jahn, and Peter Verstraten, but also exploring the concepts of experientiality by Monika Fludernik, Marie-Laure Ryan, and David Caracciolo, as well as spatial theories by Eleanor Andrews, Richard Koeck, and Yi-Fu Tuan, in order to deliver a narrative typology for 3DSC. More importantly, the strategy behind this investigation is to examine this typology within the framework of communal spectatorship, based on the conceptual models of Vivian Sobchak, Gilles Deleuze, and Félix Guattari, which this dissertation terms as *rhizomatic spectatorship*.

1.1.3. Aim of the Research

The aim of the dissertation is to expand the boundaries of narratology into the realm of immersive technologies, beyond what is characterized as "emerging vectors of narratology" (Hansen *et al.*, 2017) and *transmedial narratology* (Thon, 2016), in order to offer a subcategory in narrative studies, designed exclusively for Cinematic VR with a focus on stereoscopic spherical cinema. The key objective is to propose a 3DSC narratological typology that will aid professionals and academia alike in building effective stereoscopic 360° narratives, not contingent on the VR technology used, yet, delivering an 'episodic neuro-visceral immersion'.

1.1.4. Tasks of the Thesis

1. To conduct an extensive review of technical and theoretical literature pertinent to Virtual Reality, Narratology, cVR, and 3DSC, as well as to explore audiovisual artifacts that serve as prototypes for rhizomatic spectatorship.
2. To adapt and redefine the established key concepts in cVR and narratology such as, but not limited to, experientiality, narrative empathy, spatial immersion, multiperspectivity,

focalization, voice, mentation, narrator, implied author, sequentiality, narrativity, narrative levels, metalepsis, rhizome, narrative constitution, place, time, and others.

3. To deploy grounded theory (GT) techniques in order to code and morph the research data into unique narratological categories pertinent to 3DSC.
4. To formalize the narrative typology for 360° stereoscopic spherical cinema, in order to advance the scholarly discourse on the subject and aid the film industry in addressing any structural gaps that may exist in the dramatic construction of cVR narratives.
5. To characterize and demonstrate the **rhizomatic spectatorship** of 3DSC as a novel and in-depth neuro-visceral immersive viewing format in public space.

The unique aspect of this dissertation lies not only in its artistic and theoretical aspects, strategies, and practices, which substantially contribute to the development of spectatorship models in rhizomatic space to suit the ever-evolving social platforms of VR technologies, but more importantly, it advances the field of narratology with respect to virtual domains.

This dissertation does not necessarily assert that there is no effective template to properly narrate in Cinematic VR format, but it questions many cVR practitioners' mechanical applications, focusing solely on technological competencies.

After reviewing a considerable amount of related research, as sparse as it might be (Nielsen *et al*., 2016:229; Kjær *et al.,* 2017:1; Fisher *et al*., 2022:673; Brade *et al*., 2023:428), it becomes evident that the published articles reference each other on two key issues. First, despite extensive efforts in cVR film production, there is no widely accepted film grammar in 360° spherical video (Bogle, 2016:3; Dooley, 2017:170; Sherman and Craig, 2019:75-76; Cannavò *et al*., 2023:2). Second, producing cVR works presents significant challenges and unintentionally elicits physical and emotional reactions in viewers (Gödde et al., 2018:184-185; Kelling et al., 2020:123; Kukkakorpi and Pantti, 2021:786; Amrhein, 2022). While it is out of scope for this dissertation to examine all studies, it is important to review a few notable research studies to recognize the critical need for establishing a more formal narrative typology for cVR, especially in its stereoscopic mode.

1.1.5. Limitations of Related Work

The analysis of related research intersects with the analyses of case studies presented by Dooley and Munt (2024), where they have outlined the diverse methods through which immersive cVR narratives are crafted, formulated, and scripted. While their book gives a comprehensive overview of existing scholarship, highlighting the interdisciplinary nature of cVR research and the diverse approaches, too much of its focus is on cinematic technologies, prototyping, and user testing, which do not fully capture the complexities and affordances of the cVR medium, particularly in terms of narratological processes and their effects on cognitive embodied experiences. When reviewing these case studies, as well as the multitude of other scholarship not covered in their edition, it becomes apparent that all recent research papers pertinent to 360° video production, up to the point of writing this dissertation, can be

divided into two categories: those that claim to offer a cVR narrative grammar as a set of new storytelling strategies (Dooley, 2021) and a unique subset of narratology (Reyes, 2023), and those who consider the cVR narrative grammar as a set of production techniques during 360° video shooting stage, be it lights, audio cues (Van der Burg *et al.*, 2008; Damas and de Gracia, 2023:31), moving objects, a set of guided camera and distractor techniques (Brown *et al.*, 2017), diegetic cues (Rothe and Hußmann, 2018), "action units" (Tong *et al*., 2019), a sophisticated framework based on dual-axis augmentation (Morgan, 2025), and various non-diegetic cues, not limited to textual and visual overlays.

To the first group belong scholars such as Afshin Nasrabadi who proposes a narrative typology for 360° videos based on cinematic motion (Nasrabadi *et al*., 2019) or Joshua Fisher who suggests a new research agenda to explore scriptwriting for Virtual Reality Interactive Digital Narratives (IDN) based on scripting the body, movement as action, environmental storytelling, and guiding the interactors' gaze (Fisher *et al.,* 2022). Other scholars in this group include Kath Dooley, Maria Reyes, Sarah Jones, Laurent Lescop, Simone Arcagni, Julia Gutiérrez, Michael Vallance, and Paul Moody whose research is situated at the intersection of philosophical approaches to immersive media and technology, historical surveys, and their subjective theoretical rhetoric.

For instance, the latter, in his article *An 'Amuse-Bouche at Best': 360° VR Storytelling in Full Perspective* (2017), deconstructs a popular claim that the interactive and immersive nature of 360° film is incompatible with traditional approaches to narrative. Instead, Moody (2017:43) argues, albeit on more hypothetical grounds, that the restrictive gratifications of watching a 360° film are not an impediment to immersion, and "that in fact, many of its restrictions are likely to become conventions for VR experiences in general in the future".

His faith in the sustainability of cVR is rooted in the very distinction between traditional VR and 360° film, where the audience expects some degree of pre-existing authorship and does not necessarily want to interact with the characters or direct a story (Moody, 2017:44). Hence, according to him, interactivity is not an essential component of cVR, as observed from his interpretation of the current 360° environment and the issues of space, frame, temporality, authorship, and narrative frequency in VR. But far from providing a full perspective on narrative strategies in 360° film, as the title promises, his paper fails to consider that, even at its best, a VR computer-generated story is limited in what it can do. Its interactive element is conditional: there are only a limited number of storylines that can be pre-authored.

In turn, Weaving (2024) in *The Nature of Narration in Cinematic Virtual Reality* explores the condition of narration in cVR and the various options for positioning the viewer in the story world with zoning in on three cVR scripts and planning materials developed based on the core story *Alice and the Virtual Bears* (2021) and inspired by the 1837 British fairytale *Goldilocks and the Three Bears*. His experiment has furnished three unique versions of the grand narrative, each using one of three approaches to the viewer's narrational positioning: "invisible witness", "acknowledged witness", or "embodied witness". The key strength of Weaving's interdisciplinary approach is the wide spectrum of theories and concepts borrowed from film studies, theatre, and psychology, providing a rich and nuanced understanding of the topic. However, his research does not provide detailed information on the methodology used

to develop the case studies, which may make it difficult to replicate. Additionally, it relies on theoretical analysis rather than providing empirical data to support his findings, which may limit the validity and reliability of his conclusions to the point of them being fairly generalized.

Likewise, a filmmaker and academic based at UniSA Creative, Australia, Kath Dooley, in her *Storytelling with virtual reality in 360-degrees: a new screen grammar* (2017)*,* makes an attempt to highlight a number of issues in relation to form and structure of cVR where the audience is an active storytelling agent. By exploring various story lines and methods in cVR narratives with reference to three Australian case studies--the short drama *VR Noir* (2016), the docudrama web series *The Next Striker* (2017) and the short documentary *Collisions* (2016)—Dooley (2017) delivers a few useful insights into the history and development of VR and the problems with attracting and directing the attention of the viewer. At the same time, no significant ground-breaking theory has been made into the grammar of 360° video. In fact, Dooley concedes that another, a larger study is warranted to guide the viewer through the virtual world or the physical format of a cVR screenplay (Dooley, 2017:170), which leave two notable mentions: Laurent Lescop's *Narrative Grammar in 360°* (2017) and Maria Cecilia Reyes' *Interactive Fiction in Cinematic Virtual Reality: an interactive and immersive narrative (text)* (2019).

Both research papers take a shot at applying the fundamentals of narratology in the construction of cVR narratives, and both are problematic. Lescop is right in his claim that the main difference between a narrative in 360° and a classical one is the presence or absence of frame as well as his speculation that, in cVR, time, which always continuous and in present, is converted into space (Lescop, 2017:254), while non-VR structural narrative elements such as ellipses, prolepses or analepses can be modelled as spaces. His approach is largely theoretical, with no rigorously tested data presented, and he makes quite a leap in applying narratological categories directly to Virtual Reality Environments (VRE); he is confusing the main function of narratology, where it "seeks to understand how recurrent elements, themes, and patterns yield a set of universals that determine the makeup of a story" (Pradl, 1981:2), with the function and methods of its offshoots: cognitive narratology, natural narratology, and transmedial narratology, where he also conflates all three.

Classical narratology is primarily concerned with narrativity (Sommer, 2018), whereas cognitive and natural narratologies focus on the mental and experiential states of a receiver (Herman, 2014; Fludernik, 2002). Transmedial narratology may be used as a method to apply select narrative categories from one medium to another (Thon, 2016), but Lescop is not concerned with the transmediality of cVR. In his reference to Jessica Brillhart's *Probabilistic Experiential Editing* theory[1]*,* which is useful but not peer-reviewed, one sees a confusing

[1] "Central to the concept of *Probabilistic Experiential Editing* is another concept: Points of Interest, or, simply, places in a scene where a viewer is likely to be looking. "So we have a glacier mountain world," explains Brillhart, and "there's one mountaineer walking in the distance. It's pretty barren, so, while you could be looking around at a glacier, it's very likely you're looking at him. He's a point of interest. But let's say we have a shot with a stable, two horses, and an entrance and an exit. You could be looking at any of those, but it's probably unlikely you'll be looking between the horses. And, horses are horses, so you're probably looking at them. From there, I can edit to respond to those actions. What's the result of looking at a horse? Or looking through a window? I can respond by cutting — you look out a window in a tram and then [I cut to]

argument, valid as a set of 360° video production guidelines, but hardly as the grammar of cVR narratives.

If the structuralist angle of Lescop's narrative matrix does not convince the language of cVR is just around the corner, Maris Cecilia Reyes (2019) attempts to make a bolder claim to the manifestation of narratological categories in 360° videos with her paper *Interactive Fiction in Cinematic Virtual Reality: An Interactive and Immersive Narrative (Text).* Her paper, eventually expanded into the most recent book *Interactive Fiction in Cinematic Virtual Reality: Towards the Immersive Interactive Movie* (2024), proposes a structuralist approach based on Seymour Chatman's conception of the narrative text applied to Interactive Fiction in Cinematic Virtual reality (IFCVR), which is the use of 360° videos.

Her proposition is highly hypothetical, and her use of Chatman's model is not supported by any real-life prototypes in virtual environments. As she admits, it is "a conceptual tool for researchers when analyzing a specific interactive narrative text" (Reyes, 2019:216). Her debatable use of Chatman's model includes three aspects.

First, while immersion is typically the main objective of virtual reality technologies (Fuchs, 2017), it is not always heightened by interactivity (Albæk *et al.,* 2011; Moody, 2017). Second, in *Story and Discourse: Narrative Structure in Fiction and Film*, Seymour Chatman (1980) heavily builds on Gerard Genette's (1983) narrative model. Reyes' matrix primarily concerns textual narratives, but Chatman's astute observation lies in his notion of 'story-space' versus 'discourse-space', a dichotomy more appropriate in cVR research, something Reyes does not use. Finally, she applies Chatman's textual model directly to her IFCVR narrative matrix without theoretically framing it within medium-specific approaches, bypassing Thon's (2016) "transmedial narratological method" that assesses narrativity across different media, which some narratologists consider a must. Her appraisal of the precariousness of interactivity in cVR is elusive, even though content creators working with game development engines such as Unity or Unreal Engine in a 6-Degree-of-Freedom (6-DoF) format, like Joshua Fisher, often addresses it.

In one of its latest studies *A New Research Agenda: Writing for Virtual Reality Interactive Narratives,* Fisher's (2022) team derives insights from writing for linear cVR, in order to establish insights and challenges writers for IDN may encounter with respect to movement in action, environmental storytelling, and guiding the interactors' gaze. His team proposes the System-Process-Product (SPP) model, a media-specific perspective that identifies three broad categories used IDN samples: the system itself as the digital artifact, the process, the interactive experience of the system, and its product, the result of that experience (Fisher *et al.*, 2022). While some of the findings of the study are useful, such as the active, embodied participation of the interactor in the narrative being the most distinguishing difference between cVR and IDN, with the possibility for the latter to explore non-linear or kaleidoscopic narratives (even when cVR is less about control and more about exploration, as practiced by

the horse looking back at you. [The cuts] can be jarring or playful. Or, the opposite: you look through the front or back windows of the stable, and it cuts to the [corresponding] corridors." (Macaulay, 2015)

the interactor) the insights are conceptual and impractical to meet the compositional challenges with respect to narrative complexity, perception, and immersion aspects in cVR.

In part, the SPP model does not sufficiently differentiate between 6-DoF and 3-DoF modes within a standardized typology for 3DSC. If the transmedial method that compares narrativity across different mediums is used, it falls short of addressing the precariousness of interactivity in cVR with respect to the category in which Cinematic VR may be positioned. Yet, this is precisely what Sara Jones (2019) does in her article *Towards the Essence of Cinematic VR: Embracing New Technologies to Define a Medium*, where she makes a provocative, and rather convincing, suggestion that cVR is not a domain of film studies, nor is it pertinent to ludology. To substantiate her proposition, she uses a philosophical approach to media and technology, particularly the one popular among VR artists in the 1980s and 1990s, who had laid out various concepts of *presence*, connected to the notion of *place* seen as an important component in capturing "place illusion" (PI). While PI refers to how the virtual world is perceived, plausibility, defined as "relating to what is perceived, suggesting that the scenario being depicted is actually happening" (Jones, 2019:323) is a key aspect to how the virtual world is sketched. Her overarching position is that cVR is no longer rooted in any particular media practice, but rather merges all forms of technology and narrative through simulation and stimulation, and she arrives at her conclusions by cross-referencing four VR projects shown at the Sheffield DocFest and Tribeca 2018 film festivals:

> "If we don't treat it or define the medium differently, we simply end up with 'walking in someone else's shoes' filmic practice, that doesn't always justify why it needs to be in VR" (Jones, 2019:332).

Unfortunately, her analysis adds very little to the discourse on how exactly cVR narratives should be constructed to justify their use of the stereoscopic 360° format. As with other analyses that have offered a dry debate on theoretical notions of immersion, presence, and the inherent psychological effects of VR technology, its potential and limitations of VR storytelling in the context of narratology and the freedom that VR technology may propound her analysis does not address the constraints of conventional cinematography that could result in a more interactive experience.

Others, such as Arcagni and D'Aloia (2021:2-3), focus on a "frame to field, from screen to scape" approach in the potential narrative application of the format. Yet, as their paper admits, the road to establishing grammar for cVR is only "at the beginning of a path of affirmation and refinement of a medium" (Arcagni and D'Aloia, 2021:5), without giving much sense of what exactly they are offering to the discourse of storytelling in cVR.

Similarly, Vallance & Towndrow (2022:3) in their *Perspective: Narrative Storyliving in Virtual Reality Design* introduce the concept of "narrative storyliving…as an exploration of the mutually-informing interface between the physical and virtual worlds…an arena of cognitive, social and emotional learning". The authors propose that incorporating a dynamic and expanded "chronotope", borrowed from the work of Mikhail Bakhtin, in conjunction with the use of AI techniques that can facilitate the transformation and merging of real and virtual

intelligences by emphasizing the dynamic and socially-oriented nature of storytelling. The article states that a fully immersed narrative experience has yet to be achieved in VR, but it does not provide empirical evidence or data to support this claim. Apart from having some outdated references while discussing the potential and limitations of "narrative storyliving" in virtual reality, their arguments are mostly conceptual and academic; practical examples and real-life scenarios are mentioned briefly, while the main focus is on presenting a theoretical framework.

Going forward, to advance this discussion, Vera and Gutiérrez (2023:109-119) propose a typology based on the paradox of immersion whereby by integrating spectators into a virtual world through navigation and overlaps between the user-character and narrative elements as well as experiences that can shift from passive viewing to allowing the participant to take on roles within the story itself. The proposed audience typology presents four key options: the "immobilized protagonist", the "observing ghost", the "companion", and the "multifaceted user". Some of the popular techniques offered are "character-bound focalization", "documentation of space", and shifting point of view (Vera and Gutiérrez, 2023). Apart from some insightful case studies surveyed where such categories exist, the typology is not exactly the narratological kind, but more of a basic screenwriting template, the general guidelines when crafting a cVR script. To provide a more comprehensive understanding of the audience's engagement with immersive content, complementing existing frameworks in cVR, Nasrabadi et al. (2019), in turn, present a narrative classification, *A Typology and Dataset for 360 Degree Videos*, based on viewport traces that are clustered according to viewing patterns in head movements triggered by different events in a story. The goal of their research is to design a two-dimensional typology of 360° videos based on camera motion and moving objects. Notwithstanding the intelligent effort, their findings yield less of a typologic structure and more of a system of heatmaps indicating clusters of the "points of interest" (PoI) that could imply a certain level of narrative engagement but do not definitively prove immersive viewer experience within the subject matter. Their approach, very technical in essence, is echoed by a second group of cVR researches who view the narrative grammar of 360° videos in terms of production "methods and techniques, which enable the filmmaker to guide the viewer through the scene and the narrative" (Gödde et al., 2018:185) with various tactile, auditory, and visual cues.

Kvisgaard et al. (2019) use the so-called "frames to zones" technique, based on David Bordwell's four mise-en-scène elements used in classical film—setting, costumes, lighting, and staging—in order to manipulate the viewer's attention to a desired part of a film frame. Kvisgaard's framework divides virtual film space into four discrete points of interest. The zones rotate around the user, but the primary point of interest is always in Zone 1, drawing the viewer's attention from the other zones by means of cinematography, moving characters and objects, and various sound cues (Kvisgaard *et al.,* 2019:2). The participants of their study were seated on non-swiveling chairs throughout the six-minute Cinematic VR experience, after which they filled out a questionnaire to log their points of interest in relation to objects seen. Half of the participants experienced visual cues based on the zone-division system, while the other half had no such guidance. The assessment was evaluated by measuring the

angle between the user's head orientation and a relevant point of interest. However, as expected, the visual guidance group oriented themselves much closer to a particular point of interest, and "no significant differences were found in relation to the participants' recollection of the points of interest", which prompted the research team to recommend additional studies to fine-tune the results (Kvisgaard *et al.,* 2019:5).

Another study that ends with suggestions for further research and open-ended questions is John Mateer's *Directing for Cinematic Virtual Reality: how the traditional film director's craft applies to immersive environments and notions of presence* (2017). His paper aims to explore the suitability of existing filmmaking directing techniques in cVR projects, particularly in establishing immersion in virtual space. To assist film directors in predicting and controlling the user's viewpoint within the virtual scene (Mateer, 2017), it connects familiar film concepts such as "suspension of disbelief" and "presence" to "transportation theory" (Mateer, 2017). His study reads as a conceptual piece, a theoretical survey; it does not give rise to a formal cVR grammar, as is the case with a small cluster of projects with similar claims.

Nielsen et al. (2016:229) offer a technical typology for deploying directing techniques in cVR, based on a study comparing two different ways of guiding users' attention: *forced rotation* and *firefly* (using a small flying firefly to clue the user in on where to focus). After watching a cVR prototype, the audience's sense of presence is assessed using a questionnaire. There is no statistically significant data showing a preferred route, although forced rotation slightly hampers the sense of presence. Sheikh et al. (2016) have created a number of 360° clips to test unobtrusive visual and audio techniques for directing a viewer's attention. Although Sheikh et al. (2016) found that audio and visual cues in combination are more powerful than visual cues alone, the limitation of their study is its scope and, subsequently, subjectivity.

Gödde et al. (2018) and Rothe and Hußmann (2018) have proposed a rather similar approach, albeit more complex and comprehensive in methodology, with the former suggesting guidelines on how to direct viewers' attention via cinematography, staging, and editing cVR videos, and the latter suggesting a framework of sound and movement to guide the audience. Gödde et al. (2018) used questionnaires and semi-structured interviews, while Rothe and Hußmann (2018) utilized more complex heat maps of viewing direction to record the points of interest while 360° clips were being played. The heat maps can be helpful as a concept, but they only indicate a specific point of interest, gaze in time and space, and are not necessarily indicative of any particular immersive state. While they offer some useful insights into how to shoot 360° videos, neither of the case studies delves into how the narrative itself might achieve or weaken immersive scenarios in cVR and 3DSC. And while there are some recent attempts to establish storyline templates for cVR, such as *Investigating a Cinematic Virtual Reality Narrative Framework for Screenwriting* (Alves *et al*., 2023), by remodeling the existing patterns and modes for writing a screenplay for cVR, they only edge closer but not close enough to be universally adopted as key in delivering immersive experiences.

Finally, Rob Morgan's *Storytelling for Spatial Computing and Mixed Reality* (2025) offers a framework predicated on the ontological flexibility inherent in spatial computing. He posits

that augmented and mixed reality technologies necessitate a shift from traditional linear storytelling to embodied spatial narrativity. He argues that narrative structures require "dual-axis augmentation": the first axis involves "player-subjectivization" by means of metacognitive identity constructs (e.g., proprioceptive avatars, diegetic role internalization) that reconfigure users as self-reflexive protagonists within a narrativized ontology, while the second axis entails "topological narrativization" of physical space through techniques such as hybrid staging (simultaneous real/virtual scenography), spatial pacing (kinetic modulation of narrative tension through user locomotion), and boundary design (negotiation of liminal zones between diegetic and nondiegetic domains). Despite the sophistication of his model, Morgan's framework exhibits some limitations when applied to cVR format, particularly for 3DSC, where the passive-immersive dynamics and fixed narrative structures require a different approach. For instance, Morgan's techniques for guiding attention via "boundary design" and "spatial pacing" rely on real-time environmental interactivity, neglecting the specific demands of directing gaze in stereoscopic spherical space. Such an oversight ignores the demands that 360° video production must deploy alternative methods like diegetic sound cues, lighting gradients, and character blocking, or other techniques seen in traditional cinematography but requiring spatial reconfiguration.

1.1.6. Knowledge Gaps and Addressing Inadequacies in Related Work

What becomes apparent in all of the surveyed research is that it conflates the *narrative grammar* of cVR with the *cinematic grammar* used in the 360° video production pipeline.

The narrative grammar of film can be best understood as a complex multi-dimensional system where the three key dimensions in film narration (semantic (story world), syntactic (plot structure), and narratorial) (Bordwell, 1985) intersect with epistemological hierarchical boundaries in narrative structures (Branigan, 1992), Chatman's (1990) concepts of a "cinematic narrator" and an "implied author" that orchestrate the narratorial intentionality. This structural framework is also modulated by Genette's (1988) conception of "narrative mood", "distance", and "focalization" patterns, through the expansion of a narratological toolbox, chiefly the "filmic composition device" (FCD) (Jahn, 2021), the film's creative intelligence that structures narrative elements through recursive patterns across different scales of storytelling, as shaped by both geometric principles and technological evolution. While the film’s narrative grammar, ontological and structural in essence, governs the story progression and narratorial control and strives to maintain story engagement without breaking immersion in a viewer-targeted medium, the cinematic grammar relies on visual syntax, shot composition, editing techniques, the 180-degree rule, visual silences, or the cVR specific applications with a focus on creating presence through technical means. Notwithstanding the technical means that may help to enhance immersion and narrative engagement, they cannot be regarded as components of an effective immersive narrative.

As stated earlier, the issue at the core lies in the fundamental *raison d'être* of immersive technologies, i.e., the attainment of physical teleportation (Ceplitis, 2017; Fuchs, 2017) even though the current narrative systems, as well as their visual configuration, oppose the very

type of experience they strive to deploy (Ryan, 2015:235; Ceplitis, 2017; Wohl, 2017:18; Tong *et al*., 2019).

At the root of this impasse is the status quo of interactivity and its impact on immersive experiences of *now*.

The renowned VR scholar Marie-Laure Ryan (2022:181) does not believe that narrativity and interactivity will ever be fully reconciled, as "the potential of VR as a narrative medium depends on whether creators can put narrative effects in the service of experience, by instilling suspense, dramatic progression, or a sense that the outcome depends on the user's actions." By contrast, Moody (2017:44) asserts that the target audience of 360° films is quite content with their inability to interact with the characters (without providing convincing data to back up his claim). Yet, their somewhat divergent views are less relevant if one takes into consideration that 360° film cameras currently cannot provide interactive recording, as provided by real-time and sensor-based computer-generated rendering, leaving as Moody (2017:43) correctly points out, cVR production with inherent restrictions, which will remain a convention in the future.

What is more important and missing from the entire discourse, however, is how to apply such restrictions to benefit immersive experiences, regardless of whether interactivity is present or not. In this equation, as this dissertation proposes, through an extensive narratological ecosystem, both in the production pipeline of 360° stereoscopic film and in its final viewing platforms, the irreconcilable may be rectified. By developing the narrative matrix for 3DSC, it is possible to decipher the code of narrative schemata that renders the 360° stereoscopic film neuro-viscerally immersive and prolongs an experience of presence for a sustained duration under a variety of 360° narrative configurations. In support of this proposition, three research questions have been designed to achieve this objective.

1.1.7. Research Questions

1. Are there limits to the degree at which we can effectively assess narrativity in 360° stereoscopic spherical film (3DSC) against interactivity and what are the most prevalent components of “narrative constitution” (composition of narratives) currently used?

2. How do the dominant narratological categories observed in 3DSC affect the narratorial functions of a narratee (i.e., the audience/viewer) who is geospatially placed at the "bull's eye" of 3DSC and exists on the intradiegetic plane only, since the viewer is never external/outside the frame of cVR or 3DSC?

3. Which variables of the key typological categories in narrative constitution (implied author, space, narrative levels, metalepsis, focalization, etc.) are most effective in supporting an 'episodic neuro-visceral immersion' for longer durations, and when deployed under a rhizomatic spatial configuration?

The first research question explores the prevalent narrative constitution[2] that is most often deployed in current 360° Cinematic VR (in mono mode) and in 3DSC. It touches upon the issues of genre and whether specific films may even yield good narrative scenarios, based on narratological categories applied. The question is addressed through a very extensive literature review for virtual reality, narratology, film, and spectatorship, in addition to studying more than 180 research papers and artifacts in relation to the research methods and purpose.

The data is further augmented through the use of "open (initial) coding", a methodology based on Charmaz's (2006) grounded theory, which involves conducting on-site questionnaires, unstructured interviews, taking field notes, and memoing to prepare the remaining data for the "re-focused coding" phase.

The second research question addresses the subjective (or objective) nature of spectatorship in 3DSC and aims to measure the depth of immersion when viewing 3DSC under different narrative scenarios and a selection of narratological categories. The resulting data is reassessed using re-focused coding methodology with overt observation, field notes, semi-structured interviews, on-site questionnaires, and memoing where 3DSC films will primarily be used in data gathering at this stage.

The third research question is addressed through the deployment of a narrative matrix blueprint for 3DSC (drawn from re-focused coding), which is further fine-tuned with the aid of "theoretical coding" and "saturation" where field notes, semi-structured theory-generating expert interviews, and memos are processed using "abductive reasoning", which includes "thematic analysis" and "deductive reasoning". This abductive reasoning as the overarching approach leverages the strengths of all three components while addressing complex research questions. While deductive reasoning ensures alignment with existing knowledge, abduction (explains unexpected outcomes) and thematic analysis allow for creative, context-sensitive patterns. Not all, but only the most relevant components of narrative constitution are being tested. Personal 3DSC prototypes are used in the assessment at this stage and are also framed within the conceptual models of the Deleuzoguattarian six principles, Vivian Sobchak's spectatorship theories, and Lombardi's social space. During the saturation coding phase, the narrative typology 360° of stereoscopic spherical cinema is finalized.

1.2. Rationale for Chosen Research Design and Methodology

The social sciences and humanities are using a variety of research approaches and techniques for collecting data where cVR, being a tool with great potential to explore experiences beyond the constraints of the physical world in order to feel as though the events

[2] "In general terms, the term "narrative constitution" refers to the composition of narratives. In a narrower sense, it involves structural models with two or more tiers that, following the tradition of formalism and structuralism. In a wider sense, though, the concept touches on the basic questions attached to the construction of narratological models in any form" (Hühn *et al.*, 2009:292).

are really happening, is used both as an object of research and a methodological tool in a highly controllable manner (Jones and Osborne, 2022:4-5). Thus, the object of the dissertation is the 360° stereoscopic spherical cinema and the narratological processes that govern its dramatic construction. While, at first glance, it might appear that the most appropriate choice for research methodology would be narrative research, Creswell and Poth (2018) stipulate that the latter focuses on individual stories told by research participants, but phenomenology, which could be another viable choice, emphasizes the common experiences these individuals share.

Of all the other options for qualitative research, the grounded theory (GT) methodology is chosen (Fig.1) because it moves beyond mere description and generates or discovers a theory, a "unified theoretical explanation" for a process or a phenomenon for which a theory does not exist. While literature models may be available:

> "they were developed and tested on samples and populations other than those of interest to the qualitative researcher. Also, theories may be present, but they are incomplete because they do not address potentially valuable variables or categories of interest to the researcher. On the practical side, a theory may be needed to explain how people are experiencing a phenomenon, and the grounded theory developed by the researcher will provide such a general framework." (Creswell and Poth, 2018:138)

Furthermore, Urquhart (2012) gives very specific motives for the deployment of the grounded theory, that is, this methodology should be used to generate a new theory, by focusing on how the audience interacts with the phenomenon under investigation. When discussing the phenomenon, the aforementioned traits are indicative of virtual reality, and since the aim of the methodology is to construct a *lingua franca* for 360° stereoscopic spherical cinema, the resulting theory must be framed in a set of propositions, such as building a narrative typology for 3DSC.

Another aspect of why grounded theory is appropriate in the context of the dissertation is its constant "comparative analysis" and "theoretical sampling" accrual approach. Creswell and Poth (2018) refer to this process as a process with an inherent "movement", distinct phases that occur over time, based on observations, memos, audiovisual materials, interviews, involving 20 to 60 participants or more, and collecting data by going back and forth to the field.

A more detailed breakdown of the research design is expounded on in the methodology section of the Thesis, but it is still important to mention that the goal of such phasing is to categorize the experience of 'episodic neuro-visceral immersion' into a more objective measure. Respondents complete the *Immersive Factor Questionnaire* (IFQ) and the *Immersion/Narratological Factors Questionnaire* (INFQ), based on studies by Brown and Cairns (2004), Jennett et al. (2008), and Witmer et al. (2006), using a Likert Scale to assess the *Immersive Factor* (IF) for narratological concepts at each coding phase. After the theoretical coding phase, the preliminary 360° stereoscopic spherical film typology is fine-

tuned in the final saturation coding phase, where theory-generating experts, in a cluster of six, watch six personal 360° stereoscopic films in a rhizomatic spectatorship mode.

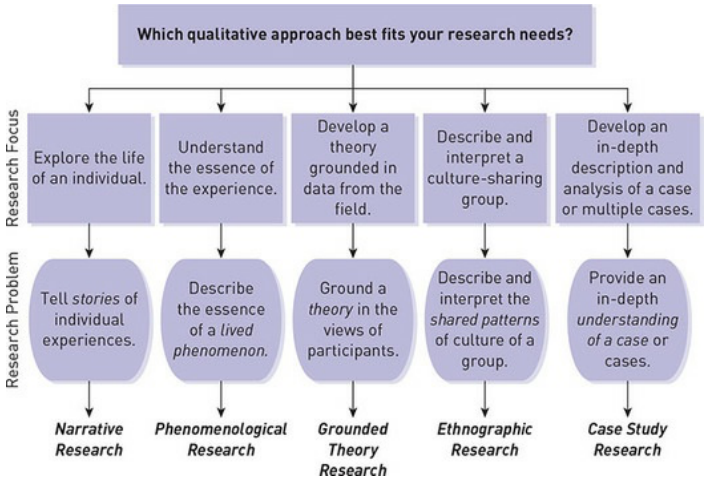

Figure 1: Major Strands of Qualitative Research
(Source: Creswell and Poth, 2018:110).

1.3. The Scientific Novelty

- The unique aspects of the dissertation can be summed up in the following:
- The dissertation presents a pioneering theory on the narrative processes of dramatic construction in 360° stereoscopic spherical cinema, within the framework of narratology. This theory explores not only the narratological structures, but also the ways in which they influence our perception and heighten the level of episodic neuro-visceral immersion.
- This Thesis outlines a structured set of narrative codes and a narrative typology in 360° stereoscopic spherical environments.
- The Thesis is unique in its use of methodology, as "constructivist grounded theory" (CGT) is used to produce and verify the topological categories within the framework of transmedial concepts, where narratology acts as the backbone of the scientific domain in this approach.
- The Thesis is original in its formalization of ambisonic narrative processes in ambisonic sound design, as a subset of "audionarratology".
- The dissertation is a pioneering endeavor to advance narratology as a science into the sphere of immersive technologies.

1.4. Key Terms and Concepts

Most of the prevalent terms used in virtual reality discourse are described in detail in Chapter Two. However, it is important to briefly mention them, along with some less common terms, without which it would be difficult to proceed with the Thesis's main theoretical proposition. The first and foremost term is Cinematic VR, and more critically, its function as the buzzword in the framework of stereoscopic film production.

This term is now used fairly liberally by both academics and professionals, yet if challenged, it is doubtful that someone would be able to locate its original source. Chris Milk, Nonny la Peña, and Jessica Brillhart, known for pioneering 360° video production, did not invent the term. Regardless of its authorship, there is a widely accepted consensus among scholars and professionals that cVR and its variations encompass a broad range of concepts, from passive 360° videos to interactive narrative videos (MacQuarrie and Steed, 2017:45). These surround videos are not computer-generated but are filmed in a real-life environment, often referred to as "Film VR" or "Live Action VR", with reference to its status as lens-based cinematographic moving image practice and in contrast to "traditional VR" where a computer-generated virtual world resembles an interactive gaming engine (Vosmeer and Schouten, 2017:86). They are filmed using several cameras, in a rig, to capture overlapping views that are later stitched together in software, creating the so-called "viewing sphere", which allows them to be watched on a desktop or smartphone using Facebook and YouTube applications. Alternatively, they can be filmed using algorithmic cameras that utilize mathematical sensors to create a 360° video sphere. Thus, cVR may provide an immersive virtual reality experience "where individual users can look around synthetic worlds in 360, often with stereoscopic views, and hear spatialized audio specifically designed to reinforce the veracity of the virtual environment" (Mateer, 2017:15).

It is also important to note that the distinction between 360° (360-degree) and the designation "spherical" is nuanced and warrants clarification. The former describes the extent of recorded angles, whereas "spherical" pertains to the geometric projection type (Wohl, 2017; Rosendahl and Wagner, 2023). This is why 3D immersive installations or CAVE projections may be deemed to be in a 360° format, but are not projected in a spherical format. Therefore, the designation "360° stereoscopic spherical" does not duplicate but complements the essence of the format researched in the thesis.

The dissertation adopts the abbreviation 'cVR' whenever a topic addresses a monoscopic version of 360° or when speaking in general terms of spherical video, and whenever the interactive computer-generated format is discussed. Similarly, the abbreviation '3DSC' is used when discussing 360° stereoscopic video.

The key component of the latter is its ability to provide an immersive visual experience by presenting omnidirectional real-world scenes with an HMD or other VR devices (Yu et al., 2015:1), which places the viewer inside a scene where he or she can determine the flow of the narrative by turning their heads (Nielsen *et al.,* 2016:229) or even changing the field of view (FoV) (Rothe and Hußmann, 2018:101; MacQuarrie and Steed, 2017:45). The residual effect of this experience is an illusion of presence within the unfolding narrative (Kjær *et al*.,

2017:1), and, more importantly, “spatial presence” (Vosmeer and Sandovar, 2018:223), which is a neuro-visceral effect of geospatial awareness within the environment.

Another related term is "immersion," from a cognitive perspective, defined as the phenomenon of getting lost in the story worlds created by films or other media (Ghazouani, 2017:2). Immersion is often incorrectly used in place of "presence." There is a difference between the two.

Slater and Wilbur (1997) characterize immersion as an objective concept, a physical experience that a technological agency may produce in terms of an illusion. Unlike presence, immersion is extensive, matching, surrounding, vivid, interactive, and plot-informing. While "immersion" refers to the technology itself, supported by high-resolution graphics, accurate lighting, realistic textures, and detailed distribution of spatial audio objects (Dutta, 2024), ‘presence’ is more of an internal psychological and physiological state of the user (Stankovic, 2016:46).

Finally, in the spirit of Eisenstein’s projections where stereoscopic cinema is inevitable (Eisenstein, 2004:77), the near future application of the term “Cinematic VR” will imply 3D videos only. This dissertation agrees with Nick Kraakman (2017), a virtual reality specialist and co-founder of Purple Pill VR, in his assertion that for content to be classified as Cinematic VR, it should offer a top-notch immersive video experience primarily in 3D, ideally with ambisonic audio, and potentially incorporating interactive features. Without ambisonics and a camera capable of recording a high-resolution 360° stereoscopic sphere in 6K or larger, the essence of cVR in monoscopic mode goes against the very grain and purpose of virtual reality. In the meantime, ‘3DSC’ is a more proper term used, since, as a medium, it carries many important geospatial attributes, unattainable in a mere monoscopic version, to amplify the episodic neuro-visceral immersion, the kind of a psycho-physical transportation into an artificial space that produces deeply visceral immersive states. ‘3DSC’ is also a more accurate description for stereoscopic Cinematic VR, technically and ontologically, as it subsumes the discussion for all forms of video shot in 3D and sound that is “based on physical principles of the acoustic field, [while] not restricted to single plane waves… [and] completely layout-independent” (Arteaga, 2015:5).

1.5. Structure of the Thesis

Chapter One begins by stating the aims, tasks, rationale, limitations, and gap in knowledge in the proposed research, as well as defining some key terms in Cinematic VR and immersive technologies. In defining the domain, the chapter establishes the limits and opportunities for fusing two distinct disciplines: cVR and narratology. In doing so, it explores the means of contribution to the phenomenological inquiry into an episodic neuro-visceral immersion in order to propose the 3DSC narratological typology that many film professionals and academia may deploy. It first explores the limitations of related research, based on the extensive data supplied by the leading cVR scholars for the past seven years, and it decodes their strengths and weaknesses, followed by a set of propositions to address the gaps in the form of research questions and methods to achieve it. As the backbone of the core

methodology, the constructivist grounded theory is substantiated to illuminate the scientific novelty in the Thesis, along with expounding on the nuances a variety of virtual reality terminologies may coexist and, at times, conflict with each other.

Chapter Two discusses the purpose of immersive technologies in the context of academic research, and it grounds various theoretical frameworks of narrative construction against the backdrop of current virtual reality production tools. It also clarifies the difference between computer-generated virtual reality, Cinematic VR, and 360° stereoscopic spherical cinema, as well as the rationale for choosing the latter medium. Central to the argument are in-depth analyses and applications of major narrative models by Schmid (2014), Fludernik (2002), Chatman (1980), Genette (1983), Verstraten (2009), Caracciolo (2014), Branigan (2012), Birke (2015), Bordwell (1985), and Jahn (2021), along with spatial and cognitive theories by Tuan (1997), Ryan (2016), Lefebvre (2007), Tan (2014), Andrews (2014), Riggs (2019), and Ryan (2016/2019).

The audience's experience is discussed within the framework of phenomenological spectatorship as defined by Sobchack (1992) and the latest models of immersion proposed by Nae (2021), Ryan (2022), and Caracciolo (2022) in order to incorporate a number of theories regarding the hyper-immersive experience that computer-generated virtual reality, presented in 3D format, can provide. Through examining transmedial and narratological parameters that may be employed in cVR structures, this section also analyzes select audionarratological components introduced by Mildorf and Kinzel in 2014 and 2016. The chapter concludes with an exploration of Deleuzeguattarian codes as a novel mode of rhizomatic space, conceptually derived from pencil drawings by Mark Lombardi (2000), in order to test neuro-visceral experiences in conjunction with those rooted in the visual, semi-physical, emotional, and spatiotemporal aspects of immersion.

Chapter Three features an exposé of a fairly complex methodology section, comprising four parts with a mixed-method design. Its core element is constructivist grounded theory (CGT), which is used to generate the narrative typology for 3DSC. By highlighting the coding process, memoing, and field experiments used to develop a narratological theoretical model for *episodic neuro-visceral immersion*, this chapter utilizes various questionnaires or self-reports, semi-structured interviews tailored to specific coding phase, and finalizes it through a systematic investigation to a more objective measure. The questionnaire models from Steuer (1992), Slater and Wilbur (1997), Witmer and Singer (1998), and Grassini (2020) inform the design of the 3DSC 'Immersive Factor Questionnaire' to assign labels to particular narrative sets and answer three research questions at the initial, re-focused, and theoretical coding phases.

Chapter Four focuses on the "initial" and "re-focused" coding procedures by using CGT methodology applied to cVR. The chapter begins by discussing the initial coding phase, where data is broken down into smaller components to identify relationships between clusters, themes, and patterns that exist in the current monoscopic cVR artifacts. It explains the challenge of measuring the immersive states due to the complexity of subjective emotional responses. The second part of the chapter discusses the re-focused coding stage, where initial codes are refined and abstracted into larger theoretical frameworks by applying advanced

coding techniques like axial and selective coding. Data from creative expert interviews, field tests, and questionnaires are used to validate the emergent typology.

The findings in this chapter show that coherence in narratives is crucial for enhancing the viewer's sense of presence in VR. In addition, the immersive states in 360° stereoscopic film are fundamentally 'platial', with the viewer deriving meaning from the spaces they inhabit as well as carrying the psycho-physical and contextual attributes of narrative engagement. The chapter also highlights the significance of the viewer's geospatial positioning and "deputy focalizer," as well as "self-other differentiation," as a visual reference for framing the viewer's perspective in multimodal processes. The concept of 'oscillating perspective' is introduced to reflect the shifting viewpoints experienced by the audience throughout the cVR storytelling with various focalization codes, such as 'aRIL' (an auditory geopositioning between 'REL' and 'RIL'), which denotes an address to the narratee, primarily an extradiegetic, homodiegetic, or heterodiegetic perspective using the general "you" in narration.

Chapter Five delves into the intricate process of theoretical coding a method used to refine and classify data through constant comparative analysis and merge dominant narrative categories into code groups to inform the construction of a final narrative typology. The goal is to substantiate the creation of original 3DSC rhizomatic prototypes to explore complex narrative frameworks in immersive environments by describing the production process entailed in making *Gaslight Narratives Neo-noir* (2022) as well as its moral impetus, aesthetic language, and its narratological design. This chapter describes in detail the rhizomatic aspect of *Gaslight Narratives Neo-noir* and how it uses the immersive technologies to blur the boundaries between reality and virtual spaces, highlighting the political and socio-economic implications of the 2008 Baltic financial crisis where the artistic connotation is used to critique neoliberal economic policies and explore how virtual and mixed reality technologies can alter audience perception of those past events. The chapter also includes tables and graphs displaying the distribution of narratological categories within 360° spherical cinema while the coding data assesses the kinematic, kinaesthetic aspects, orientation, and 'deputy movement' in 3DSC spatial frames.

Chapter Six provides an overview of the saturation stage, which finally demonstrates the 3DCS narrative typology that show key narratological categories tested in the context of *rhizomatic spectatorship*, inherent in the 3DCS installation of *'Gaslight' Narratives Dark Noir.*

The offered 3DSC typology and the assessment of "theory-generating expert" interviews are coded through the lens of "kinaesthetic" clusters of "places". This chapter summarizes the spatial dynamics created in 3DSC environments that rest on the binary of "sociopetal" and "sociofugal" spaces, which either draw people together or push them apart through the shift of exploring neuro-visceral immersive states in a collective intelligence era. Ultimately, this creates an ideal aesthetic form for engaging with narratives beyond traditional viewing experiences by means of *topographic flânerie* that governs this process is accentuated by the succession of pauses, and movement *in potentia*. This chapter also describes in detail the typological differences as suggested by structuralists who primarily discuss the concepts of "extent" and "reach" in relation to *anachronies* (analepsis and prolepsis) under the category

of "narrative time". In contrast, the author of the Thesis codifies these terms as ‘chrono-perceptual scope’ and ‘chrono-spatial radius’, respectively, for 3DSC environments under the category of ‘narratorial perspicacity’, which is a part of "narrative distance", among others.

Chapter Seven provides an overview of the key findings from the dissertation and relates them back to the original research questions. It summarizes the arguments presented and how they help address each of the three questions laid out in the 3DSC typology. This chapter considers the conflation of the narrative grammar of cVR with the cinematic grammar, as well as ongoing issues regarding immersion given the current nascent state of virtual narrative engagement. It reiterates in detail those narrative categories and configurations that appear most conducive to creating the states of episodic neuro-visceral immersion, based on the narrative design employed rather than relying primarily on technological capabilities. This chapter concludes with a concise summary of certain constraints inherent in the present research endeavor and offers prospective avenues for additional scholarly exploration aimed at a deeper integration of storytelling techniques in artificial intelligence and volumetric cinema to push the boundaries of immersive narratology.

Finally, it is useful to remind that original concepts or terms generated by the dissertation's author have been placed in bold, but words for semantic emphasis in italics (just as the titles of films, books, articles, and foreign idioms). The terms created by other authors are indicated in double quotation marks, while single quotation marks are used for the Thesis author's terms that are repeated or set apart for better clarity.

CHAPTER II: THEORETICAL FOUNDATION IN THE CONTEXT OF 3DSC

2.1. Discourse in Critical Narrative: Fludernik, Chatman, Genette, Verstraten, Branigan, Jahn, and Bordwell

2.1.1. Narratology

Having begun with Russian formalism and grown out of francophone structuralism in the middle to late 1960s (Herman, 2018:338), *narratology* refers to the organizational analysis of narrative, where researchers aim to comprehend how repetitive elements, themes, and patterns combine to create a set of universals that shape the composition of a story (Spore and Harrison, 2002:19). The term itself ("narratologie") was coined by Franco-Bulgarian philosopher Tzvetan Todorov in his *Grammaire du Décaméron* (1969) so that it would not be confused with a mere analysis of narrative; instead, narratology denotes "a systematic, thorough, and disinterested approach to *the mechanics of narrative* [emphasis added], an approach in stark contrast to those approaches that observe or seek out "value " in some narratives"" (Groden *et al.*, 2005:677). The implicit underpinning of all narratology is "the logic, principles, and practices of narrative representation" (Meister, 2014:623): "This view holds that the world is not given to humans in pure form but is instead always mediated or *re*-presented" (Groden *et al.*, 2012:349).

Narratology, therefore, takes encouragement not only from structuralism but also from semiotics, the study of signs in all their manifestations, to identify key common narrative parameters appearing in literature and film (Carlsen, Degn, & Lloyd, 1991; Bordwell, 2013) as well as in hypertext, theater, oral poetry, stage plays, opera, puppet shows, paintings, comic strips, films, radio, television series, news, computer games (Nae, 2021), stereoscopic cinema, virtual, augmented, and mixed realities (Ryan, 2022), in addition to some core concepts that can be translated across all media, while describing "the specificities of particular forms within [each] given media" (Groden *et al.*, 2005:677), what is referred to as "transmedial narratology" (Thon, 2016).

The historical development of narratology charts four different periods of the discipline: the Pre-Structuralist stage, French Structuralism of the 1960s, Poststructuralist narratology of the 1980s and 1990s, and Postclassical narratology of the 1990s and beyond (Meister, 2014:626-635).

Relevant to the main arguments of the Thesis, the most significant structuralists of narratology in the 1960s are film theorist Christian Metz (Meister, 2014), Algirdas Julien Greimas, Gérard Genette, and Roland Barthes who "have advanced an understanding of *narrative* from a semiotic position in which language is seen as signifiers (*sjuzet*) and signifieds (*fabula*)" (Koeck, 2013:18). But it is Genette whose narrative typology is central to the dissertation's methodology, since, as Makaryk (1993:112) has rightfully termed it, it is the lingua franca of narratology that has introduced a whole new set of terms that are still

deployed in today's narratological discourse. His major contribution to various aspects of "focalization" still causes numerous debates among the leading scholars on the functions of narrative, even in the era of postclassical narratology, dominated by two major trends: a widening of narratology's scope beyond literature and the importing of concepts from other disciplines (Hühn *et al*., 2014:633), most notably media and the virtual domain.

Among the leading postclassical trends considered in the context of 3DSC are "contextualist narratology" by Seymour Chatman (1990), which ties narrative to specific cultural, historical, thematic, and ideological contexts; "natural narratology" by Monika Fludernik (2002) and Marco Caracciolo (2014), who address the levels of narrative experientiality; "cognitive narratology" by David Herman (2000); and "affective narratology" advanced by Patrick Hogan (2011), with a focus on human intellectual and emotional processing of narratives. Additionally, 3DSC is reviewed in the framework of "transgeneric narratology" (Hühn *et al.*, 2014) that reformulates narratological concepts used in drama (Monika Fludernik, Manfred Jahn, Brian Richardson, Ansgar Nünning), film (David Bordwell, Manfred Jahn, Peter Verstraten, and Edward Branigan), music (Lawrence Kramer), the visual and performing arts (Mieke Bal and Marie-Laure Ryan), computer games and virtual reality (Andrei Nae and Marie- Laure Ryan), as well as "transmedial narratology" by Jan-Noël Thon (2016), who focuses on the intersubjective construction of storyworlds across various media.

Because the choice of a particular narrative model often provides the core function of the medium where it is being used (Chatman, 1980:197), the question remains whether one can and to what extent certain narrative models are applicable to Cinematic VR. While it is beyond the scope of this dissertation to cover all aspects of narrative models that may be applicable to virtual environments, this chapter presents a cluster of models relevant to the 3DSC format that primarily operate in discussions of "focalization", "point of view", "space", "voice", "narrator", "narrative levels", and "immersion", which are further examined in detail through a particular narrative category tested in 3DSC. The nucleus of these narratological categories is rooted in Peter Verstraten (*Film Narratology* (2009)), Seymour Chatman (*Story and Discourse: Narrative Structure in Fiction and Film* (1980)), David Branigan (*Point of View in the Cinema* (1984)), David Bordwell (*Narration in the Fiction Film* (2013)), and Manfred Jahn (*Narratology 2.3: A Guide to the Theory of Narrative* (2021)), to name a few, whereby regardless of medium, a distinction is made between *story* vs. *plot*, *diegesis* (telling) and *mimesis* (showing), with focus on the voice of a narrator.

Chatman's (1980) major addition to this discourse is his inquiry into the "narrative microstructure and typology of the plot," as well as the various functions of "story-space." For him, story-space operates distinctly from "discourse-space," which can include elements beyond the screen frame, such as off-screen sounds and invisible spaces, contributing to varying levels of diegesis within a multilayered plot. Chatman's ideas on narrators (homodiegetic, heterodiegetic), story, point of view, and narrative perspective are adapted from Genette's typology that capitalizes on the term "focus of narration," which was introduced by Brooks and Warren in 1943 as "restriction of 'field'," and "a selection of narrative information with respect to what was traditionally called omniscience" (Genette,

1972; translated in 1980:189-94, as cited in Schmid, 2010:92). The significance and application of this term in the framework of virtual reality environments underscores the particular status of 'space' and 'focalization' in the equation because the audience primarily acts as the chief "focalizer" within the cinematic 3D space, an affordance impossible in any other medium. Not only does the audience focalize narrative information here, physically and optically, it does so through what is known as a *natural* narrative situation.

2.1.2. 'Natural' Narratology

The sense of presence achieved in 3DSC cannot be separated from the contextual meaning derived from the experiential perspective, semantic content, and narratological elements that collectively explore the immersive nature of storytelling. By utilizing vivid imagery, three-dimensional space enhances the audience's emotional connection to and engagement with the narrative through an enhanced storytelling experience. At its inception, one finds a "natural" narrative situation.

In her *Towards a 'Natural' Narratology* (2002), Fludernik proposes that the fundamental narrative reality is reconstructed along the "cognitive-narratological universality" axis (Mäkelä, 2019:163), where literary frames, such as "action," "telling," "viewing," and "experiencing", serve as core cognitive parameters of human experientiality:

> "In my model there can therefore be narratives without plot, but there cannot be any narratives without a human (anthropomorphic) experiencer of some sort at some narrative level. This radical elimination of plot from my definition of narrativity is based on the results of research into oral narrative, where, as I will illustrate, the emotional involvement with the experience and its evaluation provide cognitive anchor points for the constitution of narrativity." (Fludernik, 2002:9)

In other words, narrativity is governed by experientiality through the separation of personal stories and distant ones as well as the shifts in foregrounding and backgrounding of relevant plot information relative to "discourse that can portray consciousness, particularly *another's* consciousness, from the inside" (Fludernik, 2002:21): a narrator *chooses* which information needs to be omitted or reshuffled to bear in mind the "culturally discrete patterns of storytelling, …a knowledge about storytelling situations and the structure of that situation (who is telling what to whom, interaction or non-interaction with listeners, etc.)" (Fludernik, 2002:32) so that the intended target has a full scope of emotional and cognitive experiences of a situation he or she is being exposed to. The implication of 'natural' narratology for 3DSC, thus, becomes important in the discussions on whether the stereoscopic 360° apparatus is sufficient enough to deliver immersive experiences without some type of 'natural' narrative situation present as well as how does one structure a narrative and with kind of experiential vigor required for the audience to slip into "someone else's shoes". Which brings in another important Fludernik's contribution to narrative studies, no less relevant in stereoscopic 360°

cinema: the status of the second-person narration. In Cinematic VR, this second-person perspective does not necessarily permit the awareness of whom the narrative is addressed to: “we learn nothing explicit about the narratee as such… we do not know what he thinks of these events as he is told them”, all the while he takes part in the events recounted to him (Fludernik, 1994:285). Such an inherent capacity of ‘you' to address both the actual audience and a narratee as well as denoting a fictional protagonist, as it accommodates “a variety of "you's" and a variety of "I's," and a combination of these [moving] along and across another boundary line, that between the discourse and the story” (Fludernik, 1994:286-288), making an addressee in the second-person perspective a natural habitat for stereoscopic 360° spherical film (Ceplitis, 2018).

2.1.3. Cinematic Narrator

Clearly, where there is an addressee, there is also a narrator. In the literal sense, the term ‘narrator’ designates the inner-textual highest-level speech position from which the current narrative discourse originates and from which all the references to it characters, actions and events are being made (Margolin, 2014, as cited in Hühn, 2014:646). In its hierarchical placement, two aspects are considered: the “narrative voice” (who speaks?) and “focalization” (who sees?), with them together being called the “narrative situation” (Scott, 2014:76). It is the former aspect - "narrative voice" - that becomes crucial in anchoring the cinematic narrator in 360° film, in contrast to its tiered status in the overlapping, but seemingly divergent narratorial models by Seymour Chatman, Manfred Jahn, David Bordwell, Peter Verstraten, and Edward Branigan.

Chatman, for example, advocates a broader concept of narration, while at the same time insisting that narration necessarily entails a narrator (Zipfel, 2015:51), even if the narrating agency “bears no sign of human personality” (Chatman, 1990:115). So does Zipfel (2015:51-52), by using the term ‘mediacy/mediation’, in lieu of a broader template of a narrator: “even though every genre and medium has its specific ways of presenting and thereby mediating stories”, without a default narrative mediator, narration is impossible. Whether this mediator is called a “cinematic narrator” (Chatman, 1990) or a “filmic composition device” (FCD) (Jahn, 2003), they are, in fact, of the same ontological composition, where the former, albeit mistaken for a human voice "over" the visual image track, is the non-human “*nomina agentis*…the composite of a large and complex variety of communicating devices, [occasionally] replaced by one or more "telling" voices on or off the screen” (Chatman, 1990:133-135), and the latter, a theoretical agency behind a film's organization and narrative structure, who is neither the director nor a filmic narrator but a cluster of film professionals who had actually produced the film through auditory and visual channels, set design, locations, actors, color, camera, editing rhythm, etc. (Fig. 2).

The revision of FCD in 2021 (Fig. 3) resembles very much the dual model by Verstraten (2009) who splits "the nomina agentis" into visual and auditive narrators, both under the headship of a "single creative intelligence responsible for orchestrating the data and realizing

the film's overall vision", a "hypothetical filmmaker" who considers the viewing of a film from the vantage of possible audiences (Jahn, 2021:7-8).

Chatman (1990:133-134) is very specific in not conflating a voice-over narrator, a single component of "the total showing", with his conception of the cinematic narrator, who is always transitory and does not "dominate a film the way a literary narrator dominates a novel." But what if the cinematic narrator is a transitory unit, what and who then govern its interim disposition?

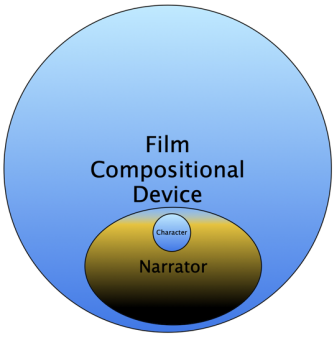

Figure 2: Filmic composition device (FCD) (Jahn, 2003).

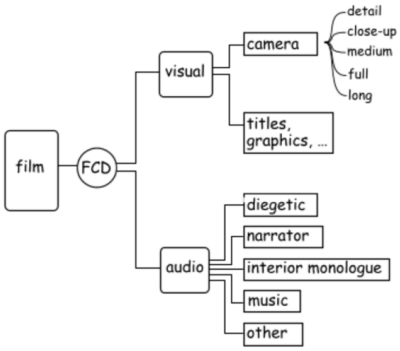

Figure 3: FCD updated (Source: Jahn, 2021:7)

Tom Gunning in his *D. W. Griffith and the Origins of American Narrative Film: The Early Years at Biograph* (1991) refers to such a regulating body as "Narrator System", a personalized narration-the purposive design-through the proxy of the filmic medium, that is, an "'apparatus' that is highly charged with overtones of personality in symptomatic and productive ways" and, more specifically, the system where the production techniques, that narrativize a filmic discourse, "endow it with the narrative aspects that Genette (1990) refers to as tense, mood, and voice" (Gunning 1991:21, as cited in Quendler, 2018:278-279). The challenge for Cinematic VR in the application of Gunning's narrator system is in its narratorial variability and instability. It fluctuates between what may be legitimately classed as 'an implied author' and that of Bordwell's (1985) notion of a narrative process, reconstructed by

the audience[3]. This is why in the well-known theories on filmic narration, such as David Bordwell's *Narration in the Fiction Film* (1985) and Edward Branigan's *Point of View in the Cinema* (1984), the notion of the cinematic narrator is rejected as an "anthropomorphic fiction" (Bordwell 1985:62; Gunning 1999:470, as cited in Faulkner, 2004:134). Whereas Chatman (1990) insists that narration must involve a narrator, whether human or not, scholars like Bordwell (1985) and Branigan (2013) argue that, in film, the viewer plays a more active role in *re-constructing* the narrative. While Bordwell and Branigan may differ on the narrator's role, their narrative theories come together in two significant ways.

First, they both see the viewer at the core of the narrative proceedings. Second, they both categorize all visual and auditory elements of film into a pattern, balanced between mimetic and diegetic modes of narration, making the process of semantic and visual decoding far more participatory. That is, Bordwell (1985) posits that narration is an interactive process where the viewer does not just passively consume what is presented on screen but actively participates in shaping the film's narrative. Conversely, Branigan suggests that the film camera functions as a linguistic construct, with its meaning contingent upon the shared communal interpretation of the wider audience (Quendler, 2012:202).

Their argument is not entirely baseless; some aspects of it have already been put forth in Roland Barthes' influential essay, *The Death of the Author* (1967), where he challenges the traditional view of the author and shifts the focus of literary analysis towards the examination of discursive practices. By reducing the author to a "scriptor" - a figure devoid of transcendent authority and existing solely within the act of writing - Barthes (1977:145-147) reconfigures textual authority, arguing that meaning emerges not from authorial intent but through the reader's engagement (in Bordwell's (1985:62) case, through the presupposition of a perceiver, but not any sender, of a message). While, as a formalist, he may reject Barthes' radical dismissal of authorship, Bordwell (1985:62) nevertheless posits the filmic narrator as an "anthropomorphic fiction" rather than a conscious, intentional creator, by emphasizing how formal cinematic techniques shape viewer cognition and, therefore, complementing Barthes' focus on the target's agency, creating a dialectic between structural mediation and interpretive freedom. These dynamics are crucial in cVR environments, where such a theoretical interplay manifests as a dual dynamic: interactivity empowers viewers to construct personalized narratives (embodying Barthes' "readerly freedom"), while technical and compositional frameworks subtly guide interpretation (reflecting Bordwell's structural mediation). In addition, insofar as rhizomatic spectatorship is concerned, it echoes Barthes' transference of textual authority to the reader's engagement with cultural codes into the proposed rhizomatic model that disperses narrative agency across a collective intelligence, where viewers reconfigure story pathways through ideological, perceptual, and psychological filters. The erasure of fixed authorship, well aligned with Bordwell's structural mediation, as the platform's technical parameters (like interactive triggers or environmental semiotics) replace

[3] The *narrator system* [emphasis added] "bears the 'traces' (which also include indirect evidence such as gaps, elisions, fractures or structuring absences) of a narrator who springs from an author while producing an image of authorship. Gunning's narrator is a 'negative image' that is reconstructed by a spectator on the basis of stylistic 'choices made within and among the three levels of filmic discourse (e.g., expressionist set design, high angle of camera, and match cutting)'" (Gunning 1991:21, as cited in Quendler, 2018:279).

traditional directorial control, creating a "scriptor"-like system where meaning emerges from viewer-pathway interactions rather than authorial intent, in a Deleuzian-Barthesian hybrid where narrative authority rhizomatically proliferates through spectators' cognitive and visceral reactions, dissolving linear progression into a multiplicity of co-created trajectories that resist closure. Such a paradigm shift becomes evident when contrasting the 360° cinema's emergent properties with traditional filmic narration models.

Classical film theory establishes a binary between "overt" narration (explicitly telling the story) or "covert" (subtly guiding the audience through visual or auditory cues). Here, Seymour Chatman's narrative theory reinforces this dichotomy, insisting on the presence of a narrator as fundamental, whether human or institutional. However, 360° cinema complicates this model further as the viewers in the spherical frame *reconstruct* a pre-constructed narrative, even though their active role, just as in Chatman's (1990:127) framework, is transitory[4].

Robert Burgoyne (1990) and Peter Verstraten (2009) hold the opposite view, stating that the concept of a permanently fixed narrator is fundamental to film narratives: Burgoyne refers to the agent as an "impersonal narrator", while Verstraten refers to it as a "filmic narrator."

Like Tom Gunning's, Burgoyne's cinematic narrator is a construct, a one-dimensional "intermediary agent" whose sole purpose is to narrate a story by means of a technological rather than an anthropomorphic facade in order to infuse the film with a sense of meaning and unity (Quendler, 2018:279-281). Instead of aligning the agent with Chatman's "implied author", Burgoyne makes his "impersonal narrator" an architect of the truth and authenticity at the fictional level, while the 'personal narrator' is either a witness or a participant in the fiction created (Burgoyne, 1990, as cited in Thanouli, 2013:331). The difference between Gunning's narratorial system, which appears as *ex negativo* figuration of the filmic discourse within the sociocultural mass communicative aspect, and Burgoyne's filmic narrator, lies in its positive provision, capable of "world-creation" and "world-reflection": impersonal narration not only creates a world, it also reflects on it as if it was an autonomous body; by contrast, personal narrators cannot create worlds but merely report on them (Quendler, 2018:279-281). The useful aspect of Burgoyne's model for 3DSC, thus, is a temporality, where "impersonal narrator" affords its viewer the "retrospective insights and moral reflections on past simulated in present tense" (Quendler, 2018:280). The difficulty, and, perhaps, the muddying portion of his "impersonal narrator", however, is Burgoyne's insistence on the authoritative ways, transparency, and reliability (Quendler, 2018:281) by which his agent communicates through the "facts of the fictional world, and only secondarily as a formal pattern of images and sounds" (Burgoyne, 1990:7, as cited in Quendler, 2018). Given the film narration is more often, than not, colored with ideological orientation, and,

[4] Chatman's framework, as outlined in his *Coming to Terms: The Rhetoric of Narrative in Fiction and Film* (1990), presents a nuanced approach to the concept of a "cinematic narrator" who, not a visible or audible presence, is still a "transitory" force behind the film's narrative, suggesting that the narrating function can shift or change within a single work.

generally, driven by it, especially in immersive journalism, it is hard to imagine how 'impersonal narrator' can be reliable at default.

Perhaps, this is one of the reasons why Verstraten and van der Lecq (2009) do not address the reliability of their filmic narrator per se. What matters for Verstraten and van der Lecq (2009:136) is the clash between the auditory track and the visual track, the very trait that distinguishes film from literature. To resolve it, they propose the superior agent, the "filmic narrator" who encapsulates and regulates the synchronization of a "visual narrator" on the visual track (essentially deaf to all sounds) and an "auditory narrator" on the audio track (blind to all visual influences) (Verstraten and van der Lecq, 2009:7). Since images and sounds may each tell a different story, the main function of a filmic narrator is to normalize the interaction between them on the sliding scale that runs from exact correlation between the auditory and visual tracks to the complete divergence of both narrators (Verstraten and van der Lecq, 2009:130-131).

Verstraten and van der Lecq (2009:209) believe that by understanding the inherent contradiction, it becomes easier to make sense of the spoken word in voice-over and images in flashback sequences that do not match in time and/or on a narrative level. In properly orienting this conflict, it helps to dissect the incongruities of narrative structures in Cinematic VR, where the first-person narrator is generally, as Keen (2015:42) would claim, *overt* and announces his or her presence through self-reference. A *covert* narrator, on the other hand, is the scarcely noticeable functionary who "occupies the middle ground between 'non-narration' and conspicuously audible narration." In covert narration, one hears a voice speaking of events, characters, and setting, but its owner remains hidden in the discursive shadows (Chatman, 1980:197). Whether one calls it a filmic narrator, an impersonal one, or a cinematic narrator, or FCD, there is some overlap with another no less important kind of narrative agent: the *implied author*, expounded in more detail further on.

2.1.4. Gerard Genette's Narrative Typology

Although the Thesis provides a comprehensive examination of narrative theories pertaining to the 3DSC environment, the crux of its main points revolves around Gérard Genette's typology.

Apart from Roland Barthes, Gerard Genette is considered the most important French literary theorist, best known for his treatise *Discours du Récit* (1972, *Narrative Discourse: An Essay in Method* (1980) as well as its sequel, *Nouveau Discours du Récit* (1983, *Narrative Discourse Revisited,* 1988)[5], in which he builds a narrative typology, still vigorously applied in literary and film analysis today, under the five trajectories--time, duration, frequency, mood, and perspective (Groden *et al.*, 2005). His typology modifies the original two-tier presentation of narrative, what the Formalists referred to as '*sjuzhet', into* the "three-tier levels of narrative"--narration*,* discourse and story--*,*and *"*by analogy with these [Genette]

[5] In *Noveau Discours du Recit* (1983, *Narrative Discourse Revisited,* 1988:13), Genette specifies *narrating act* as the real or fictive act that produces discourse-recounting, separate from narrative (the discourse, oral or written, that narrates them) and story (the totality of the narrated events).

postulates three categories in which the relations between these three levels can be classified: *voice*, *tense,* and *mode"* (Fludernik, 2009:98). Using his typology may decode the entire inventory of narrative processes in use and how the narrative is organized, not just in literature and film, but in other disciplines as well, be it sociology, literary history, ethnology or psychoanalysis (Guillemette and Lévesque, 2006). And, while Genette's poetics of narrative is not universally accepted; notably, Dorrit Cohn has taken issue with him on the *point of view,* and Mieke Bal has differed with him on *focalization*, he is universally recognized as the starting point for subsequent discussion (Groden *et al.*, 2005), where many other narratologists and film theorists such as Shlomith Rimmon-Kenan, David Bordwell, Monika Fludernik, Seymour Chatman (cinematic narrator), Manfred Jahn (filmic composition device), and Peter Vertsraten (visual narrator) have built their own theories on or in line with Genette's terminology.

By separating "who sees", Genette's (1980) clarification makes it easier to also assess the effectiveness of narrative structures in Cinematic VR, where the viewer is a passive but operational agent in 360° and does not narrate. In the spirit of his *Nouveau Discours du Récit* (1983), in which Genette finds that the dichotomies of "story/discourse", "narrative/discourse", and "story/narrative" are confusing unless we are willing to show respect for contexts and let everyone tend to their own cows (Genette, 1988:14), the Thesis proposes a new typology designed specifically for narrative processes in 360° stereoscopic film, where the time of narration is of lesser significance, and the dynamics of "narrative levels", "voice", and "perspective" support new core narratological categories in 3DSC.

2.2. Core Narratological Categories for Decoding 3DSC

Implied Author vs. Real Author

With the ever-developing technical and aesthetic methods in virtual reality, Cinematic VR has shifted the narrative discourse from "what happens?" to "where am I and what am I looking at?" In such a context, no concept in cultural studies for the past four decades has generated so much intense controversy, ranging from devastating criticism to passionate advocacy, as the one related to the "implied author" (Kindt and Müller, 2006:63).

Birke and Köppe (2015:2-5) make a clear narratological and ontological distinction between the *author* of a work, "the one who created it and brought it into existence, the person who is responsible for it," and the *narrator*, who merely relates a narrative, irrespective of whether the story is fictional or not, or whether the narrator believes the content of the story to be true. The distinction is further made between the "implied author" and the "real author."

Originally coined by Wayne C. Booth in his *Rhetoric of Fiction*, in 1961, as an author's "second self", the implied author carries the work's "core norms and choices" (Hühn *et al.*, 2014:291): on one hand, he is an entity between the real author and the fictitious narrator, placed in a position as defined by his ideological and aesthetic norms in the overall structure of the narrative work, on other hand, the implied author is a reader/ viewer-generated construct "without an equivalent pragmatic role in the narrative work" (Hühn *et al.*, 2014:288).

With respect to the former scenario, the implied author is the "agent who appears to have invented, arranged, and integrated the various narrative agents and aspects of narration" (Bordwell and Carroll, 1996:253); Kurosawa, Tarantino, Antonioni, and the directors of similar statue, are widely accepted as major emissaries of *auteur cinema*, where they function as the chief creative force behind all editing, grading, sound design, and writing decisions:

> "You might be able to identify the specific narrators of *Rashomon*, *The Seven Samurai* and *Ran* (three Kurosawa films), each of which is a different construction for the purposes of that specific film; but also you might be able to identify, among all of the films, an abiding set of narrative concerns, recurrent patterns, obsessions, formal turns and so on, which add up to something more than a 'narrator'… what we call an 'implied author': the image we have of Kurosawa." (Huisman *et al.*, 2006:83)

With respect to the latter scenario, where it is the construct of the viewer, a good case in point is Quentin Tarantino's *Inglorious Basterds* (2009), which tells a fictional account of two concurrent plots to assassinate the Nazi political leadership at the end of World War II, the first by a young Jewish woman Shosanna Dreyfus (Mélanie Laurent), and the second, by a team of Jewish-American commandos led by First Lieutenant Aldo Raine (Brad Pitt).

The film's narrative uses a mixed-method narrative structure, deploying multiple-first and multiple-third person points of view where the real author, Quentin Tarantino, remains a fairly fixed constituent throughout the story, while the implied author, though never fixed, comes to light at times here and there. A particular scene in question is the Baseball Bat scene, where Sgt. Donny Donowitz, aka The Bear Jew (Eli Roth), executes a captured Nazi, Sergeant Rachtman, with his baseball bat in a rage that amounts to an overkill just because Donny "wants to feel each Nazi's head being crushed by the force of his wooden slugger" (Dismuke, 2016:2). There is no actual record of an American paratrooper ever using a baseball bat during his World War II military engagements. By choosing a real historical figure Sam Dreben, the "Fighting Jew", whose weapon of choice was a rifle not a baseball bat, which "stands as a particularly neat symbol for the film's openly conflicted moral vision, in terms of the bat's contrasting associations with wholesome US sporting recreation and violent gangster crime" (Boswell, 2011:176). In fact, the choice of selecting the American director Eli Roth, whose real grandparents perished at Auschwitz in Poland, is all too obvious. There is no love lost between the director Roth and anything German, or, for that reason, anything Eastern European, whose gruesome, morally corrupt, and licentious milieu is a reoccurring theme in his own horror trilogy *Hostel* (2005-2011): Roth *is* the implied author of the baseball bat scene, and conceivably of the whole film, in his purposeful referencing to his "own Nazification and swooning complicity with Nazi ethics and aesthetics" through which Tarantino generates a critique of his own artistic violence by questioning the audience's pleasure in films, particularly in the gore (Boswell, 2011: 178-181):

> "When we filmed the scenes where I killed Nazis, the German cast and crew were as excited about it as the Jews were — it was like we were killing them together," Roth said. I remember [the actor

> who plays] Goebbels saying ‘Yeah — we get to kill those m———- today.’ They were so happy. And they wanted the deaths to be as violent as possible, because they’re tortured by the Holocaust as much as we are” (Pfefferman, 2009:3)

Besides being explicitly recognized, the implied author can be quite easily inferred from the tonal variations, stylistic choices, and idiosyncratic motifs of his narrative design, as well as the entire range of signs, specific to his artistry, that creates a clear mental image of the implied author (Hale, 2009; Bordwell and Carroll, 1996:253). One must further argue that an easily recognized identity, or a façade of a filmmaker, is by no means the only form the implied author may take; at times, above all, in the subcategories where the audience constructs it, he can be epitomized as a concept, a class, a group, or a set of opposing political forces, an unambiguous case in point of which is *Dog Day Afternoon* (1975), directed by Sidney Lumet, that documents an actual robbery of a Chase Manhattan branch by Sonny Wojtowicz and his partner Sal in order to pay for the sex-change operation of Sonny's boyfriend. Whether there may be a strong cinematic voice in this instance, for Fredric Jameson, a Marxist political theorist and literary critic, the real intentions of Lumet and his production team are irrelevant; it is eventually overshadowed by the prowess of the film's implied author - the embodiment of the class struggle - the "ideological reality [and] allegory of the actual state of class repression in America... [where] Sonny became a kind of hero to the crowd of onlookers outside the bank" (Chatman, 1990:106-107). But what about instances where the image of an implied author film is a work of collective effort?

According to one position, there could be stories without a narrator (intuitively, there is a clue about the person who might be telling it); in line with an opposing position, a story always has a narrator because "all stories need an utterance time to be interpreted. If there is an utterance time, then there is an utterance situation. If there is an utterance situation, there is someone who makes an utterance" (Birke and Köppe, 2015:154). This is why Kozloff (1989:44-47) favors the term "image-maker":

> "Implied director" and "implied narrator" both have advantages, but the former makes auteurist assumptions, and the latter…risks confusion with voice-over narrators; "image-maker" clearly captures the activity of the off-screen presence—making images—where "making" is broad enough to encompass all the selecting, organizing, shading, and even passive recording processes that go into the creation of a narrative sequence of images and sounds.”

But if "the image-maker" is the composite of all film production techniques, plus all other variables, and is sometimes partially told by a narrator or narrators, with "telling" voices on or off the screen, and if a synthesis of a *chief* narrator is achieved through the semiotic processing performed by the viewer, who then orients a narrative in 3DSC?

Implied Viewer (Narratee)

When discussing 3DSC, the articulation of the presence of the implied author and its implications is less of a focus in the dissertation than that of the "implied viewer". As a format, 3DSC highlights the mechanisms by which one must properly assess the narrative distance between a filmmaker's body of work and the implied uppermost agent.

This uppermost "implied agent" (Fig.4), as coined by Gerald Prince as 'narratee', in 1971, following the French term *narrataire,* designates the addressee of a narrator, to whom the narration is addressed (Barthes 1966:10, as cited in Schmid, 2014:364), in two ways: explicitly or implicitly[6]. In a somewhat similar schemata, the narratee in film is *reconstructed*

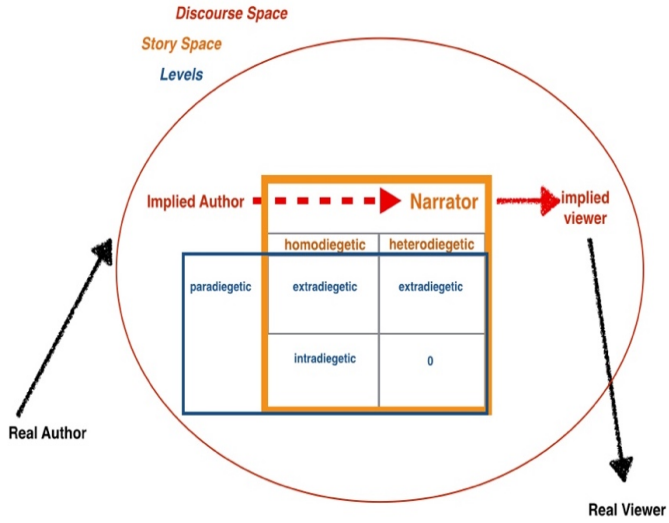

Figure 4: Implied Agent.

(Chatman, 1980:148) or constructed by the audience through "the activity of comprehension, and the more abstract meaning of a film through the activity of interpretation", referred to as "Bordwell's "narrative science"" (Thomson-Jones, 2009:137) with its four levels of construction in film viewing. Although Bordwell does not believe in the idea of the audience being a narratee, as he takes issue with the enunciation theory of the linguist Émile Benveniste and the latter's insistence on every model of communication having three agents: 'I,' 'you,' and 'he/she', analogous to a conversation in which the first-person (I) is narrating to a second person (you) about a third person (he/she) (Verstraten and van der Lecq, 2009:26), the poststructuralist reception theories, whose precepts Bordwell espouses, hold that the audience plays a decisive role in the construction of meaning via an interaction between the narrative agent and the viewer (Verstraten and van der Lecq, 2009:24-25). The contradiction set forth

[6] For Schmid (2014:364-365), "the representation of the narratee is the way in which the image of the implied reader partakes of the characteristics of the implied author"; thus, *explicit* representation, having more or less concrete features, occurs with the aid of pronouns and grammatical forms of the second person or with well-known forms of address such as "gentle reader, whereas *implicit* representation "is based on the narrative text's symptoms or indexes operating with the same indexical signs as the representation of the narrator and equally based on the expressive function of language".

is significant in that stereoscopic Cinematic VR is predisposed to the second-person narrative situation, regardless of whether a homodiegetic narrator addresses the viewer directly or an extradiegetic one does so covertly. The major divergence from the format Chatman and Bordwell work from and that of cVR, with all its narratological implications, is the binary status of a "real viewer" and an "implied viewer": in 3DSC, the real viewer is a part of the optical and narratorial diegesis, more often than not subjected to the implied viewer who exists on an extradiegetic level.

Narrative Levels

One of the obstacles to achieving episodic neuro-visceral immersion in 3DSC is the incorrect distribution of narratological elements across narrative levels; hence, narrative levels, together with the dynamics of space and place, as well as focalization, are among the most important narratological categories.

It is Gerard Genette who first coined the term "narrative levels" as one of the three categories affecting the narrating situation, with the other two being the time of the narrating (subsequent, prior, simultaneous, or interpolated) and participatory perspective: heterodiegetic (third-person) or homodiegetic (first-person) (Pier, 2014:547). While in

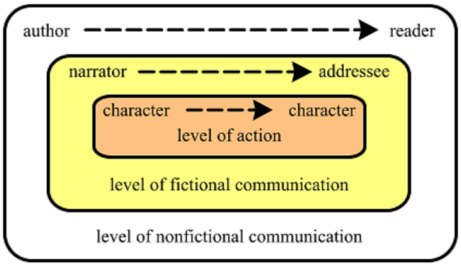

Figure 5: Narrative Levels (Source: Jahn, 2017:4).

literature, the first-degree narrative (often referred as narrative omniscience) is extradiegetic, and the second-degree narrative, “in a “subordinate” position in relation to the extradiegetic level” (Fig.5) activates the diegesis (Hühn et al., 2009:296), in film, the first-degree narrative most often is fused with the second-degree one, as the recipient of the narrative communication is a part of the diegesis (Fig.6). There are additional complex layers of narrative structure that can potentially overwhelm or confuse average social dimensions, yet may not represent the ultimate chief narrator as described by Branigan (2013:87). Even though all of the narrators depicted have corresponding hierarchical positions in relation to the target audience, these positions may not necessarily be the ultimate *chief* narrator. This is especially true in cases where the hierarchical positions diverge in embedding and framing.

“Embedded narratives” or hypodiegetic narratives (Herman, 2018:338) are generally assembled in either a basic, one stream, frame, as a matryoshka doll nesting first-degree narrative that houses a second-degree narrative, which contains a third-degree narrative, and

so on and so forth or, in a more multifarious Chinese box model (Branigan, 2013; Jahn, 2017) (Fig.7) where "narrations may interact in three fundamental ways through linking, alternating, or embedding and thus may be seen rhetorically as repetitive, progressive, antithetical, complementary, parallel, nested, and so forth" (Branigan, 2013:113). The advantage of deploying embedding in narrative structures is that it does not affect narrative levels; used in a variety of fields, as diverse as logic, linguistics, psychology, media, and computer science, its most recognized forms are (a) *mise en abyme* (an *infinite recursion,* or a mirror effect (Fig.8), (b) "intact but reified boundary (an undecidable and oscillating boundary access to an otherwise inviolate metalevel)", and (c) metalepsis (breaching narrative levels) (Pier, 2016:8).

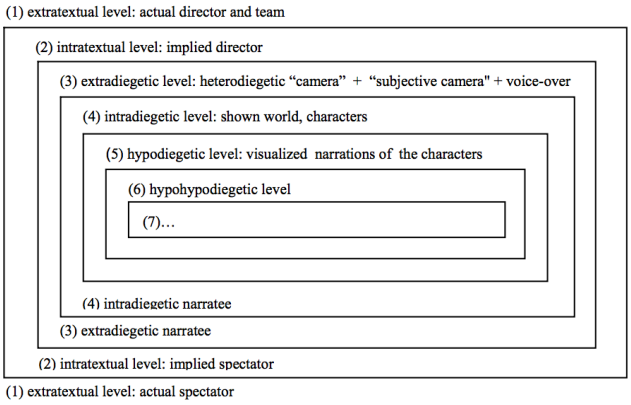

Figure 6: Narrative levels in film (Source: Schlickers, 2009:244).

Framing is generally deployed as a presentational technique. As opposed to being embedded within a larger narrative, a frame function as an enclosure, where the main narrative resides; its duration is limited, importance varies, and its chief purpose is in support of the enclosed (Nünning, 2005). Fludernik (2002:257) suggests an even more precise delineation between framing and embedding: "If the tale is conceptualized as subsidiary to the primary story frame, a relationship of embedding obtains; if the primary story level serves as a mere introduction to the narrative proper, it will be perceived as a framing device." The distinction is important because some popular narrative and visual techniques, such as *mise-en-abyme*, can only occur in the embedded mode.

Metalepsis, Metanarrative, Metafiction

While narrative levels are "hermetically sealed domains [where] any agent at the highest level dominates and presents all the lower-level agents while the lower-level agents are unaware of top level agents" (Pier, 2016:25), there could be is a breach in narrative levels, via an invasion by an extradiegetic narrator or a narratee into the diegetic space, a "metalepsis" occurs (Hatavara *et al*., 2015). Metalepsis, as a narrative device in 3DSC, is perhaps one of the most problematic techniques in virtual environments and therefore warrants discussion. In Genette's definition, metalepsis exhibits four major characteristics: first, the boundaries

transgressed in metalepsis are instigated by the (multiple) acts of narration; second, each entity created by these boundaries becomes an autonomous diegetic level (Hanebeck, 2017:22); thirdly, trespassing by a character or a narrator from one diegetic level to another violates the logic of the narrative; fourth, if trespassing does occur in spite of its logic, the purpose of the technique is to create "an effect of strangeness that is either comical (when, as in Sterne or

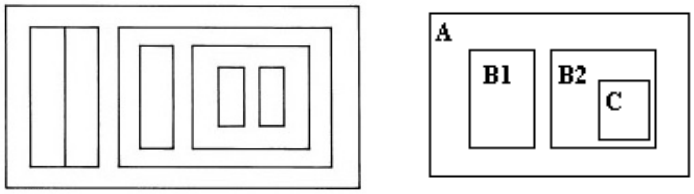

Figure 7: Multifarious Chinese box model of narrative levels (Source: Jahn, 2005:31)

Figure 8: *Mise-en-abyme* (Source: McClure, 2019)

Diderot, it is presented in a joking tone) or fantastic" (Genette, 1983:235).

As for metanarration and metafiction, they are umbrella terms that are often used interchangeably to convey self-reflexive utterances and comments in relation to the discourse rather than the story itself (Neumann and Nünning, 2014:344). While metanarration refers to the narrator's reflections on the act of narration, 'metafiction' describes the capacity of fiction to reflect on its own status as fiction by producing a hermeneutic paradox: the addressee of a narrative is forced to acknowledge the fictional status of the narrative, while at the same time she or he becomes a co-creator of its connotations:

> "the functions of metafiction range from undermining aesthetic illusion to poetological self-reflection, commenting on aesthetic procedures, the celebration of the act of narrating, and playful exploration of the possibilities and limits of fiction." (Neumann and Nünning, 2014:344-347).

Of the three, metalepsis, metanarrative, and metafiction, the former bears the most relevance to cVR and to the immersive illusion a narrative must sustain in a virtual reality setting. In practical terms, this means that the efficacy and utility of metalepsis are ascribed

to its function on a narratorial track via voice-over, that is, whether it destroys or enhances the spatial presence. Whereas metanarrative is not required to destroy aesthetic illusion, and because of that, it can be used effectively as a 'frame of storytelling'.[7] It is for this reason that metanarrative comments, although used sparingly, are effective in experimental 3DSC, such as *Limbo: a virtual experience of waiting for asylum* (2017). When the format is not experimental, and the illusion of reality is critical to a story, metanarrative comments, if transmitted through a misplaced point of view, can be problematic and may destroy the sense of presence.

Perspective

One challenge that often arises in discussions regarding the dynamics of narrative layers and narrative perspective in virtual reality is the tendency among current cVR works to conflate the levels from which a story can be told, as evidenced by the overreliance on the first-person point of view in video games and three-dimensional simulations. As Fludernik (2009:145) had noted with respect to the first-person perspective, optical and narratorial, perspective cannot be homodiegetic (or heterodiegetic) since "this the terms *first-person* and *homodiegetic* both relate to the category of *person*, and *perspective* to that of *voice.*" Here again, it is useful to recall that Genette (1972) insists on separating questions and distinctions relating to the narrator ("voice" in his terminology) from those relating to perspective, replacing the optical and perceptual viewpoint with focalization (Niederhoff, 2014:698).

To avoid confusion, Genette designates first-person narration to be transmitted by a "homodiegetic narrator", communicated by an 'I' (Fludernik, 2009:31), where 'I' is either a main character who has participated, more or less centrally, in the circumstances and events about which he or she tells a story (the "first-person protagonist") (Myer, 2012:37), or a less important character (the "first-person peripheral") (Mcclanahan, 1999), witnessing the experiences of the protagonist (the "first-person witness") (Branigan, 2012:196), or told not by a witness to the events, but by someone who has heard the story from yet another person (the "first-person reteller") (Herman, 2018:338). Whenever a narrator not only participates in the action being recounted but is also the key character of the storyworld evoked, he or she is deemed to constitute a special case of the first-person account: autodiegetic narration (Genette, 1983:245 as cited in Herman, 2018:335). The difference between homodiegetic and autodiegetic narrations may be blurring, or subtle, at best. The latter applies to fictional autobiographies with a focus on the life-experiences of the teller, whereby the former, a mere homodiegetic narrative, lacks the personal investment in three thematic areas: the narrator's origin, self-representation, and social recognition of the self as the theory's main point of

[7] "Metanarrative comments are concerned with the act of narration, and not with its fictional nature; in contrast to metafiction, which can only appear in the context of fiction, they need not destroy aesthetic illusion. It is precisely the concept of narratorial illusionism, suggesting the presence of a speaker or narrator, that may create a different type of illusion by underscoring the act of narration with what Fludernik (1996: 341) has called the "frame of storytelling"" (Neumann and Nünning, 2014:345).

interest (Pennington, 2018:24). To speak of homodiegetic narration in Cinematic VR using an orthodox first-person schema is a misnomer.

First, it is important to note Fludernik's (2009:145) observation that "perspective cannot be homodiegetic (or heterodiegetic)" suggests to better replace *the homodiegetic perspective* with internal perspective, "internal focalization, or experiencing self", which would not clash with the first-person (homodiegetic) narration. Her argument is based om her reference to Dickens' *Great Expectations* (1861)[8]. The challenge of directly transferring the dynamics in question, which is the most crucial aspect of it, is that in literature, both the reader and the homodiegetic narrator have access to a character's internal perspective, whereas in a 3DSC milieu, the internal perspective of a viewer (who is a character on the story level) is inaccessible to the narrator. The narrator does not know what the character/viewer thinks.

Second, traditionally in film, the first-person perspective is mediated through "the partial use of the point-of-view shot, sometimes termed as 'subjective camera', the medium's inception as a cinematic remediation of literary first-person narration, especially in novel-to-film adaptations" (Jarvis, 2019:156), while its first-person narration, as well as in the remediated forms of live interactive performance such as locative cinema, headphone theatre, immersive and pervasive theatres (Jarvis, 2019), is channeled intermittently, as a voice-over, most often only minimally, at least, not to the extent of a literary narrator (Kozloff, 1989:44).

In reverting to the original question of 'who *really* narrates' in 3DSC, it suits to ascertain that the 360° spherical film frame is exclusive in its ability to impose upon its viewer an *intradiegetic* narrative placement since the audience is an object, a part of the physical diegesis, and, thus, any narrator is external at default, setting the first-person perspective in conflict with the first-person narration. When reconsidering the original question of "who really narrates" in 3DSC, it would be beneficial to view the 360° film frame as unique in its capacity to situate the viewer within the diegesis of the narrative. Given that the audience is physically present within the constructed world, any narrator must inherently exist external to the events, setting a conflict between the first-person perspective and any homodiegetic narration, who, being a part of the story can only know what they personally think and observe, which ultimately makes the thoughts of the viewer inside the frame inaccessible even to the homodiegetic narrator.

The first person-perspective

The status of the first-person narrative in cVR is of a particular interest, as regards to the formula it is currently being deployed in Immersive Journalism (IJ). In literature, the first-person narration is presented by the main protagonist telling his/her own story, or, if the narrator is only a minor character, by a peripheral first-person narrator*;* in each case, they are restricted in the scope of information to just what they know, see, hear, or feel (Fludernik,

[8] "*Great Expectations* also falls into the trap of getting narrative person and perspective/focalization confused: The story is told from Pip's homodiegetic perspective … However, what the writer of the sentence *meant to say* is perfectly correct: what we get in *Great Expectations* is Pip's homodiegetic narrative, and this narrative is focalized (often internally) through the mind of Pip the child, Pip the character on the story level" (Fludernik, 2009:145).

2009). While the visual perspective of a character may change, a literary piece is always narrated; in the absence of a narrator, the author of the text still narrates. But in 3DSC, as in first-person shooter (FPS) games, where the player views the game world from the "perspective of the character he or she is controlling" (Cardamone *et al.*, 2011:63), his or her narratorial status is debatable.

In the first-person shooter video games and in 3D computer generated news, the audience is typically represented in the form of a digital avatar from the first-person perspective (la Peña *et al.*, 2010:292), as is the case with la Peña's *Hunger in LA* (2012), where she digitally recreates an account of the first-person perspective emergency situation seeing a man in diabetic shock, while the conversation amongst the witnesses uses the actual field recorded audio of people standing in line outside an L.A. food bank. The audience's perspective in this model is in the first-person, indeed, but the narration and narratives are not, as it is the case in most of cVR news stories for the most obvious reason: in cVR, the audience *does not* narrate.

La Peña's orthodox model of the first-person perspective is problematic for two reasons: for one, it conflates the *optical point of view* the audience finds itself in with the *orientation* of the narrative, and, second, one may talk of the first-person "witness perspective", which is not entirely 'I' or 'we' designation. Under the former configuration, there is an optical oscillation between the first and second-perspective. *CNNVR or the Daily 360 – the New York Times* films, for instance, primarily address the audience as 'you' in a more general sense, in the second-person perspective, where the audience acts as a witness, what (Caracciolo, 2014:174) terms a "deputy focalizer", a temporary resident of the storyworld, without playing a part in it. Such a narratorial approach, while permissible in literature or film, becomes more problematic in cVR where a homodiegetic narrator, appearing now and then, coexists with other homodiegetic narrators, as in *The Click Effect* (2016), the story of two free dive marine scientists Fabrice Schnoller and Fred Buyle, who capture a secret clicking communication among dolphins and sperm whales. In no way does the audience represent a first-person perspective or first-person narration here. Not only does the audience in cVR narrate, but its visual perspective is that of a mere witness.

It does not immediately follow that homodiegetic narration and a first-person perspective may not commonly exist together in cVR; rare exceptions do occur that require a structuralist analytical approach. This is explored in further detail in the practical section of the dissertation through the analysis of the dissertation author's 360° stereoscopic film *Once Upon a Time in Bolderaja* (2022), which retraces the sequence of events that have led to the rape and killing of a teenager in one of the typical post-Soviet suburbs of Riga. The film is an accurate instance of the first-person perspective and a homodiegetic narration. In all other circumstances, the first-person perspective in 360° stereoscopic cinema, as one would strictly define it, is, in fact, a narrative instance of the second-person perspective.

The Second Person-Perspective

A quite rare format in written texts, as most written records are in either the first-person singular or the third-person singular, the second-person narratives, to the testiness of many readers, are stories in which the protagonist is addressed in "you" form ("You enter a dark

tunnel...") (Linde, 2008:75). Yet, there are divergent views as to whether in film, the viewer can be addressed in the second-person.

David Bordwell, for instance, does not believe in the idea of the viewer as an addressee. In his book *Narration in Fiction Film* (1985), Bordwell takes issue with the enunciation theory of linguist Émile Benveniste, which Sasha Vojkovic (2001) claims is being misread. Vojkovic argues that the presence of a second person does not need to be made obvious, as the second person is automatically triggered by the existence of a first person as a narrative agent (Verstraten and van der Lecq, 2009:27-28) such as in most well-known and extreme films, such as *Lady in the Lake* (1946), where the audience is invited to identify with the lead character. This also explains why, in some camera-angle based FPS video games, the first-person perspective is actually the second person, as in "*Vendetta*", the fourth (chronologically the second) first-person shooter game of the campaign in *Call of Duty: World at War* (2008) by Treyarch, where Private Dimitri Petrenko (the first-person player) is tasked with assassinating General Heinrich Amsel, the commander of the German army at Stalingrad.

Having been unnoticed by a German patrol who execute the wounded Russians, Petrenko (the player) remains still; as he begins to crawl forward, he is suddenly, addressed in the second-person, by one of the bodies, lying low, sergeant Viktor Reznov, who, being injured, gives Petrenko his sniper rifle, and guides him to carry out the assassination (Fig.9).

Figure 9: *Call of Duty: World at War* (2008), Mission: 'Stalingrad', where Private Dimitri Petrenko is tasked with assassinating General Heinrich Amsel, at 00:45:12.

In cVR environments, the address in 'you' does not necessarily have to be an image, but it can be an experience instead. Within this view, the 'you' is, in fact, a virtual agent (Verstraten and van der Lecq, 2009:28). As the author of this dissertation has previously noted, what is rather a rare narrative technique in the Golden Age of Hollywood is deployed in cVR with frequency (Ceplitis, 2018). The reason why the second-person narration may seem to be the natural habitat for 3DSC (Ceplitis, 2018) is partially related to neuroscience, the cognitive and biological aspect with which we engage in the world: "we not only become who we are in early second-person interactions, but we manifest who we are in these interactions in maturity" (Garfield, 2019:47). Such interaction requires a reverse address, in the context of a mutual expectation of understanding, as the subjects can only know themselves to the extent that others address them; "the second-person perspective is, in fact, essential to the

constitution of human subjectivity, and it permeates all forms of interpersonal consciousness and even self-consciousness" (Garfield, 2019:42-49). What is more, Schilbach et al. (2013:393-394) find that this interpersonal consciousness and its ensuing capacity in the attempt to grasp the mental states of others, in an inferential, reflective, and what might be called a third-person mode, is at the center of many investigations, focused on the two neuroanatomically distinct large-scale networks of social cognition: the so-called mirror neuron system (MNS) and the mentalizing network (MENT). According to this viewpoint, even if human cognition and affective maturation begins with early-childhood interaction in the second person perspective:

> "early human infants [recognize] the difference in perspective, in intention, and in capacity of the second person …and how central that recognition is not only to their later recognition of third persons, but, more importantly, to their own self-conception as first persons." (Garfield, 2019:44-45)

Because humans respond with distinct neural signatures when addressed by their first names, or even as "you", the affective arousal is higher during dyadic interactions compared to when observing others (Garfield, 2019:47); it is for this reason the 360° stereoscopic film *restores* us back to the natural state in the second-person perspective through which we really engage in virtual reality.

Third Person-Perspective

A third-person (enunciation with respect to characters in literary texts as 'she' or 'he') or extradiegetic narrative is communicated by narrators who are not characters in their story, do not inhabit the storyworld evoked by a narrative in any shape or form (Herman, 2018:336), with occasional and exclusively narrative instances where the narrative levels are blended.[9]

In films, extradiegetic narration is often transmitted as a third-person voice-over narrator who is decidedly less common than those using homodiegetic narration and who speaks only intermittently without mediating every moment of their story (Kozloff, 1989:72). The status of extradiegetic narration here, including Cinematic VR, should not be confused with that of the third-person perspective, as the story may be told extradiegetically but the point of view shot is purely subjective, composed from a perspective that the primary narrative could not have. For this reason, it is important to clarify the distinction between "heterodiegetic" and "extradiegetic" narrators, as they are both transmitted by narrators outside the storyworld.

In film, as expounded on by Branigan in his *Narrative Comprehension and Film* (1992), the external focalization represents the measure of character's awareness from outside his own character; it is subjective in the manner of eye-line match; therefore: the audience sees what

[9] "Narrators can be extradiegetic-homodiegetic, like the older Pip who narrates his earlier life experiences in Charles Dickens's *Great Expectations*; extradiegetic- heterodiegetic, like Henry Fielding's narrator in *Tom Jones*, who comments evaluatively on but does not participate in events in the storyworld; intradiegetic-homodiegetic, as when Marlow, in his role as a character narrator in Conrad's *Heart of Darkness*, tells about his experiences in the Congo; or intradiegetic-heterodiegetic, as when in Chaucer's *Canterbury Tales* the Miller tells a bawdy tale (specifically, a fabliau) centering on events in which he himself did not take part" (Herman, 2009:66-67).

the character looks at, but not from his position (Branigan, 1992, as cited in Vicaka, 2014:27). Any focalized objects are "marked by close-ups, zoom-ins, movement, centrality of position, sharpness of focus, shifting focus, increased contrast, spotlighting" (Giannetti, 1993:50, as cited in Vicaka, 2014:27). Extradiegetic narrators have no narration outside the container they are in, whereas hetero- or homodiegetic narration establishes the levels between the narrator and the story they tell, such as, a narrator can be both an intradiegetic and a heterodiegetic narrator at the same time if the stories do not involve the narrator, but the narration is itself narrated (in a frame tale) by an outside extradiegetic agent (Guillemette and Lévesque, 2006).

One of the main issues with the third-person perspective, in terms of narratological discourse, is the distinction between 'knowledge' and 'optical perspective'. In video games, the third-person PoV is represented by one's avatar onscreen (Fig.10), which allows the player to retain a mental image of it. However, it does not provide the embodiment of a character and the ability to see the world through their eyes, effectively making it a first-person perspective. Moore and Novak (2012:166) argue that seeing their avatar in a heterodiegetic perspective places the player in an emotional connection with the character onscreen (third-person PoV), rather than periodically seeing their own reflection in a mirror and being represented as a disembodied hand holding a gun or object (first-person PoV). A valid argument here is that a third-person narrative, in which the speaker is a minor participant or a silent witness of the events, is not the same as the one in which the speaker did not witness the events, but still communicates it as a "retold tale" in the third-person or the first-person plural mode (Linde, 2008:77-78).

Figure 10: *Dante's Inferno* (2010), showing Dante confronting Lucifer in the Ninth Circle of Hell, at 02:15:00.

With respect to knowledge, it frames the previously mentioned divergent models in terms of their application in 3DSC as separate units, whereby 'point of view' is factionalized as the narrative act or narration, and linked to narrative levels (the first person, the second person, etc.), while 'focalization' is an optical and/or mental perspective through which the narrative is parlayed, and voice is coupled with the perceptual and ideological orientation of the narrative act.

Focalization

The distinction in the importance of "point of view" is directly tied to its function within the schema of 'perspective', as detailed in the divergent models of Franz K. Stanzel, Gérard

Genette, Mieke Bal, Boris Uspensky, and Shlomit Rimmon-Kenan (Schmid, 2010). Genette replaces the notion of point of view with that of "focalization", a narrative viewfinder of a kind that "has more than once been hailed as a Copernican breakthrough in narrative theory" (Niederhoff, 2011), separating "who sees?" (more accurately: "who is the character whose point of view orients the narrative perspective?") and "who speaks?" ("who is the narrator?") (Schmid, 2010:91).

The term "focalization" contests Stanzel's model of perspective on the grounds that it is a fuzzy concept as it fails to separate "mood", which is regulated by "narrative distance" (simulative) and "perspective" (as point of view) from the "narrative voice", defined, in turn, by the extent of narrative embodiment vis-à-vis narrative distance (temporal), narrative level, and "person" (Genette, 1983:188) (Fig.11). The immediate relevance for 3DSC concerns two fundamental categories of this system: the "internal focalization" (narrator is a character in the story with spatial limitations), and the "external focalization" (outside the diegetic environment), where narrator "has no psychological privilege and is limited to the role of witness"; however, he is temporally unlimited "since the moment of event and can provide subsequent knowledge" (Edmiston, 1989:730). While Genette introduces the third category, "zero focalization" brought about by the omniscient narrator (Genette, 1983:188) or Stanzel's "authorial narrator" who is unlimited spatially with unrestricted psychological access to his characters (Edmiston, 1989:730), with the kind of access that "transcends what is accessible to ordinary humans" (Jahn, 2011:96), it is a contentious category for cVR films, and, even more so, in the filmic narratives that are inherently resistant to the deployment of omniscience, particularly in 3DSC where narrativity is entirely dependent on the narrative efficacy of space.

In discussing the implication of Genette's *Narrative Discourse Revisited* (1983), Grishakova (2012:152-153) takes exception on Genette's notion of focalization, as accurate as it may seem, for being too general and insufficiently effective in separating cognition from interpretation. In her model, 'point of view' combines two basic meanings: perception and judgment (Grishakova, 2012:142). While the former acts as Genette's "viewfinder of sorts", "a physical place from which something is seen (a "vista" or "lookout")", the latter functions

Mood ***(who sees?)***		**Voice** ***(who speaks?)***		
narrative distance *(time of narrating)*[10]	perspective *(point of view)*	narrative distance *(simulative and embodied)*	narrative levels	persona

Figure 11: Focalization in Gérard Genette's (1983) model.

[10] Genette distinguishes between the narrative distance understood as time of narrating, more or less equals to X amount of days, hours from the point of the narrating act (Voice), and the narrative distance, where a narrative linguistically and psychosomatically is focalized in the manner of its author (mood) (Genette, 1983:188).

along the schemata, similar to Chatman's (1990), and Rimmon-Kenan's (2005) models, transmitting a narrator's mental attitude or posture, according to his or her memory, judgment, opinion, or to the point of a more extensive metaphoric transfer ("take the sentence "From the point of view of the fetus, the abortion was unfortunate"") (Chatman, 1990:139-140). Rimmon-Kenan (2005:79-82) triangulates the second aspect in terms of "facets of focalization", consisting of the "perceptual" facet, as determined by space and time and governed by the focalizer's sensory range, the "psychological" facet (consisting of cognitive and emotive components)**,** that concerns his mind and emotions[11], and, finally, the *ideological* facet, a more general system of viewing the world conceptually'. Her segmentation into facets is important for Cinematic VR insofar as her treating focalization and narration as two distinct activities:

> The term 'focalization' is not free of optical-photographic connotations, and—like 'point of view'— its purely visual sense has to be broadened to include cognitive, emotive and ideological orientation. My own reason for choosing 'focalization' is different from Genette's, although it resides precisely in his treatment of it as a technical term, [which entails] position relative to the story." (Rimmon-Kenan, 2005:73-79)[12]

The ideological facet should be considered almost in all the instances whenever decoding cVR in Immersive Journalism, with the reason being that in the era of objective journalistic practice gone, in lieu of a political agenda (Fuchs, 2019), the audience getting a subjective interpretation of facts camouflaged as an analysis, where the voice-over, split from its visual track, drives a purely ideological narrative. Because focalization is an inherently internal narrative movement (Huisman *et al.*, 2006), framed in the light of narrative voice, instead of point of view (particularly for external focalization), zero focalization does not really exist in 3DSC.

Subdivisions of Focalization in relation to 3DSC

The difference between focalization and perspective (as in point of view) may seem confusing at first. Niederhoff (2014) believes that both concepts are complementary and not binaries: "point of view" seems to convey the subjective experience of a character as an internal perspective, whereas focalization is not aimed at rendering the subjective experience

[11] "The cognitive component: knowledge, conjecture, belief; memory—these are some of the terms of cognition. Conceived of in these terms, the opposition between external and internal focalization becomes that between unrestricted and restricted knowledge. In principle, the external focalizer (or narrator-focalizer) knows everything about the represented world, and when he restricts his knowledge, he does so out of rhetorical considerations. The emotive component: In its emotive transformation, the 'external/internal' opposition yields 'objective' (neutral, uninvolved) v. 'subjective' (coloured, involved) focalization" (Rimmon-Kenan, 2005:81-82).

[12] "*Monofocalization* ''fixed focalization'' in Genette (1980 [1972]: 189) sticks to one character as focalizer, whose perceptions determine the highly individualized orientation of the complete story. Miriam Henderson in Dorothy Richardson's *Pilgrimage* (1915-1938) and Maisie Farange in Henry James's *What Maisie Knew* (1897) are often-quoted examples of this variant. *Multifocalization* (''variable focalization'' in Genette (1980 [1972]: 189), on the other hand, offers an alternation between several focalizers" (Nieragden, 2002:690).

of a character, but rather at creating stylistic effects such as suspense, mystery, or puzzlement. For this reason, the implied director and the viewer are separated from the "camera", which is an intermediator of visual and acoustic information[13] (Schlickers, 2009:243).

Schlickers (Schlickers, 2009:246) offers a modification of François Jost's original model, defining it in terms of the knowledge that a narrator has in relation to the characters: instead of Genette's characterization of perspective, "seeing" and "hearing" are replaced by "ocularization" and "auricularization" respectively (Fig.12). Here, "zero auricularization" refers to cases in which sound, extradiegetic in essence, cannot be located, such as off-screen sound and voices; conversely, "internal auricularization" suggests auditory subjectivity, located on the intradiegetic or metadiegetic level, similar to a "subjective camera".

zero focalization: narrator> character (n>c)

internal focalization: narrator=character (n=c)

external focalization: narrator < character (n < c)

zero ocularization = "nobody's shots", hetero- and extradiegetic "camera"

internal ocularization = "subjective camera" and "mindscreen"

Figure 12: Schlickers' (2009) focalization model.

One of the most recent conceptual modifications of 'ocularization' was done by Manfred Jahn (2021:34). His model is a part of a seemingly complex matrix consisting of an online perception or primary perception, the immediate audition of vision, and an offline perception or imaginary perception, such as sights, sounds, touches, smells, tastes, and other sensations perceived in recollections, hallucinations, and dreams, where focalization can be fixed (exclusively presented from the point of view of a single reflector), variable (a single event seen through the eyes of several major characters, as in Kurosawa's *Rashomon* (1950)), or multiple (the events are told two or more times, each time seen through a different reflector). He also introduces a rather peculiar term "mentation" (Jahn, 2021:34), a focalizer's perception and thought as parts of his or her mental activity (Fig.13) to be a rather useful concept in decoding 3DSC and cVR work. Yet, Jahn's (2021:32-25) model poses a challenge for 3DSC is his blending the cluster of spatio-optical categories, be it ocularization, hypothetical, or variable focalization, to name a few, with the position from which something is seen — in narratological terms, this is "the spatiotemporal position of the focalizer…[and] the object

[13] "What is more complex is the case of the so-called "subjective camera" or "point-of-view shot". Here, the takes are recorded (virtually) from the point of view of one character — the "subjective camera", as an agent of enunciation, is located on the extradiegetic level. As a consequence, what it is showing, i.e. the enounced or rather the view of the character, must be located on the intradiegetic level. This interplay of enunciation and enounced can be compared to the way speech is rendered in narrative literary texts: what the characters say is located on the intradiegetic level, yet it is the extradiegetic narrator who quotes, selects, and condenses these items of speech" (Schlickers, 2009:245).

seen 'in focus' — this is the focalized object or 'center of attention'". In stereoscopic 360°, the narrative discourse is in the present, and its optical perspective is fixed in a specific locale

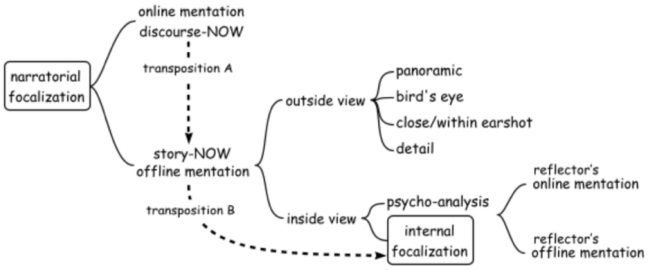

Figure 13: Jahn's focalization model
(Source: Jahn, 2021:20).

with specific spatial attributes. In order to prime the models for a more extensive examination and user testing in cVR environments, as well as to dispel any confusion of the terms, the dissertation proposes a set of new the terms, where voice is a part of narrative distance, and the narrative act, the process of narration in VR, that may be or not contain a voice-over, and is infused with psychological and ideological facets.

Voice

Genette defines voice as a fundamentally quadruple arrangement, in which a narrator is either a "homodiegetic" narrator or a "heterodiegetic" one operating on an extradiegetic plane (first-level narration) or an intradiegetic one (second-level narration). The metadiegetic plane is taken into account when an embedded narrative occurs within second-level narration on an intradiegetic level (Genette, 1983; Guerlac et al., 1980) (Fig. 14). The residual effect of such as schemata is that narrative voice here in no way addresses its cognitive, emotive, and ideological orientation (Schmid, 2010). To view voice as an auxiliary to focalization (perspective) would be inaccurate. It is only when ideological perspective and stylistic idiosyncrasies attributed to various characters are added, voice has weight and proper designation in typology, because focalization rests exclusively on visual perspective (more on internal/less on external) and does not necessarily have access to consciousness (as in zero focalization) (Fludernik, 2009). In Fludernik's model, voice, as a category, may be ascribed to various characters, the authenticity of *voice(s)*, however, due to dependence on ideological and psychological angle, may only be assessed in correlation with that of "implied author" and "narrative distance" since, as an incarnation of omniscient narrator, he mediates all other voices (Huisman et al., 2006). Her model is very important in certain aspects, namely, in relation to *ambiguous* or *shifting* focalization and to the split of voice in relation to narrative distance and narrative perspective, such as in Billy Wilder's *Sunset Boulevard* (1950).

The film opens with a murder at a mansion on Sunset Boulevard, in the city of Los Angeles. The voice-over track is that of an extradiegetic narrator describing the body of Joe Gillis floating in the swimming pool, while the ocularization is that of a third-person in God-

like perspective. As the opening sequence progresses, the narration switches to the first-person point of view where the protagonist Joe, in a flashback, relates the events six month

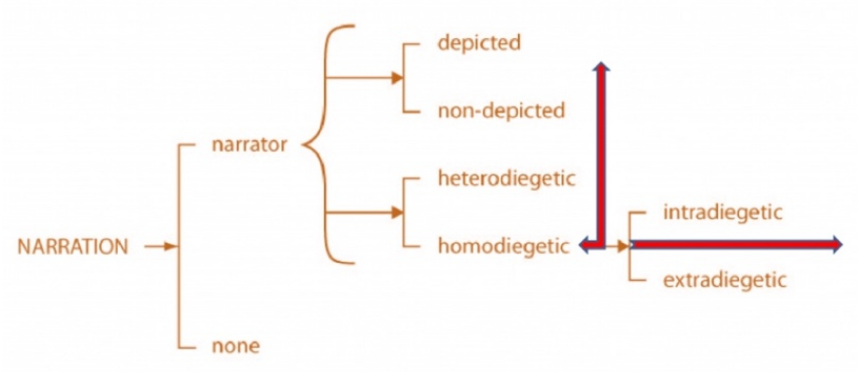

Figure 14: Genette's quadruple arrangement of narrators.

prior to his death. The narrative situation of the opening sequence is ontologically tight to allude of the presence of what Kozloff (1989:45) dubs the image-maker on a*nother level of narrative* responsible for the primary diegesis. The interplay is stringent upon narrative distance: while the time frame (as a narrative distance in time is six months, the narratorial voice is may be deemed far removed from the protagonist.

To illustrate the point, one may look at another, a very similar narrative pattern that appears in the closing, botched airplane hijacking scene in Niels Mueller's *The Assassination of Richard Nixon* (2004), a film "about social alienation in America…in its attempt to connect society's dysfunction and popular misery with the actions of a hypocritical, mendacious ruling elite" (Laurier, 2009:4).

As the scene progresses, its final moments are accompanied by the voice-over of the main protagonist, hijacker Sam Bicke who explains the chief rationale for his actions at the moment of his death. Yet, it is a peculiar narrative instance, recounted by the unreliable narrator (told by Sam, in a flashback, after the death has occurred), where amidst the majority of shots via Sam's focalization, there is a sequence of frames from the perspective of approaching airport police, something Sam could not have imagined and cannot focalize. The perspective of the police is not defined until the very moment Sam is shot (once the police are seen), which makes the alternative focalization ambiguous, unless, of course, it is seen as the perspective of an implied author, a narratorial link between the director Niels Mueller and the homodiegetic narrator Sam Bicke. What makes Mueller's narrative design stand out is not only a more visible presence of an implied author but also the oscillation and clarity of its narrative distance.

There are varying interpretations as to what defines the function of narrative distance, with (a) being a space between the reader and the character (Ellis, 2016; Dancyger and Rush, 2013), (b) a more commonly accepted formula, between the voice (vocabulary and grammar) of the narrator and the viewpoint character (King, 2012), (Genette, 1983:213) (Fig.15), and (c), Genette's overall formula that assesses the distance between the narrator and the story to

determine the extent of subjective and temporal accuracy in a narrative of the information presented (Genette, 1983:216-226). The formula rooted in triangle-axis binaries (Fig.16), that could be extrapolated for 360° film, ought to entail all three schematics, including the fourth

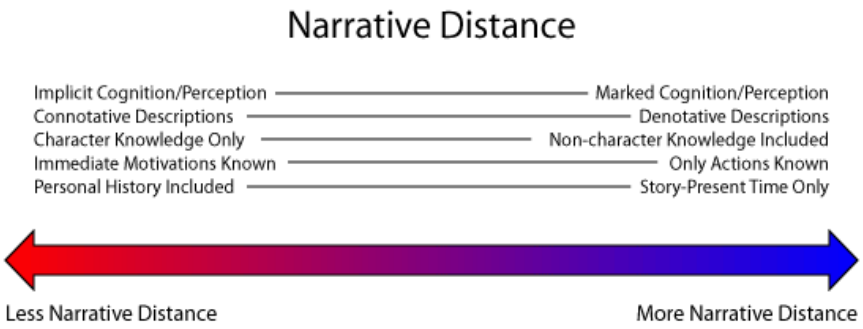

Figure 15: Dynamics of Narrative Distance (Source: Watchman, 2015).

(d), the pivotal narrative distance shaped by figurative voice based sociopolitical conceptual system (Fig.16).

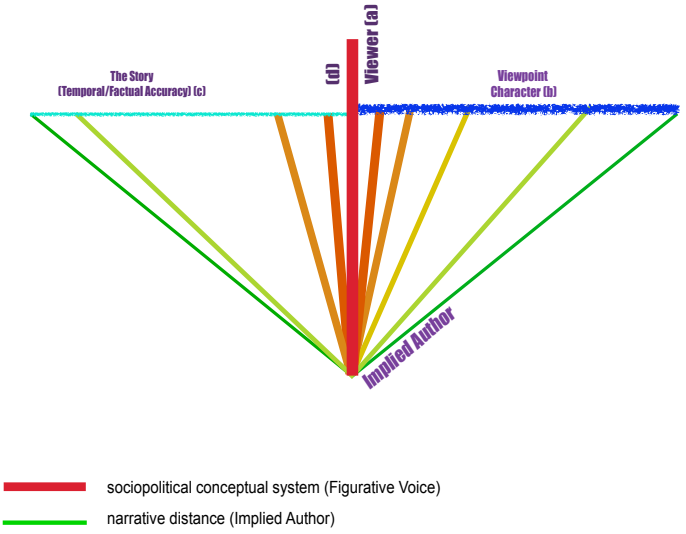

Figure 16: Narrative Distance and Viewpoint Character.

In *Public Enemies* (2009), directed by Michael Mann and released to a wider audience in 2009, the narrative distance between John Dillinger's character (the main protagonist) and the voice of the implied author, a facsimile of Mann himself, drifts back and forth throughout the film, coming to crux in the final Biograph Theater, where Dillinger is watching *Manhattan Melodrama* (1934) while the FBI assassins wait outside. In anticipation of his doom and having lost his girlfriend and allies to gunfire, Dillinger makes the decision not to drag things out any longer. In this, he has Mann's admiration and suppressed desire to emulate Dillinger's

"intense trajectory, this fascinating life filled with mystery," as "we're all doomed anyway" (Patterson, 2014:3).

It is telling that the film was released at the backdrop of 2007-2008 financial crisis that echoes the very causes and effects of the Great Depression, and, thus, becomes a covert sociopolitical statement of Mann's in the words and attitude of John Dillinger who regards banks, corporations, FBI, and the ruling political elite no more than a "band of thugs and even murderers, presided over by a quasi-fascist" state (Laurier, 2009:2-3), and, therefore, fair games. And not just that, the narrative symbolism in *Public Enemies* has direct allegorical relevance to the original dissertation's 3DSC artwork *'Gaslight' Narratives Neo-noir* (2022), which ricochets the criminal neo-liberal acts of Swedish banks in 2009 and their dire implications for Latvia's statehood.

Finally, the fusion of Mann's and Dillinger's voices along the sociopolitical axis relies on a deliberately designed metaleptic framework, a specific schematic of embedded narratives, without which the depth of the dramatic and emotive involvement may have been lacking. What this implies regarding 3DSC, and as indicated in the research assessment resulting in conclusions, is that perspective, contingent on its narrative constitution, can either increase or adversely impact the neuro-visceral immersion a story tries to accomplish. The impacts greatly depend on how well the allocation of narrative levels function in 360° space.

2.3. Narrative and Media Theories Relevant to 3DSC

2.3.1. Vectors of Narratology

Transmedial Narratology

The term "transmedia storytelling" was coined by Henry Jenkins in 2003 (Scolari, 2014:70). In turn, "transmedial narratology" has been used as an umbrella term for any narratological strategies of fictional representation across different media, as well as a method concerned with the development of terms and concepts for the analysis of a wide variety of different strategies of narrative interpretation (Thon, 2016:5).

It is important to note that transmedia narratologists do not necessarily try to develop a new grammar of narrative but rather they seek to put the narratological toolbox to interpretive use (Alber and Hansen, 2014:1-2). In this light, building the narrative typology for 360° stereoscopic cinema is a methodological process, transmedial in nature to establish a contextual frame "within which medium specific narratological concepts can be integrated…systematically correlated, modified, and expanded" (Thon, 2016:7).

Transmedial narratology entails both contextualist narratology, which "relates the phenomena encountered in narrative to specific cultural, historical, thematic, and ideological contexts", and cognitive narratology, which "focuses on the human intellectual and emotional processing of narrative" from the cognitive and reception-oriented perspective (Thon, 2016:2), all of which are essential in proper acquisition of immersive experiences via VR technologies. Furthermore, transmedial method, being a post-classical phase of narratology

does not just expose the limits but also takes advantage of the older, structuralist models "in much the same way, postclassical physics does not simply discard classical Newtonian models, but rather rethinks their conceptual underpinnings and reassesses their scope of applicability" (Toolan, 2014:3). By building a narrative typology for 3DSC, transmedial narratology, as a system, may also address the methodological contradiction between two extremes: on one side, there is what Liv Hausken refers to as the inherent contradiction of media blindness, "the indiscriminating transfer of concepts designed for the study of the narratives of a particular medium [. . .] to another medium" (Ryan, 2004:34), on the other side, one finds radical media relativism, which suggests that "because media are distinct, the toolbox of narratology must be rebuilt from scratch for every medium" (Rippl, 2015:441).

Thon (2016) believes that a genuine transmedial narratology finds a middle ground between the two opposing presuppositions acknowledging "media blindness" and "media relativism" as equally valid categories. Thus, this dissertation does not attempt to build a narrative typology for 3DSC entirely from the ground up, but rather it updates and revolutionizes the well-known narratological terms to correspond to the 360° stereoscopic frame, while offering some unique concepts and theories deployable only in virtual reality space.

Finally, telling a transmedia narrative involves either taking and splintering it across multiple media platforms, or starting with one story and "keep adding pieces on to it *ad infinitum*. Both of these processes will result in projects that can be described with phrases like "greater than the sum of its parts" and "a single cohesive story"…with the result ending in "fragmentation—the story has been broken into pieces" (Phillips, 2012:15). The purpose of a transmedia approach is to fill in the gaps in the fragmentation by introducing potential extra details in the plot that are not based on itself, per se, but rather on "complex fictional worlds that can sustain multiple interrelated characters and their stories" (Jenkins, 2007:2-3). This is achieved through the use of digital technologies, such as cVR, which are more democratic and participatory by engaging their audiences (Harvey, 2015:201) where each spectator accesses an individual episode on their own terms and makes a unique contribution to the narrative system as a whole. Thus, as Jenkins (Jenkins, 2007:4) stresses, the transmedia storytelling is "the ideal aesthetic form for an era of collective intelligence…[propagating some] new social structures that enable the production and circulation of knowledge within a networked society".

Such social structures are but what Stephanie Riggs, a video game software developer and an expert in location-based immersive technologies, refers to as *Storyplex* to signify a "dynamic network that balances the traditions of storytelling, human psychology, and the affordances of computational systems to create an immersive narrative" (Riggs, 2019:139), one of whose chief characteristic is to move away from the "tell-narrative" towards the *experiential* narrative, or how we present stories through frames and squares, as opposed to the spherical environments: "*Square* approach tells a story within a boundary; the *Sphere* approach creates an experience within an environment " (Riggs, 2019:140) (Fig.17). What the

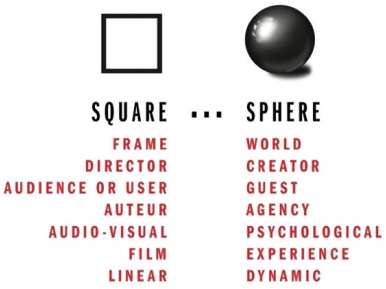

Figure 17: *Storyplex* narrative environment
(Source: Riggs, 2019:140).

transmedial approach allows in the equation is to direct the development of 'storyplex' spaces to act as conduit for rhizomatic spectatorship in order to match the ever-evolving VR viewing platforms, but more importantly, it closes the gap between 3DSC and narratology, resulting in a typology which can be applied consistently "to different transmedia examples, irrespective of whether they're large-scale, high-financed projects or small-scale, independent undertakings with tiny budgets" (Harvey, 2015:200).

Cognitive and Affective Narratologies

Transmedial in scope, "cognitive narratology" is an interdisciplinary field within the postclassical branch of narratology that deals with the study of mind-relevant aspects of storytelling practices not only in texts but also in face-to-face interactions, cinema, hypertexts, radio news, computer-mediated virtual environments, blogs, and other media (Herman, 2009:46). In cognitive narratology, one no longer identifies the unchanging aspects of a narrative and their functions, but rather pursues a series of questions concerning "how narratives reveal the phenomenology of perception" (Olson, 2011:5). While it is impossible to disentangle all the narratological aspects of cognitive narratology and its associated offshoot "affective narratology" advanced by Patrick Hogan (2011), who addresses the emotional aspect of mind-brain processes in reaction to various narratives, it is important to address the cognitive factors that are at the root of "emotional action readiness" in cinema, a phenomenon as essential, if not more so, in stereoscopic 360° spherical film due to a particular *geopositioning* of virtual reality audience that is called upon to act.[14]

Hogan (2011:2-3) contends that story structures are fundamentally governed by our emotion systems through a quadruple activity system, first, by elicit conditions that serve to activate emotion systems, second, by expressive outcomes and manifestations of reactions to the conditions, ranging from vocalizations, facial gestures, to postural changes and perspiration, third, by an emotion response that morphs into a rational action to alter an aversive situation, such as, "when faced with a threatening stranger, I might look for an escape

[14] in Cinematic VR, as opposed to computer-generated VR and video games, the end-user cannot move along x, y, z axis due to a mere fact cVR is a post-rendered sequence; nevertheless, the desire to move and act upon is, psychologically and emotionally, equally strong, particularly in sequences shot with professional high resolution 360° 3D cameras.

route and begin to run away", and, fourth, by a phenomenological tone that "motivates us to sustain or change the situation by making us experience the situation as desirable or aversive". The last two aspects, an emotional response that morphs into a rational action, which the dissertation, during field experiments, has defined as **haptic Call to Action (hCtA)** (Ceplitis, 2021:96), and the phenomenological tone may explain the geospatial mechanics of film viewing in 360° (spherical space and a relative freedom to affect the flow of narrative information when choosing an angle of 360° view). In practical terms, this means focusing on three processes that occur in 360° 3D spatial frames during the exhibit stage: the geography of film viewing, attached film viewing, and the cross-cultural and cognitive facets tied to empathy and immersion.

Emotions that prompt a desire for action in the audience are crucial; if the audience does not show or experience a willingness to take action, then it is lacking authentic emotion. Thus, the *action readiness*, which prompts behavioral responses, thoughts, or attention as much as it counts for engagement in film viewing, "is a sine qua non for emotion" (Tan, 2014:107).

From Engaged vs Detached Action Readiness to haptic Call to Action

To answer the question as to what constitutes the "action readiness" in film viewing, Tan (2014:108) departs from a take on cinematic experience that positions the viewer in the role of passive onlooker, placed in an emotionally provoking situation. The basic foundation of his premise is a sound one: in the cinema we cannot act, a peculiar restriction that is also the signature hallmark of 360° stereoscopic film viewing. But it does not follow that such a restriction is any less an engaging experience or does not force us to *want* to act:

> "To be sure, in real life too there are situations in which we experience emotion-provoking events as witnesses who are unable to act. An example would be seeing an accident happening on the other side of a busy street…action readiness in response to similar situations in real life may be *virtual*. In all emotions, part of the appraisal of a situation in relation to the individual's concerns involves a perception of what possibilities for action it affords. In some emotional situations, the person appraises these possibilities as nil. Action readiness in such cases is felt nonetheless… In the cinema, the spectator's role in events is structurally that of a witness and therefore most forms of action readiness are virtual. We cannot hurt the antagonist bully, but our anger will often result in a desire that he be hurt one way or another, and we then entertain a virtual readiness to hurt." (Tan, 2014:108)

Thus, the dissertation does not presuppose the commonly accepted view of the so-called "helpless distance," shared by many computer-generated virtual reality professionals and gamers, where the inability to move in x-y-z space or haptically interact with the VR environment undermines presence and immersion (Wohl, 2017:103). First, this view is not supported by data from a number of neuroscientific studies that confirm the activation of neural pathways in the hippocampal region during whole-brain, high-resolution fMRI scans,

triggered by mere planning of action or willingness to move or engage with the VR environment, regardless of whether the environment is full VR or Cinematic VR (Bailenson, 2018; Morie and McCallum, 2019). Second, the characteristics of action readiness, "its tendency… to mobilize…one's resources in order to fully grasp and view the story events, and to explore their possible causes and implications" as well as its "*eager* desire to know more about characters" (Tan, 2014:121) are sustained through a psychological state in which, although having no interactive access to the protagonist's actions, "we can wish that he will—a virtual "amending" of the situation" (Tan, 2014:108). Such a strong virtual impulse, neuro-visceral at its core, to want to amend the situation, while unable to move in x-y-z space, is controlled by sequences of haptic Call to Action (Ceplitis, 2021:96). Because films vary in their ability that promote either engagement or detachment, depending on genre, the depth of the information provided to the viewer, and the emotion-provoking events, which generally detached in comparison to that of the witnessing events in real life (Tan, 2014:110)[15], hCtA is an integral part of a good narrative[16], and, more appropriately, it plays a pivotal role in discerning those narratological categories that would give rise to such a state in 3DSC (Ceplitis, 2021:92).

Audionarratology

It is beyond the scope of this dissertation to address all the aspects of "audionarratology", as it is an emerging vector of narratology, still underrated as a scholarly discipline (Briffa, 2018), and chiefly the domain of the researchers predominantly working in sound. However, in the context of ambisonics, used in the prototype production for the dissertation, which tackles new narrative techniques in 360° environment, it is important to address a few audionarratological categories, as a unique interface in sound design.

The term 'audionarratology' was introduced by Jarmila Mildorf and Till Kinzel in the International and Interdisciplinary Conference in Paderborn, Germany, in 2014 (Mildorf and Kinzel, 2014). In their introductory talk *Towards an Audionarratology* (Mildorf and Kinzel, 2014:2), presented an outline for Audionarratology and their rhetorical arguments published in *Audionarratology: Interfaces of Sound and Narrative* (2016) with focus on implications for narrative theories where sound not only cements the relationship between the forms and functions of sound and a narrative but "has the potential to become [a] narrative in its own right" by fueling media's capacity to create storyworlds in and through sound. Audionarratology, thus, functions as an umbrella term for those narrative approaches that take into view various forms and functions of sound within the framework their relationship to

[15] "Films can select events and show them in ways that promote either engagement or detachment. For instance, high depth of information—the degree to which a viewer is granted access to a protagonist's inner life (for example, through dialog or close-ups)—makes for empathic engagement, whereas low depth of information results in a more detached attitude. Genre, too, modulates detachment. Fiction generally introduces psychological distance to events and characters, and comedy more so. But other fiction genres, such as drama, compare favorably with real-life situations when it comes to giving access to what is felt by participants in conflict-laden situations" (Tan, 2014:110).

[16] According to cognitive narratology, engagement as an emotion underlies the emotional experience of narrative film as a whole (Tan, 2014:109); one might argue without the emotional and active involvement that would trigger 'engaged action readiness', the narrative constitution is weak.

narrative structures (Mildorf and Kinzel, 2016a:8) in establishing theoretical considerations in the link between sound and narrativity, experientiality and focalization, via exclusively audionarratological components such as, but not limited to, "soundscapes", "audioception", "white noise", "situatedness", "auricularization", and "audioliterality" (Briffa, 2018:62).

Of all the concepts addressed in the book, and if framed in the transmedial context with regard to medial transposition, transformation, and adaptation of sound and narrative (Mildorf and Kinzel, 2016a:2), experientiality, soundscape, situatedness, and auricularization carry the most relevance to Cinematic VR. As a matter of fact, experientiality and soundscape are not new to the audionarratological discourse. Michel Chion, one of the most influential sound theorists behind the contrapuntal sound theory, in his *Le son au cinéma* (1985) shows that soundscape can trigger a specific emotion in relation to the narrative trajectory, independently of what happens on the screen, since no preexisting natural congruence between sound and image exist, as they are not meant to coexist harmoniously; our perception of the successive images change, depending on a sound cue used, the invention and interpretation of the image in one's brain (Dima, 2017:23-24). Whereas Fludernik's (2002) 'natural' narratology and her notion of experientiality assumes a very different quality in the context of immersive sound design, as it is no longer textually mediated (Mildorf and Kinzel, 2016a) but experienced directly and immediately through situatedness and auricularization.

Situatedness in 3DSC

Mildorf and Kinzel (2016a:12) borrow the term "situatedness" from David Herman (2009:17) who claims that narrative is a mode of representation situated in a specific communicative or discourse context, working within a specific cultural, institutional, and genre-based protocols, which, à propos to the 360° spherical environment, format mediated through the "relationship between *signifier* and *signified*". Of the all the related knowledge formations and concepts**,** situatedness is embedded within and shaped by the same historical socio-spatial relations, first of all, and, then, the contexts they aspire to illuminate (Brenner, 2019:345). The sound source, therefore, is not only a matter of perception but is linked to an actual object in space, situated in a narrative unit in 360° space, enhanced by the ambisonic sound as reframed from Genette's (1988) voice-oriented perspective towards Nelle's (1997, as cited in Herman et al., 2010:174) conjugation of five modes of perception[17], two of which 'auricularization' (sound) and 'tactivilisation' (touch) are used to support the narrative typology for 3DSC.

If, in literature, a focal character's perception may easily shift from ocularization [sight] to auricularization, to a "focalized representation of bodily sensation [textually ascribed]," inviting the reader to both witness and co-experience the situation as it is perceived by the focal character (Herman et al., 2010:174), then in 360° film, it may go beyond auricularization that serves as a powerful narrative tool to extend the limits of ocularization and fuse them

[17]William Nelles "conjugates focalization through the five modes of perception, obtaining 'ocularisation' (sight), 'auricularisation' (sound), 'gustativisation' (taste), 'olfactivisation' (smell), and 'tactivilisation' (touch)" (Schlaeger, 2003: 174, as cited in Catharina Löffler, 2017:116).

both by orienting the viewer in relation to the sound source projection. This is a narrative technique that is impossible to achieve in a text-based medium.

It was François Jost who was the first to question the nature of Genette's focalization when used in a visual medium by offering 'auricularization' instead (Gaudreault and Jost, 2005, as cited in Andrews, 2014:158) to transmit a perspectivised information on separate visual and auditory channels of filmic composition that often function on different narratorial tracks. In lieu of Genette's (1988) 'who perceives?', which, in Jost's view, obscures vision-oriented perspective from focalization in relation to what a character knows (Jost, 1983:192–212, as cited in (Andrews, 2014:158-159), the cognitive point of view adopted by the narrative, "ocularization" and "auricularization" describe more precisely the relation between what is made visible or audible in a film and what its characters see or hear, respectively (Thon, 2014:58). As a listener to sounds here, one can assume a position similar to someone in the story who experiences the same sounds, literally hearing a "bottle corks plopping or a shot ringing out, or at least sounds which suggest (i.e., are sufficiently similar to sounds in) those kinds of events or actions" (Mildorf and Kinzel, 2016b:14). Notwithstanding the narrative, Andrews (2014:159) believes that the film sound is difficult to locate precisely within the frame of a 2D film, since different characters will see the filmic space from different physical perspectives, even if the sound is the same for both, as well as any attempt to mimic a realistic soundscape might result a dialogue being drowned out by the ambient noise. It is for this reason, the manipulation of sound placement in 3DSC is less stringent upon how the characters would audit their scene, but more so on the expected socio-cultural, institutional, and genre-based protocols of the audience, inevitably linked to the perspectivized auditory information, as directed by it, and heteroglossia, as controlled by its uppermost narrating agent.

Auricularization in 3DSC: auditory perspective

In discussing a purely acoustic medium in narratological framework, Lutostański (Lutostański, 2016:120) stresses again and again that new terms are needed to match the sonic associations of various characters with the semiotic codes an audiovisual works intends to produce. For him, sound functions primarily in spatial terms in conjunction with perspective. By emphasizing the microphone as the chief narrating focalizer in radio drama and its effects through proxemics, kinetic properties, and movements, the device functions simultaneously as a "hearer" and a "narrator" endowed with a specific "point of view," a perspectival filter with respect to other senses, where the dominant sense in the medium in question is, of course, hearing (Lutostański, 2016:120). The relevance for 3DSC in comparing the acoustic set-up in accordance with Lutosanski's model is that in the 360° stereoscopic virtual environment, the audience is both "a hearer" and "a narrator," and it is the viewer's geospatial position that is critical in determining the sonic and textural attributes of the objects in space. For this reason, the type of microphone used in 360° spatial sound recording will affect the residual narrative constitution and auricularization of a viewer.

2.3.2. Narrative Space: Seymour Chatman, Marie-Laure Ryan, and Eleonor Andrews

The Austrian narratologist F. K. Stanzel was one of the first scholars to address the question of narrative space in his book *A Theory of Narrative* (1986) via coining the categories of "perspectivism" and "aperspectivism", where the former strives for an immersive experience by means of encouraging "the reader's illusion of being directly and vividly presented with fictional reality" (Ryan *et al.*, 2016). Notwithstanding its significance in propelling a narrative, the conceptualization of space has been undervalued in the narratological discourse (Viehhauser-Mery and Barth, 2017). It was not until narratology made its way from literature toward the narratives of other media, disciplines, film, games studies, and virtual reality, the notion of space received a theoretical attention it deserved (Ryan *et al.*, 2016).

Both space and time, while being inseparable (Richardson, 2002:2017) and referred to differently by various narrative theorists, be it "chronotope", "storyworld", or *diégèse* (Hühn *et al.*, 2009:420), are of unequal distribution: in narrative film, including 3DSC, space predominates over time because the fundamental component of a story is the shot, with its highly spatial meaning, while "time only comes about in the *transition* from one frame (which is *already* space) and a second (which is also *already* space)" (Andrews, 2014:5). The reason why space may also dominate in the 360° stereoscopic milieu and is tied to perspective, as opposed to *film architectonics*, where the chronotope governs the film frame, is that in textual and oral transmission, the narration starts with the narrator/author speaking, whereas, in 3DSC, the narration does not commence until the audience has trespassed the film plane and entered the diegesis, where it orients itself, irrespective of time, which always transpires in the present. Furthermore, the spatialization of 3DSC emphasizes the psychosomatic, interactive, and situational nature of narrative acts that connect a narrative form with its intended audience, based on their cultural, political, and social proximities (Ceplitis, 2016; Richardson, 2002:225). The connection is not only metaphorical but also concrete, which creates a particular significance for the 360° stereoscopic spherical frame, where space acts as a binary cluster: at the end of one spectrum, there is split up of ontological (Ryan and Chatman), operational (Andrews, Caracciolo, D'Adamo, and Ryan), cognitive (Tuan and Alber), and politico-ethnic (Psarra, Lefebvre) planes, and at the other end, a unique instrument of spectatorship (Sobchack).

Ontological Plane: Marie-Laure Ryan and Seymour Chatman

When addressing the spatial elements in narratological discourse, Marie Laure-Ryan (2009) divides them into what she terms as the layers of narrative space: "spatial frames", "setting", "story-space", "storyworld", and "narrative universe". 'Narrative space' in itself is a *physical* environment in which characters live and advance (Buchholz and Jahn, 2005, as cited in Hühn, 2014). Although Ryan's classification is concerned mainly with textual spatiality, some of her typology may be transmedial in nature and very relevant to 3DSC such as story-space, setting, and spatial frames.

Spatial frames

They are the immediate surroundings of actual events and the environment in which characters live; they are "shifting scenes of action...[that] may flow into each other: a "salon" frame can turn into a "bedroom" frame as the characters move within a house", etc., (Hühn *et al*., 2014:797), a movement that sets up a transition between one spatial frame and the next through a topographical determination allocated to events and states in the story, according to their position in its overall organization (Ronen, 1986, as cited in Punday, 2003:123).

In flat screen cinema, spatial frames are interconnected by "giving the spectator a sense of what lies beyond what is framed by the current screen" through various techniques such as marking an establishing shot "before zooming in, or showing the same location in a shot-reverse shot sequence from the perspective of different characters" (Hühn *et al.*, 2014:803). There is a tension between actual spatial frames and those in potential, a dichotomy that hardly exists in 3DSC. What separates spatial frames in the text and in the flat screen medium from those in 360º spherical film is the effect of immediate blur, where the distinctions between story-space and spatial frames of the spherical environment are instantaneously (and continuously) erased: one's immediate presence and imagination are no longer confined by the edges of the frame since the spatial frames of 3DSC are concrete, tangible, and imagined at the same time.

Story-space

It is the composite of all spatial frames, as occupied by the actions and thoughts of characters, plus all the locations mentioned by the narrative, not visible in the scene, or actually occurring events (Bodenhamer, 2015:13). In contrast to Ryan's model, Chatman's concepts of "story-space" is more specific, very similar to the French philosopher Étienne Souriau's *profilmic* space *"*that encourages us to blur the boundary between fiction and reality…constructed from 'all techniques, such as editing'…[as it is] neither a physical space nor a manipulated film space that the camera captures, but the sum of its parts bound together by the film" (Koeck, 2013:24). Chatman's model separates *story-space* from *discourse-space* by conceptualizing them in terms of *explicit story-space* ("the segment of the world actually shown on the screen" that are literal, "analogous, at least two-dimensionally, to those in the real world") and *implied story-space* ("everything off-screen to us but visible to the characters, or within earshot, or alluded to by the action") (Chatman, 1980:96). He believes that the spectator, not the narrator or characters, is responsible for constructing the invisible expansion of story-space. What sets Chatman's model from that of Ryan's is his giving a greater weight to spatial frame as the driving engine in the overall schemata of narrative layers since the act of "the arbitrary cutting-off performed by the frame" (Chatman, 1980:96) mediates the tension between story-space and discourse-space.

Chatman (1980:97) is very specific about the attributes that govern the story-space in classical 2D flat cinema, including scale, contour, texture, density, position, illumination, and clarity of optical resolution.

Of all the attributes cited, "illumination" (as well as color in color films) is perhaps the only parameter of Chatman's concept that can be transferred to 3DSC without affecting the depth of immersion. His last cited attribute of story-space, “clarity of optical resolution”, used mainly as a cinematic agent of focalization, especially an internal one, be it “in sharp or “soft" focus (corresponding to the effect of *sfumato* in painting), or in or out of focus, may come as a gimmick in 3SCD. For instance, in *My Brother's Keeper* (2017), shot in stereoscopic 360º, the director obviously toys with various focalization techniques borrowed from the aesthetics of 2D flat filmmaking but the result is anything but dissatisfying in terms of both narrative constitution and optics: 3DSC is a form of virtual reality, and as such, any departure from one hundred percent optical clarity may negatively affect immersion; it may also exert violence on the freedom of choice that the VR format naturally affords.

As a final point in addressing the ontological aspect, it suits to tie Ryan’s concept of story-space to Marco Caracciolo’s (2011) concept of “virtual reconstruction of narrative space”.

In her recent edition *Narrating Space / Spatializing Narrative* (2016), Ryan capitalizes on Stanzel’s her theories on space, against the backdrop of ‘perspectivism’ and ‘aperspectivism’ to tie them to focalization with respect to the microvels of individual descriptions. Perspectivism is a highly immersive representation of space that “encourages the reader’s illusion of being directly and vividly presented with fictional reality” (Stanzel, 1986:123, as cited in Ryan, 2016). She suggests that the contrast between the two lies in the conception of space as strategic and symbolic, respectively: when the configuration of space determines the unfolding of a plot (as in a murder mystery), then a perspectivist description is preferable, but when objects have an intrinsic emotional or aesthetic value, or when the purpose of the description is to evoke an atmosphere, and not to specify how they relate to each other, the aperspectivism stands.

Ryan’s (2016) formula of narrative space in terms of aperspectivism is important insofar as narrative constitution in 3DSC is concerned since the shifting mode of disembodied human being located on different sites[18], alternating between a bird’s-eye view and a horizontal view, and a position freely floating in space (Dennerlein 2009:151), is a traditional schemata of filming in Cinematic VR, with the exception of an inverted point of view, that is, in contrast to Stanzel’s model, in 360° 3D simulations, the first-person narrative situation is not aperspectivist, by definition[19]: the first-person narration may exist alongside the audience’s optical point of view, which is aperspectavist.

[18] “if a description begins by showing the front of a house, then the back, then the garden, then the inside, and alternates between a bird’s-eye view and a horizontal view, the perspective cannot be attributed to an embodied human being located on site, but rather, belongs to a disembodied consciousness unconstrained by time and space” (Ryan, 2016).

[19] “Stanzel suggests that perspectivist description is typical of third-person narrative with character localization (“reflector-character narration,” in his terminology), while aperspectivist description is more frequent in first-person narration”” (Ryan, 2016).

Operational Plane: Eleonor Andrews, D'Adamo, Caracciolo, and Ryan

Setting

The difference between spatial frames and setting lies in its stability: while spatial frames vary during the plot, setting is a relatively stable socio-historico-geographic environment in which main actions take place (Ryan *et al.*, 2016). A setting is the zero point where the *actual* story-events and story-states are localized (Ronen, 1986, as cited in Punday, 2003:123). Some settings are emblematic, associated with a specific filmic genre such as Monument Valley, the border between Utah and Arizona, with the Westerns, Gothic castles with the horror films, and so on, and so forth (Andrews, 2014). The demarcation between setting and spatial frame is by no means rigid, one of the reasons why Andrews (2014) prefers to use the concept of *place* instead, as the foundation for all other narrative layers of space. For her, place may or may not refer to a specific location but may be just a landscape (a mountain range or a desert) that adds semiotic meaning to the characters and events, or an inside of a car (acting simultaneously as a spatial frame and setting), further "subdivided into the binary oppositions of landscape versus cityscape, interior versus exterior, and public versus private" (Andrews, 2014:7). The fluidity of the delineation is further accentuated by the fact that interaction (thresholds and barriers) between the opposing spatial frames, be they interior or exterior, is a narrative with its own spatial extension (Andrews, 2014:66). She is not the first who delineates a place and a setting as binary constructs. Yi-Fu Tuan in his *Space and Place: The Perspective of Experience* (1977) and Hen Hillis' *Digital Sensations: Space, Identity, and Embodiment in Virtual Reality* (1999) regard 'place' to be an imprecise portrayal of physical landscapes; a place "is more an event than a thing", semiotically manifested: "we give places meaning, and in return they offer us existential support" (Hillis, 1999:82). At the root of one's experiencing space, and, perhaps, this is a usefulness of Andrew's schemata for 3DSC, is *position*, as an optical and cognitive platform from which the rest of the extensions emanate (Fig.18). It is the viewer who regulates their dynamics with virtually two modes of operation: either through a gaze or a movement, albeit, in Cinematic VR, one speaks of a *desire* to move. In the former mode of operation, the audience may have a symbiotic interaction with space on a *topographical level,* that is, space as a static entity[20], of which landscape and exterior/interior micro-spaces come to mind. As for the latter, we speak of *kinesis*[21] in 360° 3D space, analogous to Merleau-Ponty's conception of "virtuality"; it is not the position we occupy in geometrical space that delimits our body, he explains, but the intentional threads

[20] (Parker, 2014:79) defines, based on Gabriel Zoran's (1984) *Towards a Theory of Space in Narrative*, our definitions of place and space, respectively, as the product of movement between places: a *topographical (*space as a static entity) level and a *chronotopic level (*the structure imposed on space by events and movement, i.e. by spacetime)

[21] "Aristotle's own distinction between two general types of movement, *energeia* and *kinēsis*. For present purposes it is sufficient to define the distinction as follows. A movement is a *kinēsis* if an explicit or implicit reference is contained in its description to a possible state of the world in which the movement has stopped, other than the bare, negative state of the movement's having stopped. Otherwise a movement is an *energeia*. Thus 'dancing' is an *energeia*, since it contains no explicit or implicit reference to any state of the world other than the simple, negative one of 'not-dancing'…'Building a house' or 'trying to save a child from drowning', on the other hand, are *kinēseis*" (Engberg-Pedersen, 1983:32-33)

linking us to the world—hence the body as a "centre of potential action" (Merleau-Ponty, 1945/2002:121, as cited in Caracciolo, 2011:120).

Landscapes

Lefebvre (Lefebvre, 2007:51) sees landscapes as a *form of being* of external space in our minds through our interpretive gaze. What sets them apart from, let us say, pictorial landscapes, it is duration constrained by both narrative time and a viewing time, and landscapes differ from

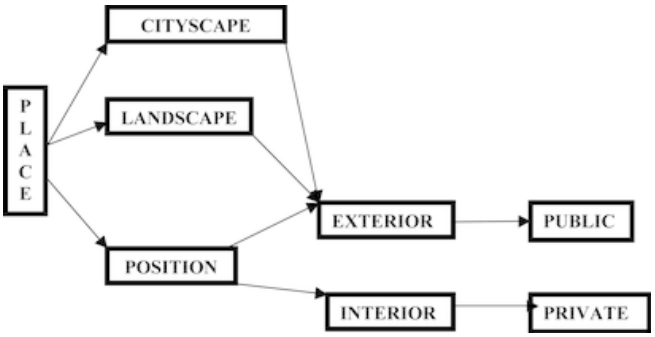

Figure 18: Andrew's (2014) 'place' typology
(Source: Andrews, 2014:7).

a mere setting in that the former is not subordinated to the demands of narrative action, but halts it, enabling the viewer to contemplate space through a spectacular mode of viewing, by "contemplation [that] has the effect of isolating the object of the gaze, of momentarily freeing it from its narrative function" (Lefebvre, 2007:20, as cited in da Silva and Cunha, 2017:80)

Lefebvre (2007:29) notes that it is the spectator's gaze which allows the notion of filmic landscape, in a narrative fiction or in an event-based documentary film, to transition from setting to landscape. But gaze in itself does not pertain narrativity until it is narrativized by objects in space that would already have an extension of emotive forces at work. This is why D'Adamo, (D'Adamo, 2017:3-4) poses a legitimate question as to why do some spaces stand out so hauntingly in film narratives while many others, albeit spectacular and breathtaking, start to fade from memories the very minute the end-credits roll up. By using popular case studies on *Apocalypse Now* (1979), *Amelie* (2001), and *The Secret Garden* (1993), he decodes the machinery of creating empathy in visual narrative space and classifies the narrative architectural form in film according to its ontological attributes, be it "alienated space", "dispassionate place", "shaded space", or a "tryst space", to name a few[22], of which a location

[22] *alienated space* is a narrative space that through its design and look and feel expresses some external or internal disjunction between its characters and their world); *dantean space* in a narrative empathetically expresses the internal conflicts of a character; *dispassionate space* hosts a characters that has external objectives but no clear internal conflicts; *dramatic space* might exhibit an internal conflict of a character, while the backdrop does not express it; *ecstatic space* heals the internal conflicts of the characters. one example is the garden in the novel and lm *the secret garden*; *empathetic space* exists in a moment of a story which either arouses some intense level of empathy in us or somehow embodies the hopes and/or fears of the character in genera; *self-abasing space* is an unpleasant one that a protagonist has engineered and now treats as a kind of

deemed to act as either a “dispassionate space”, a “dramatized space”, or a “Dantean space” that, depending on the nature of its character’s internal and external struggles, unifies them all (D'Adamo, 2017:3-19), is a useful set in 3DSC, not just in traditional film. Since the narrative edifice in 3DSC largely depends on the viewer’s cognitive travel through a sequence of spatial frames, not necessarily linked in time and perspective, the interpretive gaze ought to be provoked by rich narrative architectural forms that are impossible to achieve otherwise, constrained by traditional framing and distance.

Deputy Orientation in 3DSC

Both Setha Low (2014) and Swati Chattopadhyay (2014) assert that spatial position orientation is a key, so does Alva Noë who sees “the visual field, rather, is made available by looking around... not all at once, but thanks to movements of our eyes and head and shifts of attention” (Noë, 2004:57, as cited in Caracciolo, 2014:172), which, in effect, is the very tracking edifice of 3-DoF that Cinematic VR narratives afford.

Low (2014:22) reminds us that perception is a neuro-visceral act that can only be experienced through one’s body. In literature, the orientation in geometrical space that delimits the actions and movements of virtual body that we *could perform* is bound by its “virtual access to the world— a formulation that captures neatly the essence of our interaction with both the real world and fictional worlds” (Caracciolo, 2014:161), that is, by movement *in potentia* or by its illusion. While the readers can never be *actually* transported to a fictional place (their presence bound to remain virtual), the sense of “being there” that some novels may give is found on that illusion alone, through its sensory imagination grounded in our sensorimotor skills (Caracciolo, 2014:161-172). But in 3DSC, the sensory imagination is not bound by any illusion, at least, optically. What connects both mediums is its ‘deputy orientation’ and ‘deputy intentionality’. To amplify even further, (Dreyfus and Wrathall, 2009:74) brings in Merleau-Ponty’s original contributions to the theme of intentionality under four headings: “operative intentionality”, “bodily intentionality”, “intentionality and transparence,” and, finally, “the relation between consciousness and the world”, of which *bodily intentionality to move* is a key constituent in sustentation of presence in 3DSC.

Deputy Intentionality in 3DSC

(Sobchack, 1992:83) makes an accurate observation that even at the very inception of human development, “long before there is self-consciousness, self-representation, and the constitution of the body-subject as an "I," there is a sense of orientation and a sense of center”, and while research has clearly demonstrated that the "boundary-less" infant senses a *center* of his body as a constituting "zero- degree" of experience, it also uniquely the *subject* of his own perception; “that is, it is always perceptive of its action of perceiving”. Similarly, one may

nest that he does not want to leave (such as Jamie Gumb’s in Silence of Lambs (1991)); *shaded space* is an empathetic spatial frame of hauntology; *showcase space* represents space where everything is new and unmarked by human touch or inhabitance, creating the eerie and alienated feeling that the characters live or work in a showcase; tryst space is the location in a romantic relationship where the couple has their first encounter, etc. (D'Adamo, 2017).

technically propose that the audience in stereoscopic 360° film is a subject of the diegesis by default, the object of its own viewing, centrally situated at the existential and permanent address.

"To see is to have at a distance", (Merleau-Ponty and Toadvine, 2007:357) tells us but this gaze, undoubtedly tied to perspective, "has an *intentional structure* that is irreducible in its correlation of a *seeing act* and a *seen object*" (Sobchack, 1992:129), as (Bullington, 2013:29) would put it, if "my eyes focus upon a scene which I wish to see, and it becomes foreground and everything else fades into the background. It is done as soon as I wish to see something". This type of focalization is considered a residual of perceptual or imaginative access to the fictional world, without playing any active role in the story, in other words, the witness is more of a tourist than a permanent inhabitant of the fictional world, required to make a "deictic shift", still brings along the virtual counterpart of his or her *real* body (Caracciolo, 2011:119). The virtual body is, thus, given. In other words, the unnamed witness is already predisposed to experientiality (a quasi-first-hand experience) through the anonymous trespassing of spatial frames. Without movement *in potentia*, a filmic experience is unimaginable; the very transgressive spatial and architectural properties of cinema dictate that even in the most abstract and experimental films, the narrative is sustained through movement. "Where there is movement, there is also space" (Koeck, 2013:32).

Deputy Movement in 3DSC

André Gardies, a film scholar, widens the focus of narrative space beyond the term *l'espace narrative* (narrative space) that describes locations in order to form *l'espace diégétique* (diegetic space) that communicates the doubled construction of the space in film by the story and as it is viewed within the frame by the spectator (Gardies, 1993, as cited in Andrews, 2014:5). If narrative space in a static 360 °spatial frame is communicated by the viewer through orientation of his or her virtual body and its gaze, directed at a specific landscape, then narrative space in the succession of spatial frames is signified by the movement (on topographical level) akin to *flânerie*, the act of strolling in cityscapes, with all of its accompanying effects.

Andrews (2014:24) uses flânerie in general terms to any leisurely pedestrian exploration of city streets, particularly where there is aesthetically keen observation of inhabitants of different social classes. But Low (2014:23) extends the concept of strolling beyond a mere relaxation or an inward reflection of thoughts and memories, towards much deeper embodied and emotional interaction between the body and the environment, in a sort of a prototypical scenario seen in virtual environments. The ramification for 3DSC, on the basis of Low's extended flânerie model, fosters a binary conception of how a deputy focalizer, a passive actant in 3DSC, may move from one spatial frame unto the next: as a rule, by passing through the cityscape either via a *tour* or a *map*, with each of the strategies having certain advantages over each other.

In her *Narrating Space / Spatializing Narrative: Where Narrative Theory and Geography Meet* (2016), Marie-Laure Ryan describes the tour (route) as one of the oldest forms and most common strategies for creating the narrative space. When practiced on its macrolevel, it

reflects a type of a particular plot and genre, be it a medieval romance, a computer games, or a travel writing (Ryan *et al.*, 2016). Its fundamental nature is a dynamic mobile point of view, uniquely dependent on sight by the embodied experience of a traveler, where, for instance, an apartment will, be described in detail, tracing the steps of someone who is showing the apartment (Hühn *et al.*, 2009:427), and *experienced* directly as having moved through a room, even though the spatializing faculties of sight and touch would reveal its being at a distance. By contrast to the horizontal trajectory of the tour mode, the map strategy represents space panoramically from a disembodied god's eye perspective in a pure vertical projection where an observer is situated on an elevated point to view space divided into segments (Ryan, 2014:803-804), both natural and cultural, and organized into thematic plateaus of subspaces, hallways, passageways, windows, bridges, etc. The important aspect of Ryan's construction of space that neither of the forms is sufficient in itself as far as 3DSC format is concerned, for the 360° stereoscopic flânerie requires both the narrator "on a chessboard—a strategy that presupposes a map-like vertical projection—rather than creating a natural walkthrough" (Ryan, 2014:804), the "cognitive mapping" of spatial relations tied to geospatial direction and emotions that inhibit the storyworld (Ryan *et al.*, 2016), "built from images of individual spatial frames that replace each other in short-term memory" (Ryan, 2014:804), as well as a horizontal projection of "cinescapes" (Koeck, 2013) within *actual* spatial frames, which only 3DSC affords, beyond a mere construction of a mental model.

From the Homodiegetically Anchored Place Towards a Communal Rhizomatic Space

A socio-cultural and economic context is another way to conceive the mechanics of spatial dynamics within 3DSC milieu. Henri Lefebvre, an early seminal thinker, has proposed that the construction of spaces are stringent upon their social orders, their definition of material, political, and ideological conditions under which they operate (Sen and Silverman, 2014:2-3), and the construction itself is experienced directly before it is conceptualized through its spatial configuration by means of either a "conservative mode" that reproduces existing social relationships and categorical differences, or a "generative mode" that creates a potential for social encounter (Lefebvre, 1991:34, as cited in Psarra, 2009:237). With regards to the mechanics of the encounter itself and its relevance to the communal experience of 360° spherical cinema, two books are germane in further discussions on how both these modes replicate the extension of storyworlds the audience may finds itself transported into: Henri Lefebvre's *State, space, world: selected essays (2009)* and *Architecture and Narrative: the formation of space and cultural meaning* (2009) by Sophia Psarra.

Psarra (2009:238-245) references back to Lefebvre in support of a unitary theory of social space perceived through spatial practice that is *conceived* (representations of space), in opposition to *lived* (representational spaces). She extends his concepts to social awareness, embedded in geometry and form of architectural sites that reflect the conceiving spatial relations and exhibition of messages by means of a *shared* way of seeing, with its emphasis on social intentions where spatial continuities or discontinuities are negotiated in a layout by people (Psarra, 2009:237), primarily through the mechanics dependent upon the larger

political and economic contexts within which these individuals operate in, that is, through production of goods.

The production itself endows the organization of spaces with three major attributes: either homogeneity (a) (“paraspaces”) with its powerful centralization, a “center-periphery relation”, through similarity in airports, highways, vertical cities of concrete, horizontal cities of detached houses, with their strong points (the centers) and weaker and dominated bases (the peripheries), or fragmentation (b) (“fractured spaces”), broken down into separate spaces and occupied by functions of labor through housing, leisure, transit and transportation over a precise exchange (buying and selling), often in very small “parcels”, or hierarchization and segragation (c) into “places of inequalities” arranged unequally in relation to the centers, which are themselves unequal-from commercial centers to administrative centers through the specter of the urban (Lefebvre, 2009:212-243).

The juxtaposition of center to periphery, between the strong points of space, “the centers of power, wealth, material and spiritual exchange, leisure, and information, which are likewise multiplied and hierarchized” into the world cities, and the weak points of space, the impoverished, “miserable, so-called "undeveloped" regions and countries, is controlled by means of an “efficient apparatuses [dispositifs] of control and surveillance, linked to informational machines: satellites, radars, beacons, and grids” (Lefebvre, 2009). It is this very control by the centers over the poor spaces that ensures the homogeneous character of space, its paradoxical nature where middle classes are distinguished and where the State has a much stronger connection to space with than territory once had with the nation (Lefebvre, 2009:214-243). But the most crucial significance of spatial configuration in 3DSC, as determined by the mechanics of state control and manipulation of space in buildings and cities, according to Psarra’s (2009:239) interpretation, lies within spatial dynamics when the viewer trespasses from one 3DSC spatial frame unto another. In assessing the dynamics at play, the Lefebvrian model appears a legitimate metaphor for rhizomatic distribution of spectatorship sites in 360° stereoscopic milieu to ensure an optimal immersive experience.

2.4. Rhizomatic Spectatorship and Associated Theories

2.4.1. Phenomenology and Spectatorship

Whether the 3DSC audience takes an active or more passive role in its engagement with VR space, its location is crucial. Without a viewer being placed in the midst of an action, there is no virtual reality, which brings the question of subjectivity into play: the objectivistic point of view, “characterized as ‘‘the view from nowhere’’ [or] a God’s eye view, where it is assumed that …there is a neutral perspective…independent of human subjectivity and embodiment, a transcendent ‘‘objective’’ stance outside of the relationship person-world” is not a useful concept because it fails to grasp the individual perception and interpretation of the world as it is (Bullington, 2013:20).

The objectivist theories run contrary to the purpose and fundamental objectives which VR technologies stand for. Phenomenology, in turn, does not study the objective world as such but examines the world as it appears to human beings through their own subjectivity or consciousness (Bullington, 2013), and, therefore, as science, phenomenology, particularly, with its focus on physical body as the nucleus of all experiences, is very fitting in understanding how corporeal experiences function and ought to be formed in 3DSC films.

The key argument Merleau-Ponty makes is that the main structure of human experience lies experience is its intentionality of being directed toward the subject and subjectivity:

> "I reflect on the essence of subjectivity, I find it bound up with that of the body and that of the world, this is because my existence as subjectivity is merely one with my existence as a body and with the existence of the world, and because the subject that I am, when taken concretely, is inseparable from this body and this world." (Ponty, 2002:2002)

This inseparability claim, also shared by Husserl and Stein as well as other phenomenologists, stresses that "the lived body (Husserl's *Leib* or *Leibkörper*) is inextricably present in all perception and is an organ of sensation, action" (Dahlstrom *et al.*, 2015:128), voluntary movement, and thought, is quite similar to Deleuze's concept of matter, which has neither subject or object (Deleuze, 1987:4), merely an active cognitive process where the first-person experience is an essential part of consciousness (I see / think / desire / do) (Woodruff and Smith, 2013:2). In opposition to Husserl, Vivian Sobchack's (1992) existential phenomenology contends that film is a "pure" cinematic vision with its own existence, as a "viewing-view/viewed-view" bodily organ, locked in a somatic and dynamic relationship with the body of a spectator (Sobchack, 1992:133). It is the supremacy of the body within experientiality in space that makes her ideas crucial in understanding the proper narrative strategies when constructing 3DSC. More precisely, it is the foregrounding of the viewers' "physical situatedness" in the overall narrative schema, the orientation and position of the body in relation to focalization, and the phenomenon of immersion.

Phenomenological Model of Spectatorship

Instead of a specific point of view, the viewer has specific mobile bodily engagements with "enworlded subjects/objects whose visual/visible activity prospects and articulates a "shifting field of vision" from a world that always exceeds it" (Sobchack, 1992:62), is, in fact, an instance of a Cinematic VR experience with its twist-and-turn agency as the primary *modus operandi*:

> "My body already ''has'' the world in a primordial way. One's own body is the third term, always tacitly understood in the figure/ground structure. If the telephone is to the left of my desk, it is because I am to the right of the telephone. The body is not in space, it ''inhabits'' space." (Bullington, 2013:31)

The phenomenological mode of spectatorship, proposed by Sobchack (1992), clarifies this ideological take by stating cinema is not shaped by the viewer on his or her ideological grounds as much as through their embodied activities, precisely due to the symbiotic engagement of two "viewing views" and "viewed views" (the spectator's and the film's) (Stadler, 1994:65). In her response to Harald Stadler (1994), and in the chapter, titled "The Act of Being with One's Own Eyes" of the *Address of the Eye* (1992) (which details a phenomenology of embodied vision in the human subject), Soback refers to Richard Zaner's description of the four fundamental ways in which the body perceptively engages us in the world. First, the perceptive body is the bearer of the orientational point with respect to which other objects are organized in the spatio-temporal surrounding, second, the perceptive body serves as an "organ of perception," that is, as a single technology with several sensory fields, third, the perceptive body is an organ of perception that synthesizes the before mentioned sensory fields into an identifiable place, and, fourth, the perceptive body is that "which actualizes volition and signifies through gesture and language the intentionality of consciousness" (Sobchack, 1994, as cited in Stadler, 1994:66). Whether she prophetically envisioned the audience trapped in a 360° stereoscopic sphere, it can be left to anyone's imagination, but what is clear is that the four fundamental features Zaner talks about are all present in 3DSC, albeit it does not immediately follow that the four traits, by virtue of being present, make the spectatorship phenomenological, with the reason being an inherent conflict the way her terms are applied. The crux of the conflict is that in 2D flat mode, the film experience is incomplete in terms of its phenomenological attributes. The most obvious one is this very presence of dark (Sobchack, 1992:25). The abyss one stares into, the act of viewing in the darks becomes increasingly solitary and superficial experience, to the point of signaling the dissolution of cinematic itself (Casetti, 2015:205). In this context, Sobchack's (1992) modeled correlation, what she sees as the "engagement of two "viewing views" and "viewed views", is rather theoretical, because the audience is bound by the film's frame and window. The audience can surmise but it cannot see what the camera sees. The two forms embodiment, the spectator's and the films, are loose and conditional. But if one *eliminates* Sobchack's (1992) "transcendent space", as is possible in 3DSC, it moves the audience from being passive observers endowed with a third-person perspective into a second-person narrative situation oriented at the center of active attention.

2.4.2. Deleuze and Guattari: Rhizome as Philosophy and Method

Originally, the concept of *rhizome* is fleshed out in the seven-year project "*A Thousand Plateaus: Capitalism and Schizophrenia"* by French philosopher Gilles Deleuze and psychoanalyst Félix Guattari, which established rhizome as a *modus operandi* of "an acentered, nonhierarchical, nonsignifying system" that "has no beginning or end; …always in the middle, between things, interbeing, *intermezzo*" (Deleuze, 1987) forming a mass of roots, and having multiple exit and entrance points simultaneously, as it resists a pure liner progression of the object oriented, cause-and-effect, hierarchal movement rhizome is evaluated on the grounds of connection (any point of a rhizome is connected to another),

heterogeneity (a rhizome propagates itself when one multiplicity (a part of the rhizome) while connecting to another, changes its nature), multiplicity (a rhizome is neither subject nor object, only its magnitudes, expressed in numbers, as they connect with other multiplicities), asignifying rupture (a rhizome can be broken at any point but will reconstruct itself since its breakdown is its unity), cartography (multiplicities connect with others from multiple entryways in an exploratory fashion like a map, which is "connectable, detachable, reversible, and susceptible to constant modification"), and decalcomania ("a rhizome is always an aggregation that actively resists rigid organization and form") (Deleuze, 1987).

The key aspect of Cinematic VR, just as the one in rhizome, lies in its resistance to what Jason Wallin (2010:83) would term "the sedimentation of life into typologic orders and moribund habits of representational thought". Unlike narrative design, found in graphic arts, photography, or drawing, the rhizomatic narrative may be split at any given plot point but it will reconstruct itself on "one of its old lines, or on new lines…[just as one] can never get rid of ants because they…can rebound time and again after most of it has been destroyed" (Deleuze, 1987). Or to use the narratological framework of the preeminent literary critic Seymour Chatman, it may be said that rhizomatic structure does not contain "satellites" (minor plot events), only "kernels"*:* major *"*narrative moments that give rise to cruxes in the direction taken by events" (Chatman, 1980), with logic of connection, but in absence of hierarchy.

2.4.3. Deluzeguattarian Codes in Rhizomatic Spectatorship: Lombardi

Rhizome, in practical terms for 3DSC, exists as a concept. Any narrative whose structure is argued to be rhizomatic (Habibi, 2013), does not fall into a well-recognized subcategory of narratology, although there have been a few case studies that attempt to develop rhizomatic typology in cybertext culture, crossmedia, transmedia, and new media art (Vilaplana, 2014). The difficulty can be partially explained by the fact that narratology addresses categories such as implied author, focalization, space, time, and narrator, whereas rhizome is evaluated on the grounds of an entirely different inventory of terms. But despite its ostensible incompatibility with traditional narrative categories, the Deleuzoguattarian principles, intrinsic to the rhizome (connection, heterogeneity, asignifying rupture, multiplicity, and cartography), can be successfully used to decode various artifacts, such as Mark Lombardi's *Narrative Structures* (2000). In this, the Deleuzoguattarian schemata must morph from being put forward as "the rhizomatic thought process" and a "remedy for inadequacies in narrative theory" (Culler, 2008:7) into a post-digital utility that no longer imposes visual norms of orthodox cinema on viewers, displayed in a classically understood community-mediated setting (Wilson and Nash, 2011), as a communal rhizomatic hub.

Some 3DSC video installations, such as Del Favero's *Scenario* (2011), initiate "perceptual shifts and invokes an alternative mode of social engagement of the self with the other, *and* even with the others within the self" (Lee, 2015:2), in other words, it becomes, rhizome along three-dimensional spatial axis, the one found also in Lombardi's *Narrative Structures*.

Mark Lombardi, an American neo-conceptualist artist, used pencil drawn diagrams for six years before his death in 2000 to map the "charts of shady deals and shaky agents, and org charts of world-class con men, revealing the genealogy of wickedness in the highest places of corporate and government power (Dowbenko, 2003). The diagrams entitled *Narrative Structures* interpret this interconnectedness of banks, corporations, private individuals, military and government by "juxtaposing and assembling … [loops with] a set of stacked, parallel lines to establish a time frame, the flow of money and other key details as indicated by a system of radiating arrows, broken lines" (Lucarelli, 2012). The key to is to look at the sheer multitude of size in drawings ranging from small prints to those measuring in 5 x 12 feet as if to mirror a multitude of private corporations, federal agencies involved and the size of their influence over the world's function mechanism. The established social order **revealed is a political underground stem** (rhizome), where connections are made within the narratives of the diagrams (Fig.19), and, outward, with the audience (Fig.20).

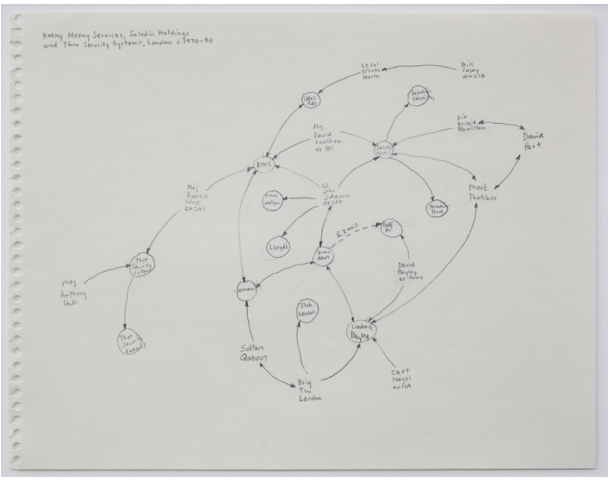

Figure 19: Mark Lombardi, *George W. Bush, Harken Energy, and Jackson Stephens*, ca 1979–90 (2000) (Source: Chayka, 2011).

Such is also the take of *Mark Lombardi-Kunst and Konspiration* (2012) directed by Mareike Wegener, which examines the legacy of Lombardi's work on the contemporary arts scene. Comprising mostly of interviews by art critics and Mark Lombardi's friends, immediate family and associates, the film rarely ventures beyond the zone of information widely available in print and on the net. It does, however, feature a rare interview by the artist immersed in his creative pursuits and at the apex of his fame; perhaps, it is the only remaining video record of him alive, the unexpected visual prowess of his presence to only inflate the conspiracy theories surrounding his death, as he comes across in film as being just an artist instead of a political preacher with agenda in sight. The senselessness of his departure is even more underscored by the monochromatic soundtrack and the never-ending stream of museum visitors of all ages and from various strata of society as seen in the film's closing shots. What

emerges at the end is the concept of **rhizomatic narrative kinetics** and it propagation in public space, which, in itself becomes a default model for 360°cinema; as the drawn lines switch into active verbs that expand dynamically as they connect in multiplicities, each of the dots or circles (representing legal entity or an interested party), rather small in size to be legible from distance, *pulls* a spectator *in*. In pondering on each dot, one actually contemplates on all of them simultaneously; the focal points are not the loops, but the lines that connect them, which in turn, connects to the audience and generates a further movement within (Fig.20). The audience is a constantly shapeshifting mass of **viewer bees** (Fig.21)

Figure 20: Pirogi Gallery, New York Pirogi Gallery, New York (Source: Chayka, 2011).

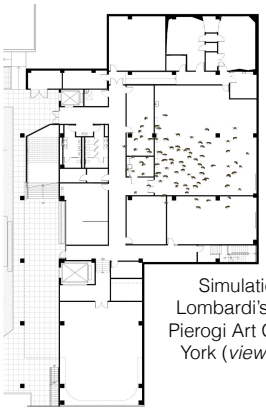

Figure 21: Layout of Pirogi Gallery, New York.

cross-connecting along x, y, z axis, and becoming a part of the *Narrative Structures*: a metaphor for rhizomatic connections in 360° space. One cannot simply come up to Lombardi's paintings and, then, merely walk away: the drawings *Narrative Structures* are tied to the spectators who are chained by them, and they, in turn, with each other in time, and in space, even after the exhibition is over. Such communal spectatorshipforms are all but Riggs' (2019:139) experiential *Storyplex*. Whether the experience is labeled as "Storyplex" or a "rhizomatic spectatorship" platform, as proposed in the dissertation, their ontology is essentially the same: the goal is to explore the neuro-visceral immersive states in public space within the framework of communal spectatorship based on network models, as framed by the six principles of Deleuzoguattarian rhizomatic spectatorship, Vivien Sobchak's spectatorship theories, and Lombardi's social space.

2.5. Stereoscopic Spherical 360° Video Technical Considerations

2.5.1. Cinematic VR vs. 3DSC: Rationale for the Chosen Format

The advantages and challenges of 360° videos in enhancing audience experiences and engagement are outweighed by the cVR performance, generally worse than traditional documentaries in enhancing audience engagement, because VR does "not facilitate a direct relationship between a user and an experience's subject in reality to achieve empathy" (Fisher, 2017:233). The reasons are many and they vary, but the most obvious are two: first, the lack of spatial extension that Sobchack (1992) refers to as a "transcendental plane", the space between a traditional film plane and the audience, and, second, monoscopic cVR, with minor exceptions, conflates the essence of VR with its purpose.

The main purpose of VR is to trigger a "sensorimotor and cognitive activity" in a viewer (Fuchs, 2017:9), to immerse the audience inside a believable place (Dorta *et al.*, 2016:211), "with enough interactivity to perform specific tasks in an efficient and comfortable way"

(Gutiérrez A *et al.*, 2023:2) so that the environment one finds himself immersed felt real. To do that, two illusions need to be sustained: depth of the view, and the feeling that you can look and move anywhere you want to (Rubin, 2018).

While the monoscopic mode of cVR is a very popular format in Immersive Journalism (IJ) due to the production demands of news channels that depend on equipment that can deliver VR segments in a more flexible, mobile and arguably more participatory formats, be it CNN, Russia Today, Gannett Company, USA Today, CBS News, Univision or BBC and Seattle's KING5 television, that produces 360° experiential news that are locally focused and of similar length to those of the AP VR news (Pavlik, 2019), the content has to be delivered quickly. The segments are often shot in a low resolution monoscopic mode with some stitching errors, which does degrade the immersive experience and empathy it seeks:

> "watching mono 360˚video is like having your head inside a giant globe looking around at the inside of hat sphere. With stereo, the contours of that globe fade away, and the illusion of being in real space intensifies. Technically, the difference is subtle, but experientially it's huge." (Wohl, 2017:152-153)

Beyond the technical anomalies, the lack of allure of monoscopic display is also apparent in the narrative constitution and the storytelling techniques afforded by the format and mediated experience of narrative space. The feeling of being transported into a realistic virtual world is one of the most fundamental aspects of experiencing VR (Wohl, 2017:19), irrespective of narrative form. While the basic principles of building a space through various visual techniques have not changed since early painters, what has changed is the audience's *experience of entering* that space (3DSC), rather than just *imagining the process* of entering it (cVR). Hence, not only is 3DSC superior to other virtual reality technologies in delivering a more naturalistic and immersive sense of presence, which is the hallmark of a VR experience, but it also closely replicates how humans naturally see and experience the real world, compared to monoscopic 360˚ footage which is flat with no depth perception. In addition, in 3DSC, the format's two essential aspects -"immersion" and "presence"- are triangulated in dynamic processes with narration. In comparison to immersion and presence, "interactivity" - the third component in cVR discourse - is not as essential as the former two (Nae, 2021). Since the purpose for which Cinematic VR exists is to equalize immersion and narrativity, an 'episodic neuro-visceral immersion', not stringent on interactivity, may address the entire inventory of narrative processes in stereoscopic 360 film. It may also disclose the mechanisms for organizing the narrative, somewhat similar to those found in literature, sociology, literary history, ethnology, and film.

2.5.2. Immersion and Experientiality: Fludernik, Caracciolo, and Ryan

Whenever virtual reality is discussed, one may often come across a heated discussion where the concepts of "presence", "empathy", "flow"," experientiality", "embodiment", "immersivity", and "immersion" are used interchangeably or conflated. They may mean

different things in different disciplines (Doerner *et al*., 2022:13), albeit with respect to narrative structures in 360° stereoscopic film, the most relevant are experientiality and immersion.

"Immersion"**,** derived from Latin *immergo* (to plunge, dip, or sink into liquid), the English term "immersion", e.g. for the administration of Christian baptism, has acquired a figurative sense to refer to both a mental state of absorption within a condition or a task as well as the capacity of such a condition (Anton Clavé *et al.,* 2023:113). One way to look at the phenomenon is to distinguish between the two figurative senses: immersion and immersivity; immersion as a state of mind and a non-mediated aesthetic illusion or "presence", and the mediated residual of a mental immersion that produces some type of neuro-visceral effects of "physical immersion", which Anton Clavé et al. (2023:114) term as "immersivity". According to the scholars, the former has been described as a gradable phenomenological perspective, variable in its intensity, that diminishes a critical distance between emotional involvement in a represented world and experiencing this world in a way similar to one's real life. While the latter, contrary to its promises, does not necessarily deliver immersion but offers, instead, immersivity in the shape of immersive environments that, given the right disposition, may temporarily lead to a more or less intensive degree of the experience of immersion (Anton Clavé *et al*., 2023:115).

In academia, for instance, the term "immersion" is often muddled up with "presence" (Lombard *et al.,* 2015:13; Doerner, 2022:16-17), whereas in game studies, presence commonly refers to a sensation of being present in an environment through mediated means, namely, with the support of media technologies (Dubbelman, 2013:15). Its central concept for describing the mental aspects of virtual experiences in relation not only to the "place illusion" but also to the "plausibility illusion" arises when the events of the simulated environment are perceived as if they are indeed happening (Flatlandsmo and Gynnild, 2020:68), which bring up "Presence Theory" advanced by Lombard et al. (2015:22) who had identified seven dimensions of presence with distinct but overlapping aspects, including "spatial presence", "social presence", "self-presence", "engagement", "realism", "cultural presence" and "parapresence".

With respect to 3DSC, spatial presence, inherently embodied perceptual–cognitive phenomenon with reference frame to a first-person perspective, "cultural presence" (presence in a real or simulated environment, while immersed in a sociocultural context of connecting objects with people (Lombard et al., 2015:26)), and realism ("correspondence between a technology-mediated experience and a similar experience not mediated by technology …[aka] "real life"" (Lombard *et al.*, 2015:25) are precursors to immersion. In the absence of presence, no immersive state is possible (Mestre and Fuchs, 2006).

What is more important, however, is to distinguish between 'presence' as more of a state of mind and a sense of being in a different place, and immersion in VR, seen as a physical experience that technological agencies may deliver (Berkman and Akan, 2019) and measure, such as Brown and Cairns' (2004) qualitative study. By using grounded theory as their base method, Brown and Cairns (2004) came up with three stages of immersion, all in the ascending impact: engagement, engrossment (emotions of players are directly affected), and

total immersion, resulting in presence, "being cut off from reality and detachment to such an extent that the game was all that mattered" (Brown and Cairns, 2004:1300). In his later study *Quantifying the Experience of Immersion in Games* (2006), Cairns briefly compared various models of immersion not just in video games, but in virtual reality as well. Based on these two studies, the research group that participated in them co-authored another study *Measuring and Defining the Experience of Immersion in Games* (2008), as more objective measuring tool, which the dissertation has used to be a springboard template for measuring immersive states in cVR. It is important to note that one can be engaged with a video-game without being immersed in it; that is why flow is not a defining factor in an immersive situation within cVR, but a spatial awareness is. The physical transportation in an artificial space is what triggers immersive scenarios with respect to the virtual technology rather than the human experience resulting in "total immersion"[23] (Fuchs, 2017). Although this type of immersion is very close to Marie-Laure Ryan's (2022) one, it fails to consider temporal and emotional aspects of the narrative engagement, which is "an essential part of the way people experience the world" (Ghazouani, 2017:2), and cVR, particularly.

Ryan's (2022) model of immersion, where she balances immersion along spatio-temporal, temporal, emotional, and ludic categories[24], supports the core of the argument that immersion in the 3DSC narratives is the perception that "'you', the participant, are physically there...wherever "there" may be… the goal is to create such a high degree of immersion that users aren't caught up thinking (Damiani, 2016). For this to occur, an immersion model must consider the entirety of cognitive, neural, emotional, and physical states that the dissertation defines as 'episodic neuro-visceral immersion.'[25]

Finally, one must add that "mental immersion", where the engrossed participant in video games becomes so preoccupied wanting to play it more and wanting to tell friends about it, or a state of being deeply engaged to the point of suspension of disbelief in Cinematic VR may often be desirable and sometimes critical, but its absence does not mean the experience is not a virtual one (Sherman and Craig, 2019:10). It is for this reason, compounded by a mandatory necessity for spatial presence, that mental immersion is not as essential in 3DSC as experientiality is.

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[23] "But can we speak of "total immersion"**…**do so, a minimum of three conditions must be met: The representation of the subject's body in the VE must be appropriately rendered in real time; The sense of visual immersion must be total, requiring the field of view of the VR headset to match that of the immersed participant; The VE must spatially correspond to the RE to ensure the accessing of the subject's proprioceptive sensations (muscular and kinesthetic)." (Fuchs, 2017:20)

[24] According to Ryan (2015; 2022), *temporal immersion* is what keeps readers turning pages or spectators speculating about what will come next in film; *in spatio-temporal immersion*, the imaginative distance between the position of narrator and addressee and the time and place of the narrated events is reduced to near zero, *ludic immersion*— the passion a player brings to playing a game, solving a problems, and *emotional immersion* requires the following types of emotion: subjective reactions to characters and judgments of their behavior (include primarily like and dislike but also admiration, contempt, pity, amusement, etc.), empathetic emotions, that is, emotions felt not for oneself but for others, and, finally, emotions felt for oneself, not for others, such as fear, horror, disgust, and sexual arousal.

[25] see the explication of the term on page 85 of this subsection.

"Experientiality" is first coined by Monica Fludernik to outline ""the quasi-mimetic evocation of 'real-life experience'" that correlates with the evocation of the consciousness of a particular incident (Fludernik, 2002:9), in order to, first of all, transport this experience to the audience, and, second, to assess "the psychological processes underlying recipients' engagement with" with that incident (Hühn *et al.*, 2014:154). The transfer and the engagement with the experience, "where the experiencer and the storyteller coincide", forms the core of Fludernik's 'natural' narrative situation, and it is controlled by a few cognitive factors, amongst which, "embodiment" takes the preeminent standing (Hühn *et al.*, 2014:149- 155). The power of embodiment is that it restores the prior experiences to their state of *now* via emotionally charged remembrance (we recount events because they were "memorable, funny, scary, or exciting", and not because we simply want to tell them) (Fludernik, 2002:21).

Still, contrary to Fludernik, Caracciolo (2014) claims that the evocation of emotionally charged recollection of past experiences is not sufficient to define experientiality. He views experientiality in terms of "narrative persuasion". To execute a narrative persuasion, the technological agency deployed must, first of all, tap into the story level, as some events are more likely than others to generate necessary responses and deepen immersivity because of their socio-cultural affinities. Second, the "existents" (events) have to be rendered through acutely intimate avenues, most of often linked to a recipient's particular and prior emotional and psychological engagement (Caracciolo, 2014:11), such as a rape victim that responds to a VR film, filled with sexual content, would have a more profound level of immersivity. In addition, not only does a narrator ought to gain an access into a narratee's collection of his past experiences and associate them with those of the narrative (natural narrative situation), but, most importantly, he must *produce moves* and *shifts* within the collection so that there was a give-and-take movement between the narrative and the background of a narratee where a narratee would be compelled to reconsider his deep-seated beliefs and value system (Caracciolo, 2014). Such a two-way transaction, in the form of tension, is indispensable to signify experientiality.

In part, experientiality is tied to the recipient's perspective along the perceptual, psychological, and ideological axis (Rimmon-Kenan, 2005), of which ideological one may play the most crucial one in enhancing or decreasing mental immersion. Being personal and collectively archetypal, experientiality must also take into an account the Perky effect, a process by which visual mental imagery is thought to interfere with visual perception: an experience in the first-person narration ("consciousness-enactment") negates the one ascribed to a character ("consciousness-attribution"), or, to put it differently, a narrative should be configured for a viewer to favor the perspective of either a character or an object central in a scene over an external observer focalization (Caracciolo, 2014).The tension between consciousness-enactment and consciousness-attribution is the first aspect in the framework of Caracciolo's model of experientiality (albeit he dealt with textual narratives) most relevant to the 3DSC film.

The Thesis adopts previously expounded theories by defining the immersive states in 3DSC through ENVI, to signal a prolonged state of narrative engagement where cognitive, emotional, and physical states fuse to create a sense of physical presence in a virtual space,

driven by spatial presence and experientiality rooted in personal real-life experiences and self-other differentiation. Thus, the term ‘episodic neuro-visceral immersion’, used in the dissertation, more accurately captures the dynamics of 360° stereoscopic film as it integrates key concepts of Caracciolo's (2014) notion of "experientiality" as well as Ryan's (2022) four aspects of cognitive and psychological immersion. While the word "visceral" reflects the deeply instinctive flow of sensory input and the enforcement of brain activity recording and stimulation as described by the NEURO-I platform (Centre de Recherche en Neurosciences de Lyon, n.d.), it also exhibits its "episodic" nature. It underscores the intermittent yet spatially coherent essence of 3DSC film viewing, where viewers oscillate between intense engagement and less immersive bouts of immersive states due to current technological limitations, such as prolonged VR exposure that risks cybersickness and necessitating breaks (Kim *et al.,* 2022; Tse *et al.,* 2021).

2.5.3. Technical Aspects of 3DSC Influencing Immersion and Narrativity

Parallax

360° stereo cameras are more prone to parallax errors and introduce other limitations such as the need to keep the horizon level at all times; the farther the camera sensors are from each other, the more discrepancy there will be in the cameras’ viewpoints, creating more parallax than a small mono camera (Wohl, 2017:29). Parallax is an optical effect where an object’s position appears to differ when viewed from different positions, that is, the left eye vs. the right one. It affects the proxemics of objects by means of “stereopsis” that derives itself from the parallax between the different images received by the retina in each eye (binocular disparity); stereopsis is particularly effective for manipulating objects within five meters or within arms’ reach (Sherman and Craig, 2019:139). One must admit, however, that the volume of objects in a shot affects both the parallax and stitching issues, particularly with omnidirectional cameras: the more objects are, the more stitching distortion occurs, although with the newest stitching software coming unto the market such as Mistika VR helps immensely in resolving the errors. The dissertation’s prototypes have taken into account the possibility of these errors, and no objects were placed or actors allowed in closer than two meters. The biggest challenge when parallax happens is with the consumer-oriented HMDs that create eye strain when used over an extended period of time due to conflicts between the depth cues of stereopsis, “accommodation-convergence conflict” (Sherman and Craig, 2019:320), therefore, all the prototypes in the dissertation do not exceed five minutes in length to mitigate any potential negative health effects, particularly in the final stage of theoretical coding within the rhizomatic spectatorship setting where the total viewing time of the videos exceeds 40 minutes.

Proximity

The immediate effects on immersion are stringent upon the distance amongst the objects dispersed in space. Riggs (2019:79) asserts that it matters little whether an immersive environment is computer generated or shot on video; in either of the scenarios one must follow

the rules of terrestrial physics to render a profound psychological effect, particularly in stereo mode. For that reason, Wohl (2017:152) recommends keeping objects from camera rigs as far as possible until the optics do not allow it any longer or one risks creating a **hyperstereo effect (HsFX)** where people and objects look miniaturized, which the dissertation calls as the **tilt-shift proximity warning (TSPW**).

TSPW is present in many high-end cameras. Because 360˚ cameras view the world through wide-angle lenses, they objects may seem to be far away, tiny and insignificant, but, if improperly gaged, the opposite of hyperstereo effect may also be true: human size, relative to the viewer, will appear abnormally large and will create a discomforting and uneven experience, as it is the case with *Everest VR: Journey to the Top of the World* (2020), a three-part documentary series by filmmaker Jonathan Griffith who explores the spectacular scenery of wild places in the Himalayas, or in his latest *Alex Honnold: The Soloist* (2022). Proximity also calls for a "sweet spot" in 3D, anywhere between 3 and 15 feet from the camera so that the stereo effect was more noticeable (Wohl, 2017); if the distance is less than 3 feet, the film will most certainly crate unfixable stitching issues, but any farther than 15 feet will decrease the stereo separation.

Another aspect of proximity affecting immersion and narrativity is a proper choice of camera height. In their case studies, Keskinen et al. (2019:429) and Rothe et al. (2018:2) have found that the most optimal camera height situates at around 150 centimeters, and both suggest to place the camera too low rather than too high with differences of ten centimeters as accepted by most their focus groups, even if the camera corresponding to their own eye height was preferred since people being close to the camera, or the camera being very low had a negative effect on immersive states.

6-DoF vs 3-DoF

Degrees of freedom (DoF) refer to the number of ways an object can move through a 3D space. More specifically, 3-DoF and 6-DoF describe the capabilities of specific hardware components. With a 6-DoF head-tracking one can track both rotational movement around the x, y, and z axes (Fig.22) commonly termed a pitch, yaw, and roll, as well as an accurate geospatial position of a viewer (movement within limits), corresponding to translational movement along those axes, which can be thought of as moving forward or backward, moving left or right, and moving up or down (Trivedi, 2019:164). Whereas a 3-DoF head-tracking system can only allow for looking up at the ceiling and down at the ground, looking left and right, and tilting one's head left and right by moving the ears toward one's shoulders; any other movement within limits is not possible (Trivedi, 2019:163), and narrative situations may be predisposed towards a third-person narrative perspective. One might deduce, therefore, that 3-DoF systems could render less immersive narrative scenarios by default; however, as the dissertation proves, this is a misconception.

Field of View: Pros and Cons of Visual Displays Systems on Immersion

At the time of writing this Thesis, the advances in VR display systems are rapid, ranging from Vuzix Next Generation Smart Glasses or Apple Vision Pro 2, slated for release in 2025

(Phelan, 2024), to Pimax Super VR HMD with 180hz refresh rate that match human vision, just to name a few. Three types of visual displays currently dominate immersive technologies: Stationary HMDs, a more expensive option, requiring a dedicated minimum-viable computer, a more advanced head-tracking, a room-scale positional tracking, and a multi-user functionality, Mobile HMDs (occlusive and nonocclusive (optical see-through and video see-through)), where the latest strides begin matching those of the stationary kind, and *Hand-Based Displays* (handheld VR and augmented reality (AR)) (Cutolo *et al.*, 2020; Sherman and Craig, 2019:262).

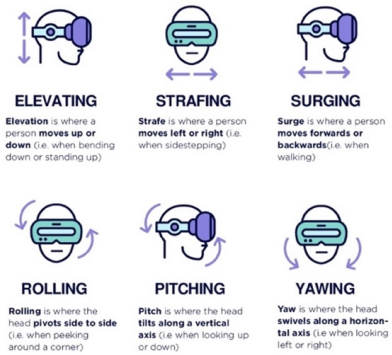


Figure 22: Types of Directional Movement in VR
(Source: Smart VR lab, 2021)

The dissertation deployed both HTC Vive Pro and Oculus Quest 2 (Fig.23) in its data coding, with some of the earlier initial coding field data deduced from Oculus Gear VR. Because the horizontal field of view (FoV) on average of a person with no visual impairment is approximately 210° horizontally and 140° vertically, the quality of most of the VR headsets

Figure: 23 HTC Vive Pro and Oculus Quest 2
(Source: Carter, 2022).

on the market is still very poor compared with the main characteristics of the human vision but the low horizontal field of view of 96° in Samsung Gear VR is offset by the octa-core Exynos 8895 system-on-chip, the smartphone's resolution of 2960x1440 pixels, DCI-P3 RGB color space, offering whitest peak brightness, highest contrast rating in ambient light, highest screen resolution, lowest reflectance, and highest contrast ratio, and providing a pixel density

of 20 ppd, which is above average (Fuchs, 2017:79-86). Its non-inferiority to the median field of view systems used in the dissertation, HTV Vive Pro and Oculus Quest 2, is anything but evident in some videos where their pixilation does not degrade immersion in the smartphone format, but it does so in Oculus Quest 2 if resolution is 4K, in lieu of 6K.

Resolution

Resolution refers to the number of pixels in each dimension that can be displayed, typically measured as width by height, with 4K (UHD 3840 x 2160) and 8K (8192 x 8192) being standard resolutions at the time this Thesis was written. The higher the video resolution, the better the image quality and thus the experience is more conducive to immersion, at least theoretically, as quality is also affected by the specific codec used, pixel depth, and chroma subsampling ratio. The practical part of this hesis has been carried out using an Insta360 Pro camera with a maximum 3D resolution of 6400 x 6400 pixels, well beyond what many head-mounted displays at the time this dissertation submission, may comfortably play back at 60 frames per second, the minimum frame rate required for smooth playback. Because the Samsung Gear VR's maximum resolution is 2960x1440, as opposed to the Oculus Quest 2's 8192 x 4096 pixels, the level of immersion discovered during prototype testing varied: any video output at 4K UHD resolution was actually better viewed using a Samsung mobile device with the dated version of Gear VR, even though the smartphone's native pixel density of 20 ppd (pixels per degree) is matched to that of Quest 2. Notwithstanding the limitations of the older model, as of 2024, the prototypes created for this Thesis can still be re-rendered at full maximum resolution, i.e. 6.4K, whenever native applications of the newer Meta Quest 3, with its upgraded 2064 x 2208 pixels per eye resolution at 25 ppd.

Lenses

Apart from resolution, an important consideration is given to lenses, which have the greatest influence on how realistic the images will be. 360° cameras commonly use ultra-wide angle lenses, with either a *fish-eye* or *rectilinear* kind. Fish-eye lenses have a small, curved glass that captures a spherical view. Alternatively, rectilinear lenses are generally larger than fish-eye lenses. Unlike curved fish-eye lenses, rectilinear lenses preserve straight lines without any warping; this makes them well-suited for capturing straight walls and interiors. Rectilinear lenses also typically provide equal sharpness across all pixels and minimize distortion, enabling easier stitching during post-production.

The Insta360 Pro utilizes six 200-degree rectilinear lenses backed by real-time 360 video stitching optics. At appropriate distances, the camera avoids HsFX due to its high TSPW, unlike some comparable competitors that exhibit them; when shotting with Insta360 Pro, objects generally appear as they do in real life, thus further enhancing the immersive states.

Accommodation-Vergence Conflict and Physical Fatigue due to Stitching

There are two aspects that affect a sustained immersive experience in 3DSC: "accommodation-vergence conflict" and "binocular-occlusion conflict". The latter occurs when occlusion cues do not match binocular cues, e.g., when text is visible but appears at a

distance behind a closer opaque object, which causes eye strain (Carvalho *et al.*, 2017:499). The former occurs due to the relationship between accommodation and vergence not being consistent with what occurs in the real world; overriding the physiologically coupled oculomotor processes of vergence and accommodation can result in similar eye fatigue and discomfort, that is why visuals should not be placed close to the eye, and if they are, then only for short periods of time to reduce the strain (Jerald, 2016:199).[26] Compounded with the physical fatigue that is a residual of multiple causes, not limited to the weight of worn or held equipment, holding unnatural poses, and navigation techniques that require physical effort (Jerald, 2016:177), although the newest HMDs on the market are not as much of an issue any longer, the accommodation-vergence conflict remains an ongoing issue, particularly if overlapping multiple lenses of a stereoscopic source results in anything less than an ideal 3D stitch.

Visuo-vestibular conflict

The simulation sickness or VRISE (Virtual Reality Induced Sickness Effects) is caused by the "visuo-vestibular conflict" (Kennedy et al., 2001, as cited in Fuchs, 2011:165), otherwise referred as "motion sickness" (Jerald, 2016:164), induced by the incoherencies between the human vestibular and visual systems during real time image generation without the production of a corresponding physical response. When a visual scene moves independently of how a user is physically moving, the mismatch between what is seen and what is physically felt is particularly unpleasant when the virtual motion accelerates because the otolith organs do not sense that same acceleration, the discrepancy that decreases with age (Jerald, 2016:122-164).

Then, there is also the matter of "VR aftereffects", the immediate effects during immersive experiences that may persist after the audience returns to the real world, resulting in adverse reactions, not present during VR usage, such as perceptual instability of the world, disorientations, and flashbacks, to name a few (Jerald, 2016:175). These aftereffects may be more pronounced in 3D films, since stereo also increases the likelihood of parallax errors and the need to keep the horizon level, and, as if all that was not bad enough, stereo spherical video is far more likely to trigger motion sickness in the viewers than mono 360° under similar narrative configurations. It is for this reason, the prototypes used in the Thesis do not consider using any motion simulations as they are detrimental to the immersive effects it strives to achieve, and most of *mise-en-scènes* staged are from the stationary focal points.

Simulation Fatigue

Improved onboard computer processing power and resolution in HMDs may help to reduce some causes of motion sickness, but using VR for an extensive period of time can still cause discomfort. One cause of the irritation is a lag in a low frame rate; anything less than

[26] "accommodation" is closely associated with vergence, resulting in clear vision of closely located objects. Vergence is the simultaneous rotation of the eyes in opposite directions, triggered by retinal disparity, with the primary purpose being to obtain or maintain both sharp and comfortable binocular vision through inward (convergence) and outward (divergence) eye movements that provide depth cues.. Accommodation is the mechanism by which the eye alters its optical power to hold objects at different distances into focus on the retina (Jerald, 2016:199).

90 frames per second may contribute to the discomfort with 60 frames per second being a borderline (Bailenson, 2018). The same goes for the refresh rate. Ideally, the refresh rate, a number of times per second (Hz) that the display hardware scans out a full image, is as fast as possible; (Jerald, 2016) recommends faster than 120 Hz. The prototyping testing in the dissertation has revealed that anything less than 120 Hz, at a higher resolution beyond 5700 x 5700, would trigger latency and judder, thus having a detrimental effect on immersion. One can partially correct the problems by using an optical flow interpolation feature during the stitching phase and updating the content to 60 frames per second but this still does not account for the second reason for discomfort: eye fatigue in VR. Despite a handful of academic studies on fatigue in VR, and while the data is far from conclusive, most academics and professionals believe that this problem will prevent long-term use of headsets (Bailenson, 2018). It is for this reason, and based on the data available from the field notes during the initial coding phase, that the 3DSC prototypes produced in the dissertation do not exceed 7 minutes each, the optimal amount of time, according to Bailenson (2018), that the audience should be exposed to in VR.

Professional cameras

To provide both ease of use and the highest possible quality that affects immersion, the most established industry standards, at the time of writing the dissertation, are Insta360 Titan that shoot at 11K mono and 10K 3D video, the Jaunt One (Fig.24), which comprises 24 individual cameras that can capture at frame rates up to 120 fps at 1920 x 1080 resolution (Wohl, 2017:42), as well as Kandao Obsidian Pro, the 12K cinematic 360° 3D camera at 12-bit RAW recording (Fig.25), with 8 APS-C sensors with up to 16 stops of adjustable exposure for precise control on the depth of field and creative capturing with motion blur.

Figure 24: The Jaunt One (left) and Insta360 Titan (Source: Mourie, 2016).

Figure 25: Kandao Obsidian Pro (left) and Insta360 Pro
(Source: Van Houten, 2022).

It is no doubt, with FoV up to 180º, at even 6K or 8K 3D resolution, the effects of immersion for narrative purposes have a great deal of potential. However, the resolution of an HMD display is outpaced by the quality of image on most of 360° 3D camera sensors and lenses, which renders the prosumer kind just as practical as effective, particularly Insta360 Pro and its version 2. In fact, its six 200-degree rectilinear lenses that avoid the hyperstereo effect some of its rivals may exhibit, and its maximum resolution of 6400 x 6400 pixels in 3D, with playback at 60 fps, the minimum frame rate required to prevent jitter, provides an acceptable level of quality in order to trigger deep immersive states under various narrative configurations. Given the current cVR player applications for generally public are generally limited to plying 360° videos at 5700 x 5700 pixels, Insta360 Pro (Fig.25) was optimal choice in the dissertation.

CHAPTER III: METHODOLOGY DESIGN FOR 3DC TYPOLOGY

3.1. Application of Constructivist Grounded Theory in Research Design

GT is one of the most widely used methods in qualitative research that was initially applied in the social sciences but it eventually began to be used in almost any discipline in which people are observed or interviewed as participants, and the data is abstracted as a result (Bryant, 2017). Its key attractiveness rests on both its application as a generator of *theory* as the end-product of a phenomenon under investigation (Willig, 2013:70) as well as its function as a research methodology to analyze overlapping data by means of "constant comparison", "theoretical sampling", and "saturation" (Urquhart, 2016:787).

GT was originally fleshed out by two sociologists, Barney G. Glaser and Anselm L. Strauss in *The Discovery of Grounded Theory* (1967) to bridge the two contrasting philosophical and methodological traditions: Columbia University positivism ("the scientific method" that "assumes an external world about which an unbiased observer can discover abstract generalities about the empirical phenomena") and University of Chicago pragmatism ("reality as consisting of fluid, somewhat indeterminate processes") (Morse *et al.*, 2016:128). GT is a *Kunstlehre* (art), and so its procedure cannot be learned in the form of prescriptions (Böhm, 2004:270). When theories do not *emerge* from the data, but are *constructed* by a researcher through his or her inventive interaction with it, we speak of a "social constructionist version of grounded theory" (Willig, 2013:77). Because the key characteristics of constructivist grounded theory (CGT) are used to generate a theory, building a typology for 360° stereoscopic video requires an ongoing social interaction with research participants who evaluate assorted cVR films and log their multimodal impressions; it is the researcher who filters and constructs the meaning of the data.

Introduced originally by Kathy Charmaz in her publications of *Constructing Grounded Theory* (2006, 2014), CGT asserts a plausible relationship between concepts and sets of concepts, derive data exclusively from fieldwork interviews, observation, and documents, proceed through identifying categories and connecting them. Since the concepts of immersion and presence are directly linked to the sensorimotor and neuro-visceral inquiry but with a difficulty to properly measure them (Shin, 2018:65) CGT is chosen as the most appropriate methodology in this dissertation to gage the extent of immersion under various narrative categories and, by using the tripart coding phases, to eventually build a narrative typology for 3DSC. What makes CGT a preferred choice is that it lies squarely in the interpretive tradition (Charmaz, 2006:130), and it is influenced by the researcher's perspectives, privileges, positions, interactions, and geographical locations (Morse *et al.*, 2016:130). And, while Glaser had objected to Charmaz's principle that the researcher should not impose their own views on the data, Charmaz defends her position by asserting that it is impossible for the researcher to construct an unobtrusive relationship with the data:

> "The designed resulting theory depends on the researcher's view; it does not and cannot stand outside of it…grounded theorists can ironically import preconceived ideas into their work when they remain unaware of their starting assumptions" (Charmaz, 2006:131).

Furthermore, CGT is allowed to use, what Dervin and Machart (2017) refer to as, "pre-set codes":

> "preconceived theoretical concepts may provide starting points for looking *at* your data but they do not offer automatic codes *for* analyzing these data" (Charmaz, 2006:68).

The pre-set codes also allow the process of building a theory to stay within the parameters of emerging vectors of narratology so that the emergent labels applied are accepted by the scholastic network of narratologists who may have little or no experience with virtual reality. Bryant (2017:108), in fact, underscores that during the "theoretical coding" phase, it becomes imperative to substantiate the emergent concepts by taking the findings back to the original literature source.

3.2. Coding Phases in the Context of 3DSC

While the terms such as "codes", "concepts", and "categories" are used interchangeably and their ramifications are not always clear and consistent, the coding process in itself sets a sound relationship with one's respondents (Bryant, 2017), with an aim to label the concepts, refining them further into categories, based on their properties and dimensions (Khandkar, 2013).

Researchers use a number of alternatives in coding strategies: the model of Strauss and Corbin (open coding, axial coding, selective coding), Glaser's schemata (open coding, selective coding, theoretical coding), or Charmaz's constructivist framework (initial coding, focused coding, axial coding, and theoretical coding) (Bryant and Charmaz, 2010:351-352)[27]. By somewhat modifying Charmaz's model, (Kenny and Fourie, 2015:1278) combines her "focused and axial" stage into the "re-focused coding" phase that identifies recurring codes and elevates them as provisional theoretical categories; Kenny's CGT framework (Fig.26), although more flexible and, technically, Charmaz's, is similar with the two-tier structure of the Classic GT (Fig.27). Because this flexibility permits the use of *in-vivo* codes (defined by

[27] It is important to note that both Charmaz (2006, 2014) and Bryant (2017) explain multiple coding strategies, irrespective of whether they use these themselves. While other Grounded Theory models are more recommendations, rather than rules, Charmaz and Bryant show theirs by discussing other frameworks, their pros and cons, and the circumstances in which they could be applicable (Bryant and Charmaz, 2019:176-177).

research participants words (Khandkar, 2013) along with "pre-set" codes, borrowed from provisional concepts that exist in a particular research domain (Charmaz, 2006), the dissertation, in the framework of transmediality, triangulates the two-tier structure with theoretical coding in order to deliver a narrative typology for 3DSC, and test it with the framework of rhizomatic spectatorship. Its overall methodological tree is as follows: initial coding, re-focused coding, theoretical coding.

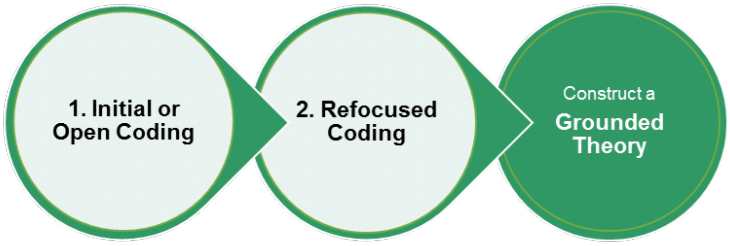


Figure 26: CGT framework based on Charmaz (2008)
(Source: Kenny and Fourie, 2015:1278).

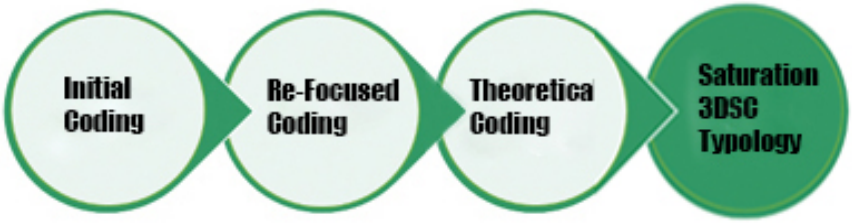


Figure 27: CGT framework proposed by the dissertation
(Modified from source: Kenny and Fourie, 2015:1278).

CHAPTER IV: INITIAL AND RE-FOCUSED CODING

4.1. Initial Coding Phase: cVR artifacts

In producing codes in the early stages of a research, data components are broken down into fragments in order to "propose ways in which some of them might be related as clusters, themes, or patterns under an evocative title" (Bryant, 2017:119), supported by field notes and memo writing, which Charmaz (2006) considers a crucial method in grounded theory.

Initial coding (Bryant, 2017) is done line-by-line, sentence-by-sentence, paragraph-by-paragraph, section-by-section, and page-by-page (Willig, 2013:73); it can also be done in the *key-point* manner (Bryant, 2017:181), interpreting the codes while staying very much open to what a code means (Urquhart, 2016:788). While Charmaz works primarily with line-by- line coding, she notes that word-for-word coding might be preferable for those interested in phenomenology (Bryant, 2017:176) or areas where phenomenological experience is a part of a user's testing set-up, such as in cVR, in addition, to pre-set codes (Dervin and Machart, 2017) and in-vivo codes, suggested by respondent.

4.1.1. Developing Preliminary Typology: User Testing

The primary purpose of virtual reality is to have access to a sensorimotor and cognitive activity by a person (or persons) in a digitally created artificial world that simulates certain aspects of the real world (Fuchs, 2017:9). By elucidating the coding process in grounded theory, which is used to develop a theoretical model for a 'episodic neuro-visceral immersion' grounded in data collected from those inhabiting the Cinematic VR milieu, the initial coding underlines the narrative categories and their configurations that render various immersive states the most.

The difficulty in measuring the immersive states lies in the lack of a uniform criterion. There is little in the way of standardized metrics that allow the impact of different viewing experiences to be measured and compared (Rigby *et al*., 2019:36): some methods require specialist equipment, such as measuring physiological signals, and sensors (Rothe and Hußmann, 2018), which can make the deployment of precise measuring tools costly, and some, various heatmap systems that measure the gaze of the viewers in a specific direction, beyond their FoV in a 360° sphere (Pillai, 2019).

The very first to gage user's immersion and to separate a mere involvement, as in watching traditional movies or video games, from immersion, something 360° spherical film format allows (Ghazouani, 2017), were Witmer and Singer in their *Measuring presence in virtual environments: a presence questionnaire* (1998) as well as Slater and Wilbur in *A framework for immersive virtual environments five: Speculations on the role of presence in virtual environments* (1997) (Ghazouani, 2017). Both teams had argued immersion could be objectively measured through the technical aspects of the system used, but because presence refers more to a state of mind and a sense of being in a specific place spatially, the latter aspect

would necessitate a qualitative approach (Ghazouani, 2017). Its psychological measurements of immersion in the first-person perspective in an interactive medium, such as in video games, can be assessed by facial electromyography (EMG), a direct measure of electrical activity involved in facial muscle contractions, and indexed according to shifts in the *zygomaticus major* (cheek muscle) and *orbicularis oculi* (periocular muscle) regions; however, there is not enough evidence in the data objectivity (Nacke and Lindley, 2008:87). And in relation to the effects of narrative structures, it is difficult to quantify which narrative and interactive elements may affect immersive states, as each audience will have their own version of a virtual encounter that is yet to be verified (Gödde *et al*., 2018, as cited in Pillai, 2019). That is why researchers use various questionnaires or self-reports, semi-structured interviews, analysis of the user's behaviour, generally tailored to a specific project (Steuer, 1992; Witmer and Singer, 1998; Slater, 1999; McMahan, 2003, as cited in Grassini, 2020), even though the systematic investigation of 'presence' and 'immersion', as a psychological phenomenon, is quite new (Grassini and Laumann, 2020:1).

At the initial coding phase, narratological terms derived henceforth from the expert unstructured interviews and focus groups that explain the processes of their particular cognitive and emotional involvement with a particular narrative. The goal was to relate the experience of immersion to a more objective measure, the IF where immersion is measured with a questionnaire and compared to the data deduced from the field notes and unstructured interviews on-site in order to assign a label to a particular narrative set.

4.1.2. Sampling Methods

Sampling strategies for qualitative methods are often less evident, and, although they tend to yield cases that are information-rich, there are no clear guidelines as to how to conduct sampling in mixed methods particularly when studies have more than one specific objective (Palinkas *et al.*, 2015). Therefore, in view of the multi-level research objectives in the dissertation, "non-probability purposeful (judgmental) sampling" and "expert sampling" methods were used to gather data; the rationale for choosing the judgmental sampling plan is rooted in the methodology by Moser and Korstjens (2018:10) who point out that participants are to be sampled deliberately, varying in pool size, mostly small in numbers, and the design must be driven by conceptual requirements and not primarily by representativeness, in addition to having a setting and situations of user testing with an easy access to potential participants, all of which are present at RISEBA University.

While "judgmental sampling design relies on the judgement of a researcher" who can provide the best information to succeed in objectives, assembling a group of people that can demonstrate their experience in a specialized area, as in expert sampling (Etikan and Bala, 2017)**,** provides confirmation of validity to the former. Because the pool of participants used in the research were expected to communicate their immersive experiences and observations in in an articulate, expressive, and reflective manner, so that initial code labels for narrative typology in 3DSC were constructed as accurately as possible, non-probability purposeful sampling, with its *theory-based strategy* at the core, has been a logical choice to initiate the

data collection so that its residual stage was to emphasize "saturation (i.e., obtaining a comprehensive understanding by continuing to sample until no new substantive information is acquired)" (Miles & Huberman, 1994, as cited in Palinkas *et al.*, 2015:8-18).

When designing a qualitative sampling plan in grounded theory, (Moser and Korstjens, 2018:10) recommend to deploy 15 to 20 interviews or three-to-four focus group discussions; (Creswell and Poth, 2018), in turn, stress that to gather enough information to fully develop (*saturate*) a theoretical model, a total of 20 to 60 interviews need to be conducted at any stage as the theory-building emerges through the simultaneous and iterative data collection.

During the initial and re-focused coding phases 89 interviews had been conducted.

4.1.3. Participants

Using theoretical saturation as the final criterion to select a pool of interviewees so that the general rule on building a theory, based on data that is gathered until each category (or theme) is saturated (Strauss & Corbin, 1998, as cited in Creswell & Poth, 2018), a sample size of 89 in total for both initial and re-focused coding phases was used as a baseline. The participants (n = 89) were primarily recruited from RISEBA University by convenience sampling gathered across different majors in audio-visual discipline (Appendix A). All participants completed informed consent, and were compensated by work-study points. The age range was between 20 and 27, with a few faculty members, between 36 and 63, respectively. Because a large proportion of the pool size was in its sophomore or third-year, where virtual reality courses are introduced, the participants were presumed to have some interest in immersive virtual reality systems, and a few were from the hardcore gamer demographic or VR aficionados, having had experience with video games, including first-person shooter and third-person games. There was no consideration given as to the gender of participants; one could surmise the female participation could skew the results, particularly when watching a more violent segments of the prototypes, but notwithstanding to its speculative value, a future post-doctoral case study may be warranted to investigate the impact of gender on the sense of immersion in similar settings. At this point, the dissertation did not conceive it to be of a crucial value.

4.1.4. Apparatus

Altogether, six smartphone-powered Samsung Gear VR HMDs with the Octa-core Exynos 8895 system-on-chip, Super AMOLED, enhanced by DCI-P3 RGB color space, providing an above average pixel density of 20 ppd, and a resolution of 1280 x 1440 per eye (2960x1440 pixels combined), with a 60Hz refresh rate and a field of view of 101°, a single HTC Vive Pro virtual reality headset with a resolution of 1440 x 1600 pixels per eye (2880 x 1600 pixels combined), a field of view of 110° and a refresh rate of 90 Hz, and a single Oculus Quest 2 virtual reality headset with a resolution of 1832x1920 pixels per eye, a field of view of 100°, and a native refresh rate of 72 Hz, adjustable IPD - 56 to 68 mm on a linear slider

Chipset and Snapdragon XR2 processor, were used in field experiments. Because the films viewed differed in frame rates and compression quality, the interviews and the on-site questionnaires were tailored to count for disparity so that data was not significantly impacted. With the exception of Oculus Quest 2, which could display the format in full 6K resolution, if available, most films were delivered at UHD resolution of 3840 x 2160, with some, in full 3840 x 3840 resolution at 60 frames per second, a minimum requirement for a comfortable viewing. Whenever possible during the initial and re-focused coding phases, an ambisonic mix was chosen, while during the theoretical coding phase, the spatial sound mix was the only audio delivery format to be considered.

The test site used was the RISEBA University Dance Studio (Appendix B), which was spacious enough for large groups to move around and rotate freely in 3-DoF space to view different aspects of the virtual environment. While Cinematic VR is inherently a 3-DoF medium, the emotional impact observed could trigger hCtA at times, and the selection of the studio would not impede or constrain the experience in any way.

4.1.5. Data Collection Methods

The first step in response to the research questions as to what are the limits to the degree at which one could effectively assess narrativity in 360° stereoscopic spherical film (SC3D) and what are the most prevalent components of narrative constitution that are most often deployed in the current 360° space is addressed through a very extensive literature review for virtual reality, narratology, film, and spectatorship as well as having more than 180 peer-reviewed research papers and artifacts studied in relation to the research methods and research purpose. After a subset of peer-reviewed articles were selected, and their significance evaluated, the information from the reviewed research was summarized and categorized into the keywords and prospective concepts, which would form the core of the initial coding questionnaire. The data was further collected and adjusted by face-to-face, on-site unstructured interviews, on-site questionnaires, field notes and memoing after the particpants had watched both 360° monoscopic and stereoscopic spherical films. These interviews were guided by the research questions but were unstructured enough so that the established narratological were compared with new ideas and themes logged and coded under new heading, prospectively exclusive for 3DSC environment.

The coded data from the creative expert interviews were incorporated into the analysis for further refinement in re-focused coding phase using tape-recorded sessions with the permission of the participants and transcribed as field notes and memos that were later entered into the Atlas.TI qualitative data analysis program to work a preliminary typology node tree from the set of node trees that emerges from specific initial codes (Appendix C).

4.1.5.1. Coding Interviews, Memos and Field Notes

Theory-building emerges through an iterative data collection analysis, and memoing processes where the researcher writes down ideas in an effort to discover patterns; the role of

memoing and field notes, therefore, becomes essential (Creswell, 2018) in validating the in-depth creative expert interviews and emerging narratological codes. The initial pre-set codes were gradually modified to reflect a specific narrative situation through a constant fusion and shuffling of the codes, where the field notes began to play a more prominent role in formulating the preliminary typology for 3DSC. The following examples show a fraction of codes discovered by theoretical sampling assigned both to a specific field note (Appendix D) and particular quotations (Appendix E). From these pieces of detailed information, using the code list, an initial typology is presented (Appendix F).

4.1.5.2. Creative Expert Interviews

The *Collins English Dictionary* defines 'expert' as "a person who is very knowledgeable about or skilful in a particular area" (Jarvis, 2012:65). Thompson and Dowding (2009) even provide a more constricted definition that states that an expert must operate, besides being very knowledgeable in a particular area, with a high level of accuracy, beyond what would be accessible to a non-expert. Nevertheless, in some parts of the world, the term 'competency' has expanded the pool of applicable candidates in expertise (Jarvis, 2012:65), and there remains little consensus as to who is an expert (Baker *et al.*, 2006:61). Both (Meuser and Nagel, 2009:18) and (Baker *et al.*, 2006:59) contend that the question as to who is identified as expert and who is not, rests exclusively with the researcher's judgement, and, because there is no ready-made answer, it is responsibility of a researcher, who knows his research subject the best, to choose the most appropriate group of experts and defend his or her choice.

For Baker et al. (2006:62-63), this question is of a substance rather than a status; the qualities, such as knowledge and experience, steer the discourse, as validated by the published books or peer-reviewed articles that demonstrate the knowledge within a specified area. (Meuser and Nagel, 2009:18), in turn, do not necessarily believe a peer-reviewed article is representative of an exclusive knowledge, since related research could been have already published. The instance on knowledge, sufficient enough as not to be disputed, and illustrative of a professional group, significantly narrows the definition of expert, reduces the potential pooling size available (Duncan *et al*., 2004, as cited in Baker *et al.*, 2006:62) and leads to weaknesses in relation to method and to contradictions (Bogner and Menz, 2009:48). For instance, a major critique of the Delphi method[28] maintains that "expert and non-expert panels make little difference to outcomes, especially in relation to forecasting or evaluating social phenomena" (Sackman, 1975, as cited in Baker *et al.*, 2006:64). Moreover, the recruitment of professional experts can lead to bias: participants with specific and advanced knowledge in their respective discipline may have a vested interest in preventing research taking place or, even, in manipulating the results (Keeney et al 2001, as cited in Baker *et al.,* 2006:63). What is needed, then, is a special erudition through an *activity*, and not necessarily through training,

[28] "The Delphi method is a structured communication technique or method, originally developed as a systematic, interactive forecasting method which relies on a panel of experts. The experts answer questionnaires in two or more rounds" to reassess their earlier estimates in order to converge towards a unified "correct answer" (Terrell, 2019:218)

whether by virtue of a specialized role (Bogner and Menz, 2009:50), or as a volunteer (Meuser and Nagel, 2009:24), which, at the surface, lowers the criteria for an judgement deemed to count. In order to address the kind of activity an expert must undergo, (Bogner and Menz, 2009:48) reformulates the concept of expertise in discussions about the methodological foundations of the expert interviews by splitting it into "voluntaristic concept", "constructivist concept" of an expert, and his or her role in terms of the "sociology of knowledge".

The *voluntaristic concept* of an expert that states "that every human being is in possession of particular information, capacities and so on which equip them to deal with their own everyday life… put it in methodological terms, "experts on their own meanings"" as well as with the *constructivist definition,* which focuses on the mechanisms comprised of the designation in the role of an expert, forked into a *method-relational* and a *social-representational* approach:

> "The first approach reflects the fact that every expert is also to some degree the "construct" of a researcher's interest…This perspective understands "being an expert" as something that functions via the ascription of a role by actors who are interested in information and elucidation, in knowledge of the "objective" facts. The consequence of this approach for the practice of research is that one can also look successfully for experts at lower levels of hierarchy within organizations." (Bogner and Menz, 2009:49)

While the method-relational definition stressed that expertise is not a personal quality or capacity, the social-representational aspect emphasizes the societal processes that define who is viewed as an expert in social reality (Bogner and Menz, 2009:50). Under such conditions, it is ultimately the specifics of a particular research interest that guide criteria for expertise (Meuser and Nagel, 2009:18; Baker *et al.,* 2006:59; Bogner *et al.,* 2009:50).

Seen in the binary of social and method-relational scheme, the dissertation defines the senior pool of audio-visual media arts students at RISEBA as *creative experts*, having gained erudition through their academic and professional activities, equipped with sufficient technical and aesthetic expertise, and viewed as such in social reality in order to be used in the *exploratory* variants of expert interviews for gaining access to an exclusive knowledge in Cinematic VR. Furthermore, Bogner and Menz (2009:53) stress that "one can hardly distinguish in practice between the interviewee as an 'expert' and the interviewee as a 'private person', and it makes no methodological sense to attempt to do this." They argue that it is only when the data is evaluated that it becomes clear whether the relevance structures and patterns of orientations used by the creative expert can be reconstructed by using his or her explanations, or if it is necessary to incorporate comments from their personal experiences. This is why observation was just as essential as the interviews themselves. Observing how the creative experts behave in virtual simulations is not avoidable, and, hence, their bodily and emotional reactions on the field were a part of data logged in memos. For example, one of the users in testing, Sonja Ghantarchyan, when appraising the prestigious Cannes Cyber Lion GOLD *Dreams of Dali* (2016), and inspiring homage to his 1935 painting, had moved

throughout the space in very animated fashion, rotating a lot, reacting intensely with a haptic zeal:

> "I felt very immersed. Everything that was happening around me was not a dream but his brain I was Dali's brain; so I was very influenced by my prior understanding of his art, so I was involved. I also could not help thinking that this is what after-life is: peace… you are with yourself, and the real life with all its problems does not destroy you…."

Her reactions become exemplary in their facility to generate initial codes with ease (Appendix G). A more detailed documentation in a picture album form is provided in the appendices.

4.1.5.3. Immersive Factor Questionnaire

Unstructured interviews rely on a few open-ended questions, not determined by a pre-existing protocol, where interviewees are encouraged to talk at length about the significant or promising aspects of the experience; as such validity arising from the details and depth of the interviewees' responses may uncover unusual perspectives that might not have been revealed using other data-collection methods (Mann, 2016:91-103). During the initial coding "unstructured narrative progressive comprehension interviews", triangulated according to the models of Tracy (2020) and Morse (2012), were used right after the field tests. In order to obtain the test subject's perspective without "leading" the participant (which is one of the major threats to the validity of the unstructured interview), Morse (2012:194-196) suggests to assume a listening stance in eliciting the participant's "story" either by means of "synthesized interviews"[29], or "progressive comprehension"[30] (Fig.28) in which the researcher is learning about the phenomena as the analysis of the interviews accrue and progresses to saturation. Because the "story" emerges, instead of merely answering questions, these interviews are narratives in essence (Tracy, 2020). The informal storytelling aspect of them had ensured that the language the participants used could generate some in-vivo codes to adjust any pre-set codes that might have otherwise arisen. The discussions were immediately followed up with questionnaires that assessed IF in each of the narrative scenarios surveyed. Immersion has a long history of interpretation but the debate is not merely whether immersion or presence is more appropriate than the other, but mainly about the sensory, cognitive, and emotional products of an immersive experience (Michailidis *et al.*, 2018:2).

[29] "all participants have a similar story to report arising from similar circumstances in the interview topic and the research question, so that the content from all inter- views is reasonably consistent and approximately follows a similar course" (Morse, 2012:196).

[30] "In this case, to gain an overall (but superficial) under- standing, the initial interviews are general and broad in scope, with the researcher asking an overall "grand tour" question (Spradley, 1979). Later, the researcher may ask more specific questions, and the content of these interviews will become more direct and targeted toward various aspects of whatever needs to be known, or more saturated. Data may be used to verify the earlier findings or will be directed, using the emerging theory" (Morse, 2012:196).

Witmer & Singer had first systematized the interpretation in their *Measuring Presence in Virtual Environments: A Presence Questionnaire. Presence: Teleoperators and Virtual Environments* (1998), and since immersion is mentioned in relation to presence, it can be measured objectively (Ghazouani, 2017) with respect to control, tendency to become involved in activities, tendency to maintain focus on current activities, a psychological preoccupation with narrative and time, an emotional involvement, attention to control and autonomy, and,

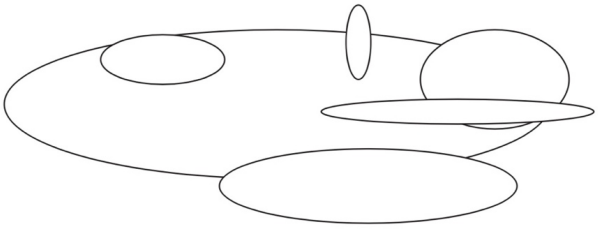


Figure 28: "Progressive comprehension" interview model (Source: Morse, 2012:196).[31]

finally, most important, in relation to spatial presence, in the sense of being located to a different place. But because it is still a fully subjective experience, despite its objective measures, and is technology-related, relying on one's emotional reaction and psychological perception of "being in" or "existing in" VR (Mestre and Fuchs, 2006:1-2), the methodology used by Jennett et al. (2008) in *Measuring and Defining the Experience of Immersion in Games* is chosen as the foundation for the "Immersive Factor Questionnaire", which measures a particular level of immersion in various narrative configurations (Appendix H).

It suits to add that Jennet's (2008) *'Immersive Experience Questionnaire' (IEQ)* has been remodeled for the dissertation due to its generalized application that encompasses a variety of multiple related concepts: flow, cognitive absorption, engagement and presence. According to Rigby et al. (2019:39), their EQ presents a promising way of measuring immersion in video media, specifically within the framework of ""lean back" activity, where the viewer observes without interacting" by focusing one's attention on the act of narration through the activation of mental models, subject to states of flow, which can lead to loss of awareness of the passage of time, irrespective of skill levels with regard to interpreting media. In order accentuate the presence factor in the set of questions, some parts of the survey had also considered *the Factor Structure of the Presence Questionnaire* (PQ) by (Witmer *et al.*, 2006) that measures adaptation, immersion, and sensory fidelity. In the final template of the IFQ questionnaires for measuring immersion in cVR, the original IEQ and PQ were edited to eliminate any game-specific wording; while the essence of key questions remained the same, for example, "how well could you move or manipulate objects in the virtual environment?" became "[to what extent] I wanted to touch (haptic) the objects or people around me." Some questions naturally

[31] "Progressive Interviews: the main theoretical scheme is derived from the grand tour questions; subsequent interviews target missing or thin data, support the emerging theory, or verify data by supplementing previous interviews with greater depth" (Morse, 2012:196).

did not apply, particularly those in relation to active interactivity and technical agency prevalent in traditional VR.

After modifying the original IEQ and PQ, the core design of the dissertation's 'Immersive Factor Questionnaires' consisted of 15-28 items (depending on a narratological category revied), where the participants engaged passively and answered a survey to reflect his or her experience using a Likert scales in range from 1 and 7. The advantage of this design, similar to PQ, IEQ, and others in their category, such as the *Igroup Presence Questionnaire* (IPQ) and the *Slater-Usoh-Steed Questionnaire* (SUS), is that these instruments have several advantages compared to other methods of investigating immersion: they are applicable regardless of the virtual reality environment, do not require lengthy prior preparation, and do not require specialized skills or scientific instruments (as in physiological measures) (Grassini and Laumann, 2020:3).

To verify the initial information and expound on the mechanics of spatial attributes in VR, the IFQ considered D'Adamo's (2017) spatial schemata with respect to its ontological attributes and empathetic functions, as well as Marie-Laure Ryan's (2016) view of narrative space in its capacity to experience it directly and kinetically by means of cognitive mapping of spatial relations and geospatial direction. Because perspective in 3DSC is less of a temporal constituent but is entwined with space, the design of IFQ for initial coding focused on the assessment of spatial attributes.

4.1.5.4. Measurement

The surveys were conducted in person, on the premises of the university where respondents were surveyed in a group. Before conducting the survey, the respondents watched a five- to ten-minute portion of a cVR film that expressed each parameter ('Spatial frames,' 'Surveillant Story-Space,' etc.). Immediately after watching the films, the participating creative experts were prompted to complete their IFQs. In general, the time required to watch the films and fill out the questionnaires was from fifteen to forty minutes.

Respondents complete the IFQ, based on studies by Brown and Cairns (2004), Jennett et al. (2008), and Witmer et al. (2005), using a Likert Scale to assess the 'Immersive Factor' for narratological concepts at each coding phase.

The aim of the questionnaire is to determine the Immersive Factor in 'Participatory Story-Space' and 'Spatial Frames', as opposed to 'Surveillant Story-Space' in order to determine the prospective hierarchy in the final narrative typology and compare these parameters with each other. The first version of the survey consisted of 26 statements which were subject to an internal coherence test using the Kronbach Alpha ratio. Based on the fact that Kronbach Alpha ratios showed insufficiently high scores, the number of questions was reduced from 26 to 21 using the Kronbach Alpha Scale, leaving only those with matching scores above 0.7.

The study for parameters: 'Participatory Story-Space' and 'Surveillant Story-Space' use a survey version consisting of 19 statements rated on the 7-point Likert scale (where there is a "1" strongly disagree, "7" strongly agree). 'Spatial Frames' survey contains 20 statements. The assessment of all parameters includes two additional questions: in one of them, the

respondent must assess the compliance of the parameter with the dimension "space" or "place"; in the second, the respondent must assess the context by noting one of the proposed contexts variants *Dramatic Space/ Place, Dantean Space / Place, Empathetic Space / Place, Showcase Space / Place, Non-place / Space, Shaded Place / Space*.

For the determination of the validity of the survey, the coefficients of Kronbach Alfa for all three surveys are re-calculated:

Table 1: Ink cohesion shows for survey 'Participatory Story-Space'

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,764	,750	20

Table 2: Shows of cohesive cohesion for the survey 'Spatial Frames'

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,851	,853	21

Table 3: Ink cohesion shows for survey 'Surveillant-Story-Space'

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,838	,847	20

Internal cohesion scores are high enough (Participatory=0.764; Spatial=0.851; Surveillant =0.838), suggesting that the survey is valid for the purpose of the study. Out of the seventeen creative experts who participated in each survey, all are full-time bachelor's and master's students at the Faculty of Media and Creative Technologies, aged 21-26, and are employed in the creative industries or as administrative employees in medium-sized enterprises. Twelve (12) of them participated in the 'Participatory Story-Space' survey, fifteen (15) creative experts participated in the 'Spatial Frames' survey, and seventeen (17) respondents participated in the 'Surveillant Story-Space' survey. The socio-demographic data of the respondents is not analyzed separately, as it is not included in the purpose of this study. The author assumes that socio-demographic indicators are not relevant in the parameter structure. In order to compare the results, compliance with the normal distribution is established using the Kolmogorov-Smirnov criterion. The central trend indicators are calculated and descriptive statistics are summarized in the consecutive tables given in Appendix I.

4.1.5.5. Results

Questionnaires were compared with each other on the basis of central trend indicators using an extensive graphical diagram. The final data analysis (Appendix I) unequivocally demonstrates that space in 3DSC is mostly thought of as a chain of spatial frames, sovereign in essence, only loosely relevant to the issues of temporality, and unambiguously platial. The vast majority of respondents who perceive spatial frames in terms of 'place' exhibited a propensity towards a stronger involvement with the VR environment and a more distinct expression of empathy towards the subjects. A slightly weaker but still in the majority was the group that had viewed 'Surveillant Story-Space' in connection with place as well, even though the **hypermodal narrative instance** in such an equation was ocularized in the third person. Only is 'Participatory Story-Space' is thought of as place and space at the same time, where the first-person perspective and hCtA are sustained by the Dantean element of space. Both IFQ and initial coding, in symbiosis, had confirmed that *space* and *perspective* are key players in the narrative typology of 3DSC and may redefine the cinematic chronotopes, the configurations of time and space, that govern literature and film. Whether space is the preeminent between the two, or the other way around, is distilled in the re-focused coding phase.

4.2. Analysis of Research Findings at the Initial Coding Phase

In the upcoming segment, the Thesis' author delves into the intricacies of empathy utilized in Immersive Journalism. By examining the misalignment between filmmakers' intentions, narrative constitution, and audience reception, the author provides a critique of how narrative construction, biases, and technological constraints can impact immersive states in various narratives. These complexities, be it disjointed narrative layers or shifting perspectives, complicate viewer engagement and do not necessarily facilitate empathy as intended. Shifting 3DSC viewpoints and narration switching between past and present may create disorienting and analeptically complex narratives, which also highlights misalignment in the narratorial ideological and representational strategies, underscoring the need to distinguish what the author terms as **empathetic stimuli** from genuine empathy toward subjects. The following section expounds on the elements contained in the table.

Table 4: Narratorial Categories at Initial Coding Phase.

Compared Categories	**Key Aspects**
Empathetic Stimuli in Immersive Journalism	• empathy is not automatically triggered by immersive technologies; • cross-cultural framework, ideological and perceptual facets mitigate prospect of empathy; • IJ does not facilitate direct relationship between user and subject to achieve empathy;

	• limitations of empathy in cVR reflect representational strategies often set forth by corporate sponsorship of cVR narratives; • empathy's multiple definitions complicate how filmmakers/VR designers apply the term; • succession of Empathetic Stimuli varies in duration and intensity.
Narrativity in Cinematic VR	• narrativity is influenced by coherence, logic, sequentiality, and experientiality; • non-coherent cVR experiences have weaker narrativity; • cVR varies in narrativity levels, with some experiences being low in narrativity while others are appraised as medium to high in narrativity.
Coherence in Cinematic VR	• coherence in Cinematic VR is essential for narrativity; • coherence requires both local (shot-to-shot) and *global* (overarching theme) unity; • spatial, temporal aspects, and narrative levels must have a coherent distribution for effective immersion.
Third-Person Witness in cVR	• third-person narratorial ocularization (optical witness narration) may enhance narrative distance and interrupt immersion; • oscillating perspectives and complex narrative layers can disorient the viewer; • the convolution of voices can significantly impact the viewer's sense of presence: a less saturated distribution of narrative layers can make it easier for viewers to process visual and narrative elements.
Third-Person Actant in cVR	• ‘we’-narrative proper expands the epistemological and cognitive possibilities of the first-person narration in cVR • narrative techniques like ‘we’-narrative and communal voice are utilized to induce collective consciousness in storytelling • also, the use of looping and mixing 'you' and 'us' in the second-person with 'we' induces a sense of collective consciousness
First-Person Actant and Homodiegetic Narration in cVR	• first-person actant and homodiegetic narration do not automatically equate to a first-person perspective in cVR; • technical errors, like poor image quality, awkward camera positions, as well as narratorial ones, be it **misformatted ideological facets** or **monoscopic immersive reduction**, contribute to reduced immersion for the viewer; • in cVR, no first-person account exists, optically speaking: ocularization of the events are exclusively seen through the

	third-person perspective, outside the frame of narrative space reference; • the concept of "deputy ocularization" is proposed to better describe the viewer's perspective in 3DSC.
Voice in cVR	• cVR may function as a superb propaganda format driven by ideological facets and deliberate omissions, such as *Mosul Victory at What Cost?* which portrays devastation without delving into the broader geopolitical context; • ideology in narratives involves both signifier and signified elements; • the succession of spatial frames in short durations hinders immersive states; • narrative techniques like frame narrator, **split focalization**, and **auditory-visual convergence** happen where narratorial shifts highlight split in focalization and narrative layers.
From Deputy Ocularization in cVR to Platial Experientiality in 3DSC	• rapid perspective changes and varying camera heights may cause disorientation in 3DSC spatial setting; • 3DSC spatial frame is inherently a non-oscillating object; oscillation is narratorial imposition; • the spatial extensions of the surrounding objects, along with their haptic feedback, are no longer a question of spatial fidelity but of **experiential fidelity**; • the tension between classical narrative canons and experientiality is reduced to almost zero, whenever a perfect geometrical calculus of the distribution of spatial object is observed; • **haptic urgency, spatial fidelity, immersive fidelity**, and empathetic immersive situation all point towards the intensifying **platial experientiality**
Spatial Extensions of Platial Experientiality in 3DSC	• **spatial orientation** and 'platial experientiality' are key narratological elements to drive immersive states in 3DSC; • the viewer's experiential background and sociocultural practices shape the immersive experience; • narrative reliability may be questioned in heterodiegetic storytelling, especially without 3D format present; • given that heterodiegetic narration inherently raises doubts about its reliability regarding narrative distance, the lack of stereoscopy only adds to the obstruction of its narrative situation.
Time as Omission, Summary, Acceleration in 3DSC	• traditional narrative techniques like "ellipsis", "summary", and "acceleration" are non-immersive actants in 3DSC space;

	• in cVR, omission is more appropriate than ellipsis to illuminate the ontological difference between summary and ellipsis, as summary in cVR is most often conveyed as acceleration; • "stretch" is a natural condition that is used to describe the duration phenomenon in 3DSC
Pause and Scene in 3DSC	• the medium of 3DSC is inherently tied to real-time in the present tense, even when narration fluctuates temporarily. • "pause" and "scene" are more appropriate for 3DSC space as they align with the viewer's live theater-like experience in the present tense.

Empathetic Stimuli in Immersive Journalism

Sam Wolson, when speaking about his *Reeducated* (2021), an animated 3DSC documentary on the plight of Uighurs and other predominantly Muslim minorities in China's secret detention camp in Xinjiang, noted that the future of IJ would rest on the same foundations of reporting, talking to experts, collecting stories, and fact-checking as in the past, with the exception of areas such as distribution, financing, and the incorporation of new tools. If journalism is to have a future, it needs to keep evolving within all of those spaces" (Pietrobon, 2021:7).

Originally, the concept of "immersive journalism" was introduced by Nonna de la Peña who argued that, apart from gaining a first-hand experience of the events or situations described in news stories, the aim of IJ is to "elicit a connection between the audience and the news story" (la Peña *et al.*, 2010:291) the catch phrase recycled by another pioneer of cVR Chris Milk, who, in his 2015 TED talk titled *How Virtual Reality Can Create The Ultimate Empathy Machine*, went even further by implying the cVR format was sound enough to stimulate empathy a "feel her humanity in a deeper way". An example of this is the film *Clouds Over Cidra* (2016), deemed to be "the first ever 360° stereoscopic film" (Irom, 2018:4270) commissioned for the United Nations by Chris Milk, the founder of WITHIN, who follows a twelve-year-old girl in the Zaatari refugee camp in Jordan, using the proprietary breakthrough spherical technology developed at that time.

In decoding the film's narrative layers, the author of the Thesis has found that its narrative structure is misplaced (Ceplitis, 2017): *Clouds Over Cidra* communicates on two split narratorial tracks: one as a translator, and the other as a girl. The narrator/translator, presumably a homodiegetic one, speaks in the voice of a twenty-six-year-old with a distorted accent. She conveys the story in the present tense, making the narrative effectively analyptical. Sometimes her comments also shift between the past and present, with the narrator's oral "achronies" injected that may or may not correspond to the girl's visual perspective. This is further obscured by shifting camera heights that do not quite match the expected visual field. The fluctuating point of view by no means benefits any empathy or immersion it aims for. Instead, it underscores the intricacy of empathy in the digital world, rejecting the false assumption of what truly triggers an empathetic response.

It is important to recall that the concept of empathy originated from the German term *Einfühlung* to describe perspective-taking. The three crucial components of empathy are affective matching, perspective-taking, and "self–other differentiation"[32] in order to distinguish one's thoughts and feelings from those of the target. The latter dynamic parallels Brecht's "alienation effect," which is used to provoke critique through intensified emotional disengagement. The "alienation effect" is influenced by a cross-cultural framework and various ideological and perceptual factors that, in turn, hinder any possibility of empathy or sympathy. This is why the author of the dissertation does not agree with Fisher's (2017) distinction, where the idea of an "empathy machine" suggests a user's profound empathy for characters in cVR, while his concept of an "empathic actuality" highlights the cVR designer's portrayals in relation to the individuals in virtual reality. Instead, a more accurate way to describe the dynamics in cVR is as the succession of empathetic stimuli, which can vary in both duration and intensity.

What *Clouds Over Cidra* certainly does is bring attention to the hazards of 'via negativa' in depicting humanitarian concerns and inadvertently boosting the corporation's reputation through the 'instrumentalization' of tragedy: by reinforcing gender stereotypes and utopian ideals, cVR technologies and their depictions could potentially become societal commodities that both resist and reinforce specific divisions. These technologies not only reinforce these divisions, but they also have an unpredictable nature in emphasizing the necessity of the first-person perspective to cultivate empathy. Take, for instance, the much-lauded *Lesbos Heroes Refugees* (2016) by Scopic about asylum seekers taking a leap into Europe from years of hunger, lack of prospects, and the Syrian civil war.

Depending on whether the audience is Swedish or Hungarian, the expected audience reaction to the anti-immigrant state policies may differ. With no signs of the war ever ending in Syria at the time the video was made, and with its increasing level of poverty and uncertain future prospects, people flee into neighboring countries with the goal of reaching Sweden or Germany, where they often get stuck in the immigration processing in Lesbos, Greece.

It is obvious that the intention of the filmmakers is to trigger an empathetic reaction in the viewer, as established by the opening first-person point of view shot where the audience is expected to identify with the plight of a refugee (albeit, ironically, in an empty boat crossing a sea) and narrated by Dutch war reporter Hans Jaap Melissen and filmmaker Eduardo Hernandez. But in spite of its accolades, the film reads, from the get-go, as a fairly unsubtle propaganda movie. If dissected into narratological units, the ideological facet shades its narrative fabric and is oppressively felt throughout.

The documentary opens with two tracks: the textual overlays, informing the viewer of a death tool that immigration, and the off-screen sounds of explosions and firing assault weapons in the distance. The information presented is menacing: three million in forced

[32] "an observer must experience affective states that are qualitatively the same as those of the target, and, in Self-Oriented Perspective-Taking, one imagines what it's like to be in the situation of another, with personal distress, false consensus effects, inaccurate predictions and failed simulations of the other's thoughts, feelings, and desires…Other-oriented perspective-taking, in turn, is oriented toward the other;…[yet], it is possible to experience affective matching and succeed in other-oriented perspective-taking and still not be empathizing [and as stated earlier] self–other differentiation is crucial for successful empathy" (Coplan and Goldie, 2011:13-17).

migration, largest since the Second World War. The information presented is short; one has to rewind the film to grasp the message. The emotive reaction the narrative bracket expects to evoke is hardly sustainable since one has to rewind the film a number of times to be able to read the important facts, a rather serious technical glitch, if immersion is vital. The following spatial frame is in an empty boat, establishing the narrative edifice as that of the first-person protagonist, followed by a wide 360° panoramic shot, where the viewer is clearly a witness, from which point, the viewer no longer focalizes as the protagonist. The oscillation between the perspective is by any means critical: what unsettles immersion are two voice-over tracks, speeches by the U.S. President Trump and Geert Wilders, a 2017 candidate for prime minister of Holland, both condemning what they see as an "illegal immigration".

The plight of refugees is not a narrative as told by either of the politicians; at the backdrop of the successive shots, showing lifeboats coming ashore, the insinuation is not lost: both men are outright racists. Trump and Gilder is bracketed by the film's ideological facet of the **apex narrator** who coordinates its FCP, as his or her presence is accentuated by the selection of non-diegetic musical track (a rather overly romantic mournful wail) and close camera proximity to children (all in juxtaposition of Wilder's speech). Unless one's political and ideological position is in tune with that of the apex narrator, the lack of subtlety in editing may miss its target.

Another important issue for the narrative lies with the complexity of its moral, ethical, and technical considerations regarding the rescue operations. These operations, while aimed at saving lives, actually place them in danger by encouraging more migration (Peter and Reitano, 2018), often tied to the "digitalization of human trafficking for ransom" (Van Reisen et al., 2019:17). The complexity of the rescue operations and the need for a deeply critical and multifaceted review of human migration over the Mediterranean Sea (Agustín and Jørgensen, 2018), within the framework of murky EU and USA policies towards Syria (Blumenthal, 2020), is essential for serious artistry. Yet, this seems to be less of a concern for Hernandez. Instead, the audience is presented with a frivolous form of the Leni Riefenstahlesque ode to "rescue heroes" that belittles basic human intelligence and ignores all the undercurrents of obscurity that require serious investigation. Any references to reports issued by the European Commission or Interpol regarding terrorist fighters using smuggling routes in the Mediterranean Sea (Beswick, 2019) are conveniently omitted in favor of a cheap shot at Trump, whose rhetoric is all too familiar and an easy target. But it is the very constructivist approach that exposes the flaws in the narrative empathy that *Refugees* proclaims and reveals the superficiality of its narrative constitution, which can easily be missed in a fast monoscopic viewing.

The monoscopic mode, when combined with a 360° camera movement, can be physically overwhelming. In *CNN Shackled by Debt* (2017), which aims to depict the inhumane conditions under which Cambodian workers in Phnom Penh struggle to pay off their "debt bondage" and gain freedom from modern slavery, the first thing viewers experience is motion sickness. Being dragged in a brick barrow, the ocularization is that of a participant, although it is technically an over-the-shoulder shot. The voiceover of an extradiegetic CNN narrator is full of empathy, both in its texture and content, but it hardly aids in immersion. Despite the

fact that, in *CNN Shackled by Debt*, space, as a narrative technique, albeit monoscopic, effectively communicates the very oppressive environment one wants to avoid. However, the narratorial gratification is brief; the shots change too quickly, and with so much visual information, viewers are constantly twisting and turning, which can be exhausting. It becomes difficult to know where to focus. When the film is re-watched on a desktop computer, it strikes as being more engaging, given that it focuses on the subject matter, which yet again raises the issue of serious *misformatting*.

The misplaced use of a pliable format is correlated with the in-built split between the auditive narrator and visual narrator in film, a feature Verstraten and van der Lecq (2009:129-139) extensively cover in their narratological model, be it flashbacks introduced through a voice-over, while the ocularization of accompanying shot is in the present, or the split principle of internal narration with external focalization on the visual track in flashback scenes, or an internal narration with ambiguous focalization and the collision of text with a shot. Such an inherent split is even more intensely evident in cVR, where the afore mentioned scenarios become more complex within the hypermodal narrative unit of 3DSC, due to the spectator's liberty in reconstructing a narrative according to the ocularization the VR agency affords. To illustrate the case, both *NYT the Daily 360 Sleeping on Denver's Bitter Cold Streets* (2017) and *NYT the Daily 360 Enter the Chaos of Duterte's Philippines* (2017) have an extensive use of textual overlays, accentuated by a frequent used of skewed proxemics in visual field.

In *Sleeping on Denver's Bitter Cold Streets*, the story centers around Denver's laws banning urban camping and its immediate effects on the city's 3500 homeless inhabitants. As late autumn becomes colder and more bitter, the Denver police seize blankets from Jerry Burton and others in late November, creating a public outcry. It is difficult to process the parallel flow of both text and voice-over. The approach does not seem particularly immersive, but rather informational, as the pressure of looking at the text and the shots at the same time conflicts with the speed at which the shots change. The 360° camera placement feels severed from its target subject matter: one sees a woman making fire and coughing, but then Jerry Burton, as an intradiegetic narrator, describes of what happened to him, in an apparent dissonance between the visual frame and its narrative perspective. Anytime the objects are spaced further away in an open field, the **geospatial proxemics** feel natural, but these moments are rare: one of the creative experts duly noted, "I am less interested in what [Jerry Burton] says but thinking more of why is he homeless".

In the latter, *NYT the Daily 360 Enter the Chaos of Duterte's Philippines* (Fig.29), Andrew Glazer of the New York Times takes the viewer inside the hideous reality of Manila where Philippines President Rodrigo Duterte has unleashed a brutal antidrug crusade that has killed thousands of people since 2016. The visual quality of the film is substandard, bad enough even for a desktop VR projection. Whenever on the street, there is a text overlay, which reads like a giant subtitle track on screen to match the voice of the narrator, a rather unnecessary gimmick. A detriment to immersion, as in *Sleeping on Denver's Bitter Cold Streets,* is the occasional 'skewed proxemics', even in the last shot where the audience is inside a prison cell stuffed with drug traffickers, and one is expected to elicit enough compassion to disregard the

awkward camera height: the compassion is cognitive and hardly visceral or haptic. However noble are the intensions, the before mentioned illustrations suggest that narrative empathy, greatly influenced by the ideological asset, is not a leading narratological category for 3DSC, neither is narrativity, linked to the very first research question as to whether there are limits to the degree at which we can effectively assess narrativity in SC3D and what would be the most prevalent components of narrative constitution currently used in 360° stereoscopic spherical film.

Narrativity in Cinematic VR

The ongoing debate over whether Cinematic VR is primarily about storytelling or experiencing a narrative situation may not provide much clarity on the matter. Many scholars have weighed in on this issue, with the majority of evidence pointing towards the latter. Ultimately, what is more important in the debate is whether VR as a medium possesses inherent narrativity, and whether non-linear cVR experiences can still be considered narratives.

One of the most leading scholars on the issues of narrative in VR environments Marie-Laure Ryan (2019:94) has emphasized that not every sequence of events constitutes a well-formed narrative; in traditional storytelling, the author is a complete regulator of a plot, but in the interactive stories the plot emerges from the interaction between the user and the computer, that is, the story is partly generated by the user and partly by the technological agency, in the blend of a new type of a target spectator what media theorist Dan Harries calls a "viewser" (Harries, 2002;171-183, as cited in Crawford-Holland, 2018:25). In this, his view is in line with the poststructuralist reception of the audience that plays a decisive role in narrativity through an interaction between a narrative agent and the viewer, the proposition favored by Ryan (2022) who believes that either the freedom of a target needs to be restricted to create a coherent narrative or otherwise, one has to sacrifice its narrative form. The narrativity in either case is stringent upon coherence. For this reason, non-coherent cVR

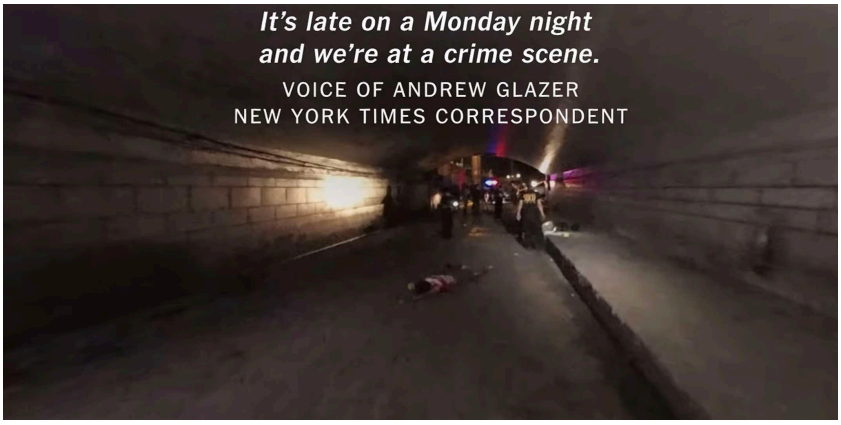


Figure 29: *The Daily 360: Enter the Chaos of Duterte's Philippines,* New York Times (2017), at 01:45.

stories can be deemed to have weak narrativity, if one takes into account the classic definition of narrativity by Herman's (2018:339), which states that it is "a property of the discourse that more readily lends itself to being interpreted as a narrative." It is also useful to consider Abbott's formula (2014:589) in the broadest level of abstraction, organized under four headings: (a) as inherent or extensional; (b) as scalar or intensional; (c) as variable according to narrative type; and, (d) as a mode among modes. In the context of cVR, narrativity as inherent and scalar input are more relevant, whereby the former involves emplotment[33] and logic[34] in narratives, while the latter involves sequentiality[35] and experientiality.

The scalar input begins with a set of defining conditions, such as the properties that characterize narrative and distinguish it from non-narrative forms; this involves the sequential unfolding of a narrative, which can be analyzed in terms of two levels: the story itself and its discourse (Abbott, 2014:593-594). If a story is well-formed but the action is slowed down by descriptions, comments, and digressions, the narrativity is considered to be low (Ryan, 2007:34, as cited in Abbott, 2014:593-594). Experientiality, on the other hand, is closely linked to Fludernik's concept of 'natural narratology', which emphasizes the importance of human experientiality in understanding narratives: to perceive a narrative as such, the audience must draw on a vast array of frames and scripts that stem from their life experiences (Abbott, 2014:598).

In reviewing the initial coding data, one can deduce that Cinematic VR varies in its degrees of narrativity from being very low to medium high, such *WORLD TOUR: A Jump VR Video* (2015) would be viewed as a mere, short term virtual experiences, low in narrativity, due to its lack of logic, sequentiality, and coherence, whereas the immersive journalism shorts, be it *CNN - Mosul- Victory at what cost?* (2018), *CNN Refugee 'We Are Not Animals' (2017), Refugees* (Scopic) (2015), or *NYT the Daily 360 Enter the Chaos of Duterte's Philippines* (2017), would be appraised on the medium spectrum, as they would require a proper experiential orientation with the ideological facet considered in order to be assessed as high in narrativity. Therefore, it is clear that coherence is more important than narrativity in maintaining immersive experiences in cVR.

Coherence in Cinematic VR

Coherence is essentially a matter of narrativity, substantially overlapping with the latter, in that, stories that defy normal expectations about time, intention, goal, causality, or closure may be judged incomplete where those high in narrativity will by high in coherence as well

[33] "For Ricœur ([1985] 1988:4), "emplotment " is the articulation of which involves "broadening, radicalizing, [and] enriching" the Aristotelean idea of plot with the Augustinian understanding of time, …for this reason, history, by definition, cannot exist without narrativity" (Abbott, 2014:591).

[34] logic of narrativity implies that a filmic fiction renders its signs consecutively, that is, although an each film unit might not have diegesis present, it is perceived in the picture as the whole (Abbott, 2014:592).

[35] Sequentiality is the linear, unidirectional succession of elements or events, either reversible (as with motion in space) or irreversible (as in the flow of time) (Hühn *et al.*, 2014).

(Toolan, 2014:66-75). Rooted in Aristotle's Poetics, which insists on completeness of plot with a beginning, a middle, and an end, in the unity of "incidents [that] must be organised in such a way that if any is removed or has its position changed, the whole is dislocated and disjointed" (Lejano, 2018:62), coherence resists a seemingly unmotivated and unpredictable shifting of the target's attention through a multiplicity of things. Coherence, thus, must be not merely local where shot by shots fits together in multiple respects, to the point that every film unit is an indispensable part of the whole, even when absence of a few shots—provided they are semantically consistent with the rest of the material—would be a cause for narrative collapse, but they must be also global in terms of their overarching theme or a purpose (Toolan, 2014:78-79). In this light, as Toolan (2014:78) correctly points out, poetry, with its greater or lesser degrees of narrativity, cannot be dismissed as incoherent whenever some form of a global theme is detected through syntax or oral communication.

Notwithstanding the coherence of poetry, it rests on forming a conceptual space, reconfiguring the spatial experience of the reader by rearranging his or her own time and space in the overall chain of events. In contrast, in 3DSC, space is not conceptual and exists independently, irrespective of its intermittent occupant. Therefore, it would be appropriate to suggest that coherence in Cinematic VR not only overlaps with narrativity, but its effective performance is stringent on the particular aspects of triangulation of space, time, and narrative levels.

If one compares *WORLD TOUR: A Jump VR Vide*o and *Refugees* (Scopic) with *In the Presence of Animals* (2016) by Condition One, the former two wrestle with conveyance of space and time, which strikes them as being incoherent, the very view supported by the reactions from the respondents who had analyzed them.

WORLD TOUR uses the scheme of a deputy focalizer trespassing various spatial frames of global sites to tell the story of the global travel, but, more importantly, testing Jessica Brillhart's "Probabilistic Experiential Editing," a concept deemed to be a new montage theory in the VR age. Setting aside one's personal view on the concept, the topographic travel of an anonymous focalizer is carried out through spatial frames, not connected by any tangible global theme or visual syntax, in addition to being so short in duration as to give any meaning to why one is place in a specific location. *Refugees* struggles with confusing structure in narrative layers; with no specifically anchored main narrator and oscillating focalization, a rather precarious narrative technique if not executed well, as it disorients the audience. By contrast, *In the Presence of Animals* (2016) suffers none of the deficiencies referred to. As the deputy focalizer moves from one location unto the next, from being surrounded by a massive bison herd on the move, into the territory of a prowling grizzly, then into the presence of an endangered jaguar, a rainforest sloth and an olive ridley turtle laying on a beach, the travel is as logical as it is binding in its overarching theme. What appears as distinct spatial frames, both in their visual composition and 3D dexterity, the narrative space reads as one, accentuated by relatively long shots, acceptable in their unity, even if stacked in a non-linear fashion from time to time. Its technical solution is commendable, for despite its 3-DoF agency, the sensorimotor reaction is rather haptic: when the grizzly or the jaguar comes up to the camera, one cannot help wanting to physically touch them. Even when the optical perspective

facing the turtle comes across as unnatural at first (one feels literally buried in the sand), the immersive quality, albeit eccentric, is never lost.

Similarly, *The Recruit: R U In* (2015), an immersive VR experience in 3D produced by Metaverse VR and directed by the former creative director for Digital Domain David Rosenbaum, that puts the audience in the seat of a second-person addressee who is interviewed for an opening in the secretive world of a high-level, technologically sophisticated agency, sustains its coherence due to the homogeneity of its setting; albeit timing and locations change, the setting never does. One may even remix the sequentiality of its spatial frames, but coherence is never lost. It does not immediately follow that consistency in setting secures coherence at all times; the perspective through which it is rendered may disrupt or enhance the unit and logic of narrative progression, above all in oscillating point of view or in the third-person ocularization.

Third – Person Witness in cVR

Kate Nash (2019) in her article *Virtual reality witness: exploring the ethics of mediated presence* points out to an inherent conflict between the codes of "something of an event" that the news stories and immersive journalism present to their audience, as opposed to "something of an experience" that is linked in various experiences of others Cinematic VR affords, the conflict with an inherent moral risk attached: the risk of "improper distance".

One predicament for the 'improper distance' lies in the ability of Cinematic VR to produce *both* presence and distance as well as in the "collapse in the distance between the spectator and other in which the latters own emotional experience is foregrounded", and, thus, fostering a moral response to others is neither impossible nor guaranteed (Nash, 2017:124-125). Second predicament may be found in the current narrative strategies deployed in new stories, whereby, the third-person perspective in homodiegetic and extradiegetic narratives is overused, without a proper critical assessment as to its effectiveness. On its own, cVR may portray distant virtual environments in an aesthetically pleasing way, prompting viewers to see the scene as a living picture or grand spectacle rather than a harsh reality. When amplified by the extradiegetic narration in such a hypermodal narrative situation, the narrative distance between the subject and the viewer increases and interrupts the intensification of immersion.

In part, as the field notes and memos deduced from the unstructured interviews during the initial coding phase have revealed, the answer lies in immersion being greatly affected by the complexity of voices if distributed on various narrative layers: a more complex narrative configuration does not necessarily amplify the sense of presence and the emotional involvement in a narrative, while the opposite is true: a clearer and less saturated the distribution of narrative layers is, the easier it gets for the viewer to process visual and narrative stimuli in the context of hCtA and 3-DoF. Take, for instance, *RecoVR Mosul, a collective reconstruction: the Economist* (2015), *10 Shots Across the Border* (2016), *NYT the Daily 360 Food Inequality in Venecuela* (2017) and compare them with *The Mercury Crisis 360° FRONTLINE* (2017), the capacity for embodiment and the first-person experience, feeling as though you are in someone else's shoes, greatly depends on the "narratorial voice" and the ideological facet through which a particular narrative is rendered.

Third-Person Actant in cVR

Narrated by an extradiegetic narrator, *RecoVR Mosul,* a collective reconstruction takes the form of a tour of the museum, with a voiceover that explains the background of the VR project. With its first gamble into the new medium of virtual reality, the Economist Media Lab has collaborated with a non-profit group *Rekrei*, formerly *Project Mosul*, to recreate the museum and many of the destroyed artefacts, with the help of two archaeology researchers Matthew Vincent and Chance Coughenour, who had crowdsourced images and reconstructed the using a technique called photogrammetry in 3D (Fig.30). According to the archaeologists, Mosul in Northern Iraq has the majority of the country's archaeological wealth, with more than 3,500 sites of significance, but, on February 26th 2015, ISIL had posted an online video showing the destruction of artefacts in and around the city of Mosul; statues in the main museum were smashed and broken up using hammers and pneumatic drills. The militants said they were ordered by our prophet to take down idols and destroy them.

The narrative schemata of *RecoVR Mosul* uses the perspective of what Bekhta (2017:103-116) defines as 'we-narrative' proper in the form of "the dominance of a collective narrative agent", a single narrator speaking on behalf of others by means of a technique that "expands the epistemological and cognitive possibilities of the first-person narration". Rooted in the Susan Lanser's concept of "communal voice", evoked by the authorial and the first-person narrative situations (Lanser, 1999:21, as cited in Bekhta, 2017), while not being entirely told through homodiegetic narration, the technique of looping and mixing 'you', 'us' in the second-person with 'we' in the course of the tour is meant to induce the collective consciousness and shared responsibility the audience must feel towards the subject. The narrator agent here coexists simultaneously as the plural form of 'I' ("we [VR filmmakers] have built virtual versions of all the hall") and 'we-proper' ("but on today's tour we'll focus on two that are of particular interest here we are in the Hat Ron Hall…"), where a single voice-over track, even supposing split on two extradiegetic narrative layers, has no bearing on the ocularization of the spectator.

10 Shots Across the Border (2016) tells the story of a Mexican boy killed by John Zuñiga, a police officer in the city of Nogales who also works as a liaison with United States Customs and Border Protection (C.B.P.). What actually happened on the fateful October 19th, 2012 remains contested. For one, the problem is that the border security is the responsibility of C.B.P., but the Nogales police can assist when illegal activity is happening inside the state of Arizona, hence, it can be rightfully questioned as to whether Zuñiga was authorized and properly used force. Second, the city itself is a community divided by the border fence, and, depending on where one is standing, the abutting co-cities may seem like a single one: a clear recipe for a hypothetical tragedy to occur.

The film is narrated extradiegetically (as in *RecoVR Mosul*), explaining an effective frame, shot from the helicopter flying over Nogales. The cinematic choice is deliberate, as it does leave an emotional streak on anyone overlooking the city divided by the wall. The heterodiegetic narrator (an investigative journalist) speaks slowly, taking pauses now and then; not only does his manner of speaking flow well with the length of the shots, but his

speaking pattern is also curt and short, like the very 10 bullets that killed the teenager. There is a single interview with the grandmother of the victim who speaks in Spanish, voiced-over

Figure 30: *RecoVR: Mosul* (2017), UNESCO and University of Mosul, showing the virtual reconstruction of the Assyrian lion statue, at 01:45:00.

with and intra-heterodiegetic translator and recounts the story from her perspective. The intradiegetic level is technically a Chinese box (Fig.31) where the dominant narration is bracketed by the heterodiegetic narration, but the intradiegetic level contains both a homodiegetic narrative by the victim's grandmother and the narrator/ translator. Because the latter is technically a part of the extradiegetic film compositional device, and not of the optical diegesis from the audience's point of view, the location of the translator's narration transgresses onto the extradiegetic level, which is one of the reasons why, in Cinematic VR, the notion of an 'apex narrator' proposed in the dissertation resolves any inconsistencies in the proper use of metalepsis that may otherwise occur.

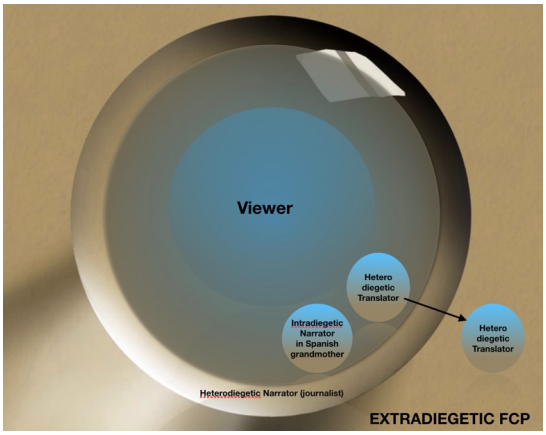


Figure 31: *RecoVR Mosul* Narrative Layering.

When the heterodiegetic narration, framed by an extradiegetic narrator and the translation overlays of a intradiegetic voice-over of casa Bistro's chef and owner Francisco Abenante, is clearly demarcated and never transgressed, as it is *Food Inequality in Venezuela* (2017), which explores the rising gap between the 80 percent of its citizens living in poverty and the upper

class that can still afford to eat out inside the expensive bistro, the only viable impediment to immersion are **asymmetric geospatial proxemics** and misformatted approach, as being shot in monoscopic 360° has no added value either in narrative itself or spatial meaning. In fact, some of deployed spherical camera positions are outright comical: the audience is offered an option to be a tomato, lettuce or a knife whether such a perspective has been intended or not (Fig.32).

Likewise, the density in narrative layers in conjunction with dualistic sectors of focalization and ocularization on top of oscillation in perspective, as they occur in *The Mercury Crisis 360° FRONTLINE* (2017), may negatively impact immersion and certainly raise questions as regards to the pertinence of 3DSC in some documentaries.

The Mercury Crisis tells a story of an illegal gold mining boom in Delta Uno, a 370,000-plus-acre area of the Peruvian Amazon, that has caused a health crisis due to the side effects of mercury used in the mining process to extract gold; by seeping into the local water supply, mercury has contaminated the fish people eat causing damage to the lungs and kidneys, and, in children, even brain damage. The general story line is focalized through the extradiegetic narration by the well-known actor William Lyman whose polished baritone voice colors most of PBS Frontline documentaries. But his perspective here oscillates from a purely extradiegetic level, unto the first-person plural ("we're deep in the Amazon rainforest although you wouldn't know it; this is Delta Uno" (as in *RecoVR Mosul*), mixed-in between with the third-person witness ocularization and a set of the second-person narrative fragments ("our rainforest is industry for us…we generate oxygen…the consequence of that is that almost all of the population of this community has a high percentage of mercury level", Luis Tayori, an environmental activist and member of an indigenous tribe called the Harakmbut speaks of the

Figure 32: *NYT the Daily 360: Food Inequality in Venezuela*, the New York Times (2017), at 04:20.

crisis) that are, in effect, are an *intradiegetic insert* of Lyman's extradiegetic narration. Such a complex focalization diagram, while perfectly acceptable in 2D flat projection mode where ocularization is never that of a spectator due to the transcendental space between the film plane and the audience, becomes disorienting in 360° mode. When the shots change quickly, with *skewed proxemics*, being too close to what would otherwise be considered a natural field of human vision, and being conveyed monoscopically, the result is rather insipid. Had the story been shot in 360° stereoscopic mode, with the demarcation lines in the narrative layering more rigidly defined, since William Lyman's perspective is clearly dominant, the film would not only strike an emotional chord with the audience, but it would also demonstrate the full spectrum of 3DSC advantages over more traditional filmmaking. Nonetheless, the

predicament of *The Mercury Crisis*, brings to the forefront another important aspect: the inevitability of apex narrator in 360° stereoscopic film. In *the Mercury Crisis,* William Lyman *is* the voice of PBS Frontline, an instance *heteroglossia*, above and beyond a mere status of a cinematic narrator or a unit in the film's FCP. To call him simply a film narrator in accordance with Verstraten's model, it would be insufficient, and it should be equally inadequate, as far as the audiovisual format is concerned, to immediately refer to the scenario as the **apex hypermodal narrative unit**. Here, the distinction is most visible between the designation of 'voice', as it is made out by the viewer ("who it is we "hear" doing the narrating" (Abbott, 2002:62)), and the one *perceived* by him. Compounded by the "synchronous or asynchronous in relation to the images, its information "parallel" or in "counterpoint" to that presented visually", as in voice-over (Kozloff, 1989:103), the distinction becomes even more significant when various translations and impersonators are added both on visual and auditory tracks, and by means of it, obscuring its narrative hierarchy. Hence, William Lyman is hardly an apex narrator, although he is the voice of his narrative. The idiosyncrasy is largely driven by the presence or absence of its ideological facet.

First-Person Actant and Homodiegetic Narration in cVR

'Empathetic Actuality' might explain the mechanics by which the perspectives of VR designers and filmmakers signal sympathy or compassion for their subjects. Even so, they do not fully address as to what kind of a narrator, in the ecosystem of 360° stereoscopic film, exists[36]: as an alternative to 'who *really* narrates?', one should be asking what kind of an apex narrator *orients* the homodiegetic narrative, the formula, currently most often deployed in Immersive Journalism. Regardless of whether empathy or sympathy are considered, they all stem from the first-person perspective the audience is required to accept by the particulars of VR format. The difficulty is further compounded by the **dichotomy of perspective and narration** in cVR. While shifting perspective, observed in cinema from an adaptation of a literary piece where an autodiegetic narrator becomes a third-person perspective heterodiegetic narrator 'we' (Webster, 2014:2010) is commonplace, what happens to a story where an autodiegetic narration (personal story) exists but no character ever shows up in the film; can we really speak of the first-person perspective in cVR?

The answer would be in the affirmative if there is no conflation of terms with respect to homodiegetic narration, a first-person witness report, and the perspective of the third-person. When a story of the main character is told by another character observing the events ("She missed the bus. She'd probably spent an hour arguing with herself that she really should get up… Now she was going to have to walk to work"), this first-person witness account is deemed to be conveyed by an observer or an impersonal witness narrator (Yilmaz, 2019:38-39), fluctuating between the first and third-person point of view, who behaves more like a

[36] Fisher (2017:238-239) proposes that VR designers mirror certain aspects of reality that are actualized by the medium of VR designed to facilitate empathy, but, because role-play is involved, Fisher (2017) calls it "empathic actuality"—an emotionally charged interpretation of life—which may result in compassion or sympathy, rather than empathy.

camera, recording the images its readers must mentally imagine. In either case, both narration and perspective through which it is channelled are technically homodiegetic.

But in Cinematic VR, for the most part, no first-person recounting exists, optically speaking. Ocularization of the events are exclusively seen through the third-person perspective, outside the frame of narrative space, as in *CNN Idlib-the Next Aleppo?* (2018), where CNN's Arwa Damon travels to Syria to find her native Idlib province eerily reminiscent of the devastation in Aleppo. Fully colored by CNN's orthodox ideological and perceptual facet, the narrative strikes to be nothing short of a propaganda film with the usual suspect Russia as being the chief bogeyman in town ("you're [the audience] standing in Idlib province in Syria…we are now 7 years in conflict [of] Syrian regime Russian backers"). There is no word of the US involvement in Iraq and Syria ever mentioned; one is really taken aback when Damon talks about 2.5 million displaced people as if the United States had no role in the devastation. Her report reads like a quick overview with no relevance to the seriousness of the subject, weakened by the lack of a 3D experience whose stereopsis would have otherwise underlined the destruction, in terms of size, height, and spatial properties. The film gives one a quick overview but the lack of depth decreases immersion. In fluctuating between telling the audience what is happening on the ground in real time and actually giving the tragic description of the events, a residual—decrease in immersion--for the audience is very indicative from the initial codes transcribed: **cognitive pause, misformatted ideological facet, and monoscopic immersive reduction**.

The monoscopy in itself may yield, at times, rather unintended results. In *CNN's City of the Dead* (2017), one would expect the HMD-based display to be the preferred format of viewing, but the voice-over is far better identified with and the story comes to life when watching it on the desktop.

The story is told through a first-person witness report, the narrator, an award-winning correspondent for CNN, Will Ripley, who describes the ten-month-long crackdown by Rodrigo Duterte, the president of the Philippines, who has turned the country into a battlefield in his war on drugs. The murder rate has risen dramatically ever since, focusing on Santo Niño, an inner-city neighborhood in Metro Manila where the most shocking killings are taking place. At the center of the story is the protagonist, Elizabeth Navarro, whose five-year son and husband were killed. In the second shot of the film, the pregnant Elizabeth is sitting in the middle of the room with her children. In what appears to be an attempt to elicit an emotive reaction in the viewer, the narrative information is presented on two tracks: visually and via Ripley's voice-over. The problem with this strategy lies in its construction and the camera placement; too many objects in the messy room (Fig.33) bring about unintended curiosity, in which the extradiegetic information presented, in fact, the most crucial flashback sequence of how they were killed, gets lost, in addition to camera being too high, effectively disrupting the sense of presence in the scene. The excessive amount of information depletes the message; it gets lost, as the audience is forced to think about something else, in what can be coded as **Split Narration and Visual Tracks in Time** (what is heard, reflected, and what is seen are out of sync) as well as **Cognitive Pause** (dissonance between the ongoing visuals and the arrest of narrative time). A rather poor image quality, stitching errors, and a hasty production,

as seen by the substandard production values of a tripod left on the scene would be less of a headache, if not for the informational shots, and awkward camera positions where the role of the spectator is confusing[37]: is he a "deputy focalizer" or an *actual* witness on site? In being situated high on the railing of a bed in the maternity ward (Fig.33) or at the level of

Figure 33: *City of the Dead*, CNN (2017), at 01:20.

a padded kneeler in the main cathedral, the proximity to objects and the placement of the audience feels unnatural (coded as **Camera Hight Wrong** and **Skewed Proxemics**). Either way, **Monoscopic Immersion Reduction** and **Reduced Immersion** would have been almost guaranteed. But then an unintended consequence occurs: the less immersive shot is, the more Ripley's voice-over comes to life, a chief reason why in its desktop version *CNN City of the Dead* reads better. What is clear from the get-go is that homodiegetic narration works as long as the audience is outside the story space it is asked to inhabit. If it is incorporated into the narrative fabric, the diminutive term "homodiegetic" is insufficient, as it does not reflect the dichotomy of the relations between the audience and the narratorial orientation that the story space entails. Under these circumstances, it is more appropriate to speak of **deputy ocularization.**

Voice in Cinematic VR

The ideological aspects through which narratives are rendered, in order to be effective, still need an appropriate target in the form of ""the quasi-mimetic evocation of 'real-life experience'" that correlates with the evocation of the consciousness of a particular incident (Fludernik, 2002:9), the core of Fludernik's natural narrative situation (Hühn et al., 2014:149-155), or the access to the audience's collection of its past experiences and associate them with those of the narrative, whereby the experiential impact is largely the experiential background of its recipients (Caracciolo, 2014), and, consequently, the degree of immersion it is exposed to. Whether it is Scopic's *Refugees* (2015), *the New York Times Daily 360: Agony in a Venezuelan Mental Hospital* (2016), *Crossing the Line: Untold Stories of Refugees Stuck at the Border* (2018), *Mosul Victory at What Cost?* (2018) or *I Am Rohingya* (2018), the ideology is not merely the forte of the signifier but of the signified as well. In *Agony in a Venezuelan Mental Hospital,* which takes the audience inside a mental hospital in Venezuela, plagued by shortages of food and medicine, that, in turn, has a devastating effect on psychiatric patients,

[37] in the maternity ward, the viewer is 'attached" to the railing of a bed.

may be trigger an empathetic reaction from an uninformed spectator who is fully or in part oblivious to the intricacies of Caracas' political landscape. But it will more likely, than not, create aversion for those who are well versed with the barrage of the U.S. sanctions against the country. Narrated by the New York Times extradiegetic correspondent Nicholas Casey, and accompanied by a few effective shots where the audience is physically close to the casualties, the filmic narrator or FCP takes a somewhat valid ideological position by putting the blame on the mismanagement of the local economy by the authorities. But the overarching narrative is anything but a delusion, as it omits an important narrative information, nowhere to be found on its auditory track, that it is the United States that is largely to blame. Having caused the Venezuelan state to lose between $11 billion annually, and having blocked the trade that supplies medicine (Bahar *et al.*, 2019), the U.S. sanctions are counterproductive, fundamentally criminal, and, instead, creating an empathetic feeling, they only incite hate. In this regard, the emotionally detached voice-over of the journalist Nicholas Casey, intended or not, strikes as sterile and as a matter of fact; in the scene where he describes the doctors having to decide which patient gets the medicines and who does not, and, presumably, is supposed to illicit emotion, the opposite occurs: the film reads as another propaganda piece to justify a regime change that has been long in making.

In *Mosul Victory at What Cost?* (2018), CNN journalist Arwa Damon tells the story of utter devastation in the city of Mosul, six months after the US backed Iraq offensive has driven ISIS out. In what can be justifiably construed as another 'gaslight' video, the shots of the destruction have the opposite effect: they allude indirectly to complicity. At no time, does the homodiegetic narrator[38] speak of ISIL as a byproduct of the US charged Iraq invasion in 2003; the expected bogyman in town, in an ironic twist of psychological manipulative narrative, is Russia, responsible for additional devastation. While Russia, should not be by any means excluded, in no time does the narrative mention that on March 17, 2017, "in accordance with the applicable rules of engagement and the law of armed conflict, a coalition U.S. aircraft delivered a single GBU-38 precision guided munition against two ISIS snipers", resulting in the death of 140 civilians, including women and children (Turse, 2020), or the U.S. coalition airstrike casualties in Syria are not routinely investigated (HRW, 2019). As the successive shots change too quickly, the viewer is hardly capable of an immersive experience; one cannot help but wonder as to what is the added value in shooting the documentary in 360° monoscopic mode, when a mere 2D flat one would suffice to make the point come across. The beginning of the film is cut to music, and the shots are superfluous. As the textual overlay "CNN" title comes up, effectively making her extradiegetic or a frame narrator, the auditory track, when Arwa Damon talks with specific words "I cover my face" and one actually sees a woman in the distance covering her face, consigns her to a homodiegetic status; from that point on, it behooves to speak of **split focalization in narrative layers**, along with auricularization and ocularization diverging or converging in the visual field.

[38] The narrator, when the textual overlay "CNN" title comes up, makes the journalist initially extradiegetic, but when she talks with specific words "cover my face" and you actually see a girl in distance covering face, she becomes homodiegetic and from that point on she technically functions on an intradiegetic level.

From Homodiegetic Narration to Deputy Ocularization in cVR

In *NYT the Daily 360 Detroit Riots Remain Vivid After 50 Years* (2017), which reflects on one of the most destructive civil riots in American history, as witnessed by its homodiegetic protagonist Charley Crossley, through the black and white superimposed impressionistic photographs, effective on their own in giving an impression of what it was like then, as opposed to what it is like now (Fig.34), the narratee is addressed by Charley's gaze in the second-person. While the objects are excessively too big (coded as **Asymmetric Geospatial Proxemics**) for the perspective of the viewer, the major impediment to immersion are **Split Focalization in Narrative Layers** and **Split Narration and Visual Tracks in Time**. The story is told in flashbacks by means of Charley's homodiegetic narration and entirely focalized from her point of view, where the spectator acts a mere witness, hardly in the first person, more so in the third one, occasionally addressed as general 'you' (coded as Reverse External Locus). To make the matters more complicated structurally, the elements of FCD (textual overlays and black and white still images) present are not clearly defined to be a residual of Charley's mentation or that of the filmmakers (Brittany Greeson, Niko Koppel and Samantha Quick) all of which, in the presence of limited spatial extension, edge the narrative towards **Empathetic Non-Immersive Situation** and **Narrative Confusion**, optically speaking (Fig.35).

The same 'narrative confusion' exists in *The Fight for Falluja* (2016), which technically should have been a disturbing, and, yet, mesmerizing encounter. But nothing happens of sorts:

Figure 34: *NYT the Daily 360: Detroit Riots Remain Vivid After 50 Years*, the New York Times (2017), at 01:33.

the only thing that is mesmerizing, it is the frequency of the voice-over, as if coming from paranormal TV series. The long ride along the empty streets of Falluja, is distressing a bit, and may peek some interest, but there is nothing immersive about the ride itself. By the time, the narrator says "this is me in the front seat", one needs to spin the head multiple times in 360° angle to grasp who "this is me" really is (coded as **Narratorial Disorientation** and

Cognitive Pause), which brings the whole new understanding of perspective in 3DSC, reconfiguration of point of view dynamics, oscillating in character, and a need for an uppermost agent, the apex narrator whose ocularization is aligned with the deputy perspective of the audience. The rationale for such a need is rooted in the overarching consensus amongst the scholars with reference to the sagacity of Gerard Genette's *Narrative Discourse* (1983) and "its more accurate method of classifying narrators in terms of their narrative levels and their relationships to the stories they relate" to (Kozloff, 1989:6), but more precisely its hierarchy by which Genette arranges them "bottom upwards as extradiegetic (narrative act external to any diegesis), intradiegetic or diegetic (events presented in the primary narrative), and metadiegetic (narrative embedded within the intradiegetic level)" (Pier, 2014:547).

While effective in its own right with respect to the textual format and film, the classification proposed by Genette does not quite fit with the 3DSC format; not only is the apex narration suggested to be aligned with the deputy ocularization of the viewer, but it is also experientiality-bound, a socio-cultural encounter that is consistently platial, first of all, namely due to the expectation by the uppermost agent that its target narratee is never abstract but actually situated in a 360º sphere.

From Deputy Ocularization in cVR to Platial Experientiality in 3DSC

Step to the Line (2017), a Defy Ventures virtual reality documentary, was produced by Oculus and is available on Meta Quest platforms in 2024 at a higher resolution. It was shot entirely on location at a maximum-security prison in California, and takes the audience inside a system of parallel lives, modulated by regret, painful and deeply hidden memories, violence,

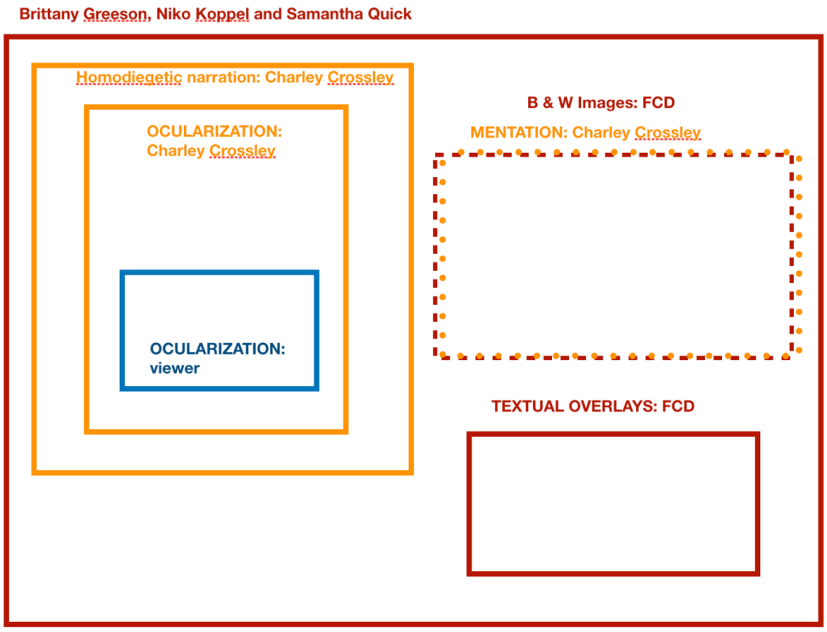


Figure 35: Narrative Structure of *NYT the Daily 360: Detroit Riots Remain Vivid After 50 Years*.

and an uncertain future. One is supposed to feel empathy and identify with any of the prisoners, but a rapid oscillation in perspective and a variable camera height, accompanied by an efficient voice-over, can be disorienting and may deduce that in 3DSC the spatial frame is inherently a non-oscillating platform.

While the narrative itself may predispose the viewer to some type of empathetic response, the depth of narrative engagement is largely dependent on whether one truly feels that imprisonment is a personal responsibility or if it is society's mind in which we operate. The shots outside the buildings in a secluded prison courtyard appear to be the most immersive of all. "Without clear self-other differentiation, we are almost certain to fail in our attempts to empathize" (Coplan and Goldie, 2011:16); it is precisely these solitary moments in 3D space, followed by close proximity to a crying instructor who had just heard a prisoner's narrative, that can touch one emotionally: one is no longer a recipient of this story on an abstract level, but is hearing it spatially, in immediate vicinity of a "natural" hypermodal narrative unit that only 3DSC can deliver. It is no wonder that the viewer may feel peaceful and even attracted to the kind, considering that some of these men are still violent.

Step to the Line offers immediacy in lieu of intimacy and hides it at the same time, providing the film is less about the place, but more about the narrative, even if the narrative becomes platial: everyone in attendance is guilty, not just the ones to have fallen through the cracks. The spatial extension of the surrounding objects with their **haptic in potential** are no longer the question of **spatial fidelity**, but rather than of **experiential fidelity**, *à la* Fludernik's "natural" narrative configuration, as seen in *The Starry Night* (2016).

The 3D aspect of the visual encounter *The Starry* Night, created by Brooklyn animator Mac Cauley, as part of Oculus' Mobile VR Jam competition, and based on an oil canvas painting by Vincent van Gogh, in 1889, extends the sunrise from the east-facing facade of the artist's bedroom window at Saint-Rémy-de-Provence asylum. The video is rather short, but immensely effective. It opens with a swoosh into a painting; as one enters the canvas frame, the frame dissipates, and one immediately becomes an actor in its story-space. In fact, using Chatman's story-space versus discourse-space dichotomy, it is appropriate to speak of blending, as story-space *is* discourse space here. The movement is slow enough as not to cause motion sickness but properly reorient oneself to the decelerated approach of van Gogh's bedroom. Yet, as if by magical cognitive shift occurs. As confirmed by the open coding data drawn from the viewers, the tension between classical narrative canons and experientiality is reduced to almost zero, due to a perfect geometrical calculus of the distribution of spatial objects, that one is very eager to touch, and the stereoscopic 360° technology itself: this is the viewers' house, his or her bedroom, his or her objects, an integral part of the viewer's storyworld (Fig.36). The emergent codes the phenomenon produces are also very telling: **perceptual experiential facet**, **accurate geospatial proxemics***,* and hCtA are anything but wired towards an episodic neuro-visceral immersion whose trigger is stringent on experientiality that is almost universal in so far as the most sacred place, one's bedroom, is concerned. The haptic is, perhaps, the most crucial element in sustaining a "natural" narrative

configuration. In the absence of it, the experientiality in 3DSC may be questioned, as is the case with *In the Presence of Animals*. It is the very promise of a potential ability to satisfy an urgent need to pet an approaching male leopard, the visual closeness of seeing him in distress,

Figure 36: *The Starry Night* (2016), directed by Mac Cauley, at 01:39

or the desire to embrace a lingering grizzly, all dispersed in stereoscopic 360° space, where the viewing position and proximity to the animals match the surroundings as if they were in real life, what makes the natural narrative situation distinctly immersive in 3DSC. Any codes that emerge out of the viewing experience, anchored in surging movement by the animals within the 6-DoF scheme such as **haptic urgency, spatial fidelity, immersive fidelity, and empathetic immersive situation**, are all but a reflection of the ever-increasing "platial experientiality". The immediate realization of what a tragic existence the humans would have, if the animals were to be extinct, is, thus, no longer abstract and emotionally distant but stems from the spatial attributes experientiality carries and the mental extensions of hCtA it triggers (in a strong desire to touch the animals), which properly would be defined as **immersive Tactuality**.

Spatial Extensions of Platial Experientiality in 3DSC

Both Low (2014) and Chattopadhyay (2014) assert that spatial orientation is a key, so does Alva Noë, the Professor of Philosophy at the University of California, Berkeley, who focus on perception and consciousness, as he sees "the visual field, rather, is made available by looking around... not all at once, but thanks to movements of our eyes and head and shifts of attention" (Noë, 2004:57, as cited in Caracciolo, 2014:172), which, in effect, is the very tracking edifice of 3-DoF that Cinematic VR narratives afford.

From a narratological angle, spatial orientation in each new spatial frame follows a similar pattern: "when a scene changes, the users are required to reinvent themselves in the new space and gain an understanding of where they are located" (Kukkakorpi and Pantti, 2020:3). The audience in such an equation and the centre of its emotional gravity are always ingrained in platial experientiality, which in itself is resistant to two-dimensionality. Thus, in *RYOT News, the Margins - Border Crossing* (2016) tells a heterodiegetic story of many immigrants who cross a scorched desert by scaling the border fence between Tijuana and San Diego. This allows the audience to bear witness and understand what it feels like to live within walking distance of the iron bars that separate the USA from Mexico. The immersive experience, the

documentary is supposed to trigger, is shaped by a strong narrative but its prowess is very stringent on perceptual facets and the understanding historical background. If the 'natural' condition, the affinity with the characters and the setting is weak, the 'platial experientiality' can be hardly separated from both the temporal aspects in the narrative and the accuracy of spatial extensions in the scene, neither of which is efficient on its own. The narrative is told in the third-person, as it is unknown when and if the journalist has been ever a witness to the story he tells. If the heterodiegetic narration in itself poses a question as to reliability with respect to its narrative distance, the lack of 3D format accentuates the conundrum even further. The succession of rapidly changing shots of which the one in the marketplace with many objects of very vibrant textures is very indicative (Fig.37), as it requires an extra processing time, something the audience is routinely denied. As a result, the **oversaturation of visual information** causes a **split in immersion and processing** as well as 'cognitive pause'. The story space under these conditions is constructed mentally, and less so experienced as a *de facto* encounter on site. While time is not the cardinal fulcrum of 3DSC narratives, its relevance to sequentiality and narrative levels is important.

Time as Omission, Summary, Acceleration in 3DSC

At the beginning of his *Time and Narrative* (1983), Paul Ricoeur, a celebrated French philosopher known for his blending of phenomenology with hermeneutics, poses a fundamental "question *quid enim est tempus*, that prompted Augustine's famous cry of perplexity in his *Confessions*: "what, then, is time? I know well enough what it is, provided

Figure 37: *The Margins - Border Crossing*, RYOT News (2016), at 00:35.

that nobody asks me; but if I am asked what it is and try to explain, I am baffled"" (Dowling, 2011:19). By focusing on and *The Magic Mountain,* Ricoeur explores Augustine's *Confessions* and Aristotle *Poetics* to establish that the concept of time becomes accessible to men "through a narrative mode, and narrative attains its full meaning" only when it becomes a prerequisite for temporal experience (Wickerson, 2017:3) since even the narrative representation of space cannot be separated from its representation of time (Gomel, 2014:26).

With respect to duration, Genette (1979) designates four types of speed in which time is conveyed: ellipsis (gapping), summary (abbreviated representation of events, where narrative time is shorter than story time), scene ("the pseudo-tape recording of characters' dialogue",

where narrative time equals story time), pause ("descriptive dwelling on a point in time in which action does not move forward", where story time stops), and a recent edition of stretch (deceleration in 3DSC), as its fifth category where "text time exceeds event time, as in filmic slow-motion" (Herman *et al.,* 2010:609).

Since cinema is edited elliptically, although cut and ellipsis are separated in cinema, with cut being a mere derivative of omission: "the manifestation of ellipsis as a process in a specific medium… more precisely, a cut may convey ellipsis, but it may simply represent a shift in space" (Chatman, 1980:75), cases where omission and cut merge are rare, but they do exist, such as in Michelangelo's film *La Notte* (1961), where cuts are deliberately used as serious gaps in chronology. Yet, the 360° cinematic preference for 'here and now' is not only fundamental to cVR but is it also enhanced by the inherent resentment with respect to the opposite: speeding up the events, where, the "directors often resort to gadgetry…[and] "montage-sequence" (Chatman, 1980:69), which cannot not be construed as an authentic summary. Summary in VR is most often conveyed as *acceleration* (speeding up events). Two examples are quite indicative of how many contemporary 360° 3D spherical films resort to the improper application of the technique: *Clouds Over Cidra* (2015) and *The Possible a Baloon Ride to Space* (2017), produced by the same VR company WITHIN.

Clouds Over Cidra creates a knock-out effect in narrative duration whereby an immersive experience is lost by virtue of imposition of next set of sequence to which the audience is not ready, either mentally or physically, since fast intercutting does not function well in a fully spherical video. The problem is in the fact that the film was apparently edited as if it was a flat 2D framed narrative, not a 360° video, hence, the narrating time was not matched to the **audiovisual cognitive time (AVCT)**, whereas in 360° milieu, the audiovisual cognitive time is longer than narrating time, at least the double of that, in so far as duration *perceived* versus duration experienced.

The voice-over flows on two audio tracks: a narrator as a translator and a narrator as a girl. The narrator-translator, presumably, a homodiegetic one, spoken in a voice of a twenty-six-year-old with a distorted accent, conveys the story in the present tense, thus, making the narrative effectively analyptical. Sometimes her comments also shift between the past and present, with oral achronies injected that may or may not correspond to the visual perspective. Apparently treated as a summary of the twelve-year old girl's life in Zaatari, the story has serious gaps as to how she had arrived in the camp to start with. In more cVR terms, the story has missing spatial frames construed as omission.

Conversely, *A Balloon Ride to Space*, shot by Zach Richter, follows the construction of a technologically advanced balloon that, when inflated, is as big as a football stadium and soars 100,000 feet above Earth. The owner of the company, World View, who makes the technology, is the main narrator who enters and exits the story-space. The emphasis of the film is on showing the production process of the balloon (to be embodied on the production site) as well as giving viewers a glimpse of what it would be like to fly in the hybrid of a spacecraft and a weather balloon. The visual narrative is comprised of a sequence of images that are edited in a typical elliptical manner. Except for the narrative strategy used, it predominantly relies on a number of accelerated frames (an exclusively audio-visual practice)

embedded in the summary, which is fundamentally a flawed narrative practice in Cinematic VR.

Impossible to attain in literary texts, 'acceleration' has found its heyday in immersive journalism. Be it *CNN VR London's Heathrow* (2017), a VR expose of an airport operating at about 99% capacity, or the *Race Home for Chinese New Year: the Daily 360 The New York Times* (2017), a rendering of the world's biggest annual human migration to Chinese hometowns for the Spring Festival, or *Everest VR: Journey to the Top of the World* (2020), to name a few, the disposition is towards compacting as much narrative information as possible to compensate for the constraints that current VR technology imposes on the viewer. But what is permissible and accepted is not necessarily effective, and the consequence for immersion is that acceleration heightens the fast change of shots, and vice versa: the fast change of shots heightens acceleration, and that, in turn, decreases immersion. In *CNN VR London's Heathrow*, post-produced exclusively in a staccato high-speed motion manner, the acceleration is thought to stress how many flights and how many people can go through the airport each day, but the message works intellectually; in terms of its immersive potential, the film resembles a photo montage in 360°, and not necessarily a Cinematic VR narrative. Whether the viewer is seated on the bonnet of a driving car, a rather eccentric geo-placement in cVR, or one may barely keep up with the text overlays and pictures going in and out of sync, the shots change too fast for the viewer to process each consecutive spatial frame.

Neither *Everest VR* nor *Race Home for Chinese New Year* employs acceleration to the exclusion of other aspects of duration. In the former, it causes the auricularization and ocularization split, where the narrative time of the voice-over of the lead homodiegetic narrator (recounted in present tense) is less than the narrative time of an event. In the latter, the experience is less immersive and more analytical in the manner of what may be rightly termed the Brechtian Alienation Effect, an emotionally removed and analytical appraisal of the setting, where the staccato high-speed movement of people resembles the production ecology of ants and termites in the pre-Covid-19 apocalypse. Regardless of the extent of acceleration used, the residual effect is virtually the same: 'acceleration' is not a native duration in Cinematic VR, perhaps due to the geospatial positioning of the audience in 3D space whose analogous experience is live theater, always processed as a scene in the present tense.

Pause and Scene in 3DSC

While the previously cited examples, are just a fraction of the illustration of durational aspects in immersive journalism, they are, nevertheless, indicative of ellipsis, stretch, and acceleration as being problematic in spherical space because they are inclined to defy the language around storytelling for the particular format since "360° film is not fixed, but, due to its social media and portable platform, is no longer defined by a rectangle [visual frame] but it is sequence of spheres moving in space along with its viewer" (Milk, 2017). The question remains as to whether movement itself has any bearing on freeze frames, when the narrative is bracketed by an extradiegetic voice-over or commentaries added to the visual frame.

Freeze frames ”act as a pause and a narrative device for a “pure description… when the film actually "stops"… [such as in] Joseph Mankiewicz's All About Eve” (Chatman, 1980:75), where in, in media res opening sequence during which Eve Harrington, the embodiment of the ruthless Hollywood, receives the best actress award, while Adisson DeWitt, a theater producer, reflects on the chain of the events that have led to the present moment. Because “unlike the verbal medium, film in its pure, unedited state, is absolutely tied to real time”, “cinema can only occur in the present time” (Chatman, 1980:75). When we look at an immersive journalism example *Mosul: Fight against ISIS* (2017), shot for BBC World News, we are promised an “extraordinary BBC footage that allows us to join the pilots of the Iraqi army as they fly over Mosul, fighting ISIS”. BBC journalists Joe Inwood and Nafiseh Kohnavard from BBC assure us “to witness the conflict, as it has never been seen before”. As callous as it may sound no empathy is triggered on the promise alone, neither did the expert interviews in the coding phase confirmed this. By the time, the narrative pause is introduced, the most of often cited reaction from the experts, although English was not their native tongue, was the well-known four-letter word commencing with ‘f’ unless, of course, the phrase “what’s the…” used proves to be an instance of immersive bodily engagement. There are moments when the instances of spatio-temporal immersion via flyover scenes over Mosul provide glimpses of embodied engagements, but they are quickly destroyed by acceleration frames: in fact, it becomes very hard to take the film about, perhaps, the most serious topic very seriously.

4.3. Summary of Research Findings at the Initial Coding Phase

The promise of Cinematic VR as the "ultimate empathy machine" is questioned due to the difficulties in assessing the subjective emotional experiences of the audience. A true empathy involves perspective-taking, affective matching, and self-other differentiation, something akin to Brecht's Alienation Effect, suggesting that critical engagement, rather than simple immersion, is needed to provoke empathy. But because this "alienation effect" is influenced by a cross-cultural framework and various ideological and perceptual factors, it may, in fact, hinder any possibility for empathy or sympathy; hence, the author of the dissertation does not agree with Fisher's (2017) distinction, where the idea of an "empathy machine" suggests a user's profound empathy for characters in cVR, while his concept of an "empathic actuality" highlights the cVR designer's portrayals in relation to the individuals in virtual reality. Instead, a more accurate way to describe the dynamics of empathetic feelings in cVR is through the succession of what the dissertation terms to be **empathetic stimuli**, which can vary in both duration and intensity.

‘Empathetic stimuli’ may echo some recent studies in neuroscience, which have suggested that the hippocampus shows neural activation even when individuals are only at the planning stage or mentally interacting with virtual spaces (Morie and McCallum, 2019); as a result, the importance of interactivity for immersive experiences may not be as significant. In its place, the Thesis introduces the phenomenon of ‘haptic Call to Action’ to characterize a strong desire to explore the implications of story sequences, which remains present even when individuals

lack interactive control over the characters' actions. Its close designation is 'immersive Tactuality', a strong haptic *desire* to touch virtual objects in space without the ability to move. Because hCtA can lead to an impulse to amend the situation, and despite the detachment inherent in cinematic experiences compared to real-life events, the presence of hCtA is a fundamental element of a compelling narrative, especially in discerning narratological categories conducive to fostering such a state in 3DSC. The difference between hCtA and Tactuality is ontological: the former is more of a cognitive act, while the latter is experienced viscerally.

With regards to key narratological categories, 'space' and 'perspective' emerge as pivotal to the narrative typology of 3DSC, with 'platial experientiality' being at the crux of the dynamic between the two, even when doubts about narrative reliability may exist in a heterodiegetic narrative situation, especially in its monoscopic cVR format. Both spatial orientation and platial experientiality also emphasize the viewer's historiographic background and cultural practices in influencing the immersive states.

From the previously illustrated data, it is clear that spatial frames in 3DSC are predominantly viewed as a chain of **summarized spatial frames**, loosely connected to temporality, but strongly related to place. Those who perceive spatial frames as 'place' tend to have a stronger mental involvement with the cVR environment and show more empathy towards the subjects. In terms of spatial extensions, 'Surveillant Story-Space' is strongly associated with the characteristics of place, if seen in a third-person perspective, whereas 'Participatory Story-Space' is seen as both place and space in a first-person perspective.

The role of space and perspective in 3DSC can furthermore redefine "cinematic chronotopes" in cVR, as opposed to those in literature and film, through its emphasis on duration. As stereoscopic VR closely mimics real-time presence, it differs from verbal storytelling where concepts like pause and scene better capture the immersive, live experience of the viewer in 3DSC. Because the stereoscopic format in VR is inherently in the present tense, "stretch", the dissertation has designated to be called a slowed down **audiovisual cognitive time**, becomes a natural state in cVR and 3DSC.

With respect to optical and narratorial perspective, the current narrative strategies in immersive journalism overuse the third-person point-of-view without assessing its effectiveness, and the visual quality, text overlays, and proxemics can negatively or positively affect immersion in 3DSC, depending on the multidimensional processes of cross-cultural conditioning, ideological and perceptual facets, and the audience's subjective emotional experience. During the unstructured interviews in the initial coding phase, it was observed that the complexity of voices distributed on various narrative layers affects immersion in cVR: a clearer and less saturated distribution of narrative layers enables easier processing of visual and narrative stimuli in the context of hCtA. When comparing VR experiences like *WORLD TOUR: A Jump VR Video* and *Refugees* to *In the Presence of Animals* and *The Recruit*, the former two struggle with conveying space and time effectively, as noted by respondent feedback data: *WORLD TOUR* lacks a tangible theme, while *Refugees* employs a confusing structure in narrative levels. In contrast, *In the Presence of Animals* excels in coherence

through seamless location transitions connected by an overarching theme, and *The Recruit* maintains coherence through a consistent spatial setting despite timing and location changes.

Consistency in the spatial setting alone does not guarantee coherence, as it is also influenced by the perspective through which the story is told, such as oscillating point of view. While narrativity, coherence, and empathy all play important roles in 3DSC, only coherence has the greatest impact on immersive states for the viewer and is strongly correlated with an increased sense of presence.

4.4. Re-focused Coding Phase: cVR and 3DSC artifacts

Re-focused coding is stringent upon attenuated theoretical sampling where the emerging concepts from the earlier stage of data analysis are checked against reality by sampling incidents that may challenge or elaborate its developing claims in order to direct future data collection all the way to saturation (Urquhart, 2016:787). Axial coding may be regarded as the first step, where the codes have a provisional character, and in the course of the analysis, they become more differentiated into "categories" (the grouping of instances such as events, processes, occurrences) that, in turn, are further assessed during the second step, "focused coding" (Böhm, 2004:271).

Focused coding, or otherwise 'selective' coding, in turn, is a parallel process to axial coding but at a higher level of abstraction to flesh out any categories that are incomplete and to synthesize large segments of data so that a selection is chosen with the most analytic power that captures a number of initial codes (Bryant and Charmaz, 2019:175-176). The goal of selective coding is to integrate the different categories that have been validated and mutually related during the axial coding phase into larger categories, and on the basis of their key elements to shape them into one cohesive theory (Kaiser and Presmeg, 2019:89). The process is carried out by "moving back and forth between the identification of similarities among and differences between emerging categories" (Willig, 2013:71).

4.4.1. Data Collection Methods at the Re-focused Coding Phase

The consecutive phase in coding with respect to the second research question as to 'space' and 'focalization' prospectively being the most significant narratological categories in 3DSC to affect the narratorial functions of a narratee (i.e. the audience/viewer) who is geospatially placed at the "bull's eye" of 3DSC and exists on the intradiegetic plane only was addressed by means of face-to-face, on-site "semi-structured narrative progressive comprehension interviews" were used right after the field tests, on-site IF questionnaires, field notes and memoing.

Semi-structure interviews can provide reliable qualitative data when used as a part of a mixed-method design, and they may include some open-ended questions, followed by quantitative data collection because as the study of the phenomena progresses, the purpose and the content of the interviews may also change (Gubrium, 2012:197), which was the

approach deployed in the dissertation to better understand which narratological categories were to be filtered for the theoretical coding phase.

The process had a two-tier progression. First, the node typology distilled during the initial coding phase was compressed; during the axial coding phase, the codes that were repetitive or less pertinent to the building of the narrative typology for 3DSC were eliminated. Out of 201 codes, only 157 were left to focus on for further analytical scrutiny. Because axial coding, being an advanced stage of initial coding that produces concepts to fit the data, connects categories by relating them to subcategories, using a coding paradigm as an axis around which the analyst delineates relationships and specifies the dimensions of each category in order to "become the core category of the emerging theory" (Bryant and Charmaz, 2019:650), the immediate task was to zone in on those codes that were to be merged as an axis (labeled as a single signifier) and to set aside those left for theoretical sampling. Thus, the **summarized spatial frames container** (originally a part of the narrative time cluster) had been moved to the 'space' category, but a set of **neuro-visceral signifiers** were crossed out and saved for review.

At the selective coding pass during the re-focused coding phase, the axes were either merged or refined as groups to better reflect the gist of a particular narratological category. Thus, the suggested references to **deputy active focalizer** and **deputy participant immersive**, which could give rise to a mere category "deputy focalizer" as the *descriptive label* (Strauss and Corbin 1990:61, as cited in Willig, 2013) at the axial coding phase, had been redefined at a higher level of abstraction, during the selective focused stage as *'Non-CtA-Presence'*. Out of 157 codes, only 65 were left to focus on for further analytical scrutiny, albeit, by using the principle of 'theoretical sampling', some earlier codes had ben revisited. Then, the constant comparative analysis was substantiated by adding new, more perspicacious codes by means of sampling the published Cinematic VR samples and personal 3DSC prototypes, such as 360° stereoscopic films *Ascenseur Pour L'échafaud 2014* (2017), *Departure* (2018), and *New Force* (2018). Thus, a very important category *'*locus', a form of focalization exclusive to 3DSC environment, is introduced and tested out in the field, followed by IF questionnaires to test various immersive states, while those codes that are not directly linked to space and perspective are further merged and reconceptualized at a higher level of abstraction.

The coded data from the creative expert interviews on the site were incorporated into the analysis for further refinement in the theoretical coding phase using tape-recorded sessions with the permission of the participants and transcribed as field notes and memos that were later entered into the Atlas.TI qualitative data analysis program to finetune the initial typology node tree.

4.4.2. Measurement

Assessing Immersive State in Second-Person Narratives

Likert Scale was used to reconfirm the data from the first stage of the field experiments, termed as the **Ocularization Field Test** (OFT), and assesses the IF in each major

narratological concept and those related to focalization in 3DSC. The main measures in the experiment were the subjective level of immersion from 34 respondents as measured by 28 questions for each narratological category, using well-known published cVR samples, done by other filmmakers, and three of my own 3DSC films, where, in each of them, a protagonist addresses the viewer directly.

Assessing Immersive State in Audionarratology

Likert Scale was used to extend the data from the second stage of the field experiments, termed as the **Auricularization Field Test** (AFT), and assesses the Immersive Factor in each major narratological concept and those related to auditory perspective in 3DSC, where, in each of them, a particular auditory point-of-view (**negative locus, internal locus, external locus, reverse internal locus**) is gaged against the effects of auditory prowess. The main measures in the experiment were the subjective level of immersion from 38 respondents as measured by 13 questions for each narratological category. The 3DSC films were approximately 5 to 10 minutes long, and the participants could control the flow of the narrative information via 360° rotation. The questions were framed to evaluate immersion against a selection of specific audionarratological categories such as 'ludic sound' (narrative space shaped by virtual reality sounds), 'auditory orientation', 'complication' and 'resolution' and completed with a 'coda' (personal narratives touching upon highly empathetic issues), and 'auricularization' on different narrative layers (selected sampling of sound on intra- and extradiegetic levels).

4.4.3. Results

The findings from the re-focused coding phase (Appendix J) show that the immersive properties of 'reverse internal locus' (RIL), as a narrative technique, promote the perception that the Cinematic VR experience is fully real. This helps to break down the barriers between virtual reality and the viewer, especially considering the dynamic role played by the second-person perspective. The immersive experience in 3DSC, in which viewers feel they are a part of the action, is not bestowed by any technological device but is reconstructed via a mere acceptance that the second-person narration is a natural habitat of 360º stereoscopic spherical cinema (Ceplitis, 2018). The AFT, in turn, tests the immersive power of audionarratological elements in 3DSC, making it one of the first of its kind to challenge the traditional directorial sound cues of a time-based cinema. It also utilizes an ambisonic soundscape, which makes use of focalization factors in the medium, whose primary attribute is space and navigation. What is clearly visible in this study is that sound behaves differently in 3DSC. The expectation of narrativity is questioned in relation to its textual, semiotic, and acoustic contributions to the purpose of the narrative where the "voice", which is central to the act of narrating, may distract the audience from immersive experiences and compete with the narrator's, while the first-person perspective is problematic. Finally, the soundtrack is more immersive than an off-screen narration: in traditional cinema, the narration is a part of the diegesis, but in 3DSC, it

neutralizes the sense of presence, since an extra-diegetic narrator, while widely used, is not a natural inhabitant of 360º stereoscopic film (Ceplitis, 2019).

4.5. Analysis of Research Findings at the Re-focused Coding Phase

The following analysis of the Re-Focused Coding phase expounds on the complexities and dynamics of homodiegetic and heterodiegetic narrations and how they co-function on narrative levels in 3DSC environments. It also identifies the various types of 'loci' along the axis of self-other differentiation and their effects on 'platial experientiality.' The breakdown of the narratological components that have emerged from this coding phase is given in the table below.

Table 5: Narratorial Categories at Re-Focused Coding Phase.

Compared Categories	Key Aspects
Perspective in Platial Experientiality	• geopositioning: the deputy focalizer perspective is crucial in 3DSC, as it carries both 'optical and attitudinal points of view'; • self-other differentiation enhances perceptual and experiential facets, linking perspective to experientiality, as demonstrated in *Africa's Pristine Delta: The Okavango Experience* (2018), where the deputy focalizer status and rapid changes in spatial frames affect the audience's engagement; • oscillation in perspective: while common in cVR, it can negatively impact neuro-visceral immersion if not properly squared against narration, as seen in *Episode V: Into the Fire* (2016) where constant shifts in perspective can be disorienting for the viewer.
Oscillating Focalization and Ocularization on Narrative Levels	• **subaltern narrators** modify the homodiegetic narrations, creating a layered narrative structure; • 'spatial frames' and 'proxemics': accurate proxemics in spatial frames help to create a cohesive story despite oscillation in narration; • 'participatory story-space' allows the viewer to shift between different perspectives such as **RIL**, **REL**, and **aRIL**; • **experiential fidelity** necessitates the viewer to feel as if they are part of the story; • oscillation is commonly observed between a singular homodiegetic narrator and a plural "we-narrative" voice; • public voice in the form of "we-narrative" can represent a collective storytelling, placing the narrator outside their representation;

	• 'extradiegetic-homodiegetic narration': Labarde's narration in *Weekend Soldiers* (2019) can be classified as extradiegetic-homodiegetic, where the narrator is both outside and inside the story; • **oscillating ocularization** can lead to a stronger awareness of demarcation on narrative levels but may compromise immersion if not managed effectively; • narrative voice and immersion: the regulation of narrative voice is crucial to sustain immersion since the current filmmaking techniques heavily deploy the oscillation in perspective and in narration, which reduce immersive states in split focalizations.
Oscillating Narration in 3DSC	• the peculiarity of narration in the 3DSC milieu involves the deputy focalizer's role in balancing the 'surveillant story-space' and the 'participatory story-space', with a neuro-visceral immersion achieved only when framed by an 'apex' narrator.
Homodiegetic Narration in 3DSC Revisited	• 'deputy ocularization', whereby the audience is addressed directly as 'you', may deliver a neuro-visceral state as long as the optical focalization remains distinct from the narrator's; • "offline" and "online mentations" (thought processes) in spatial frames play a crucial role in creating immersive states and cognitive disorientation in the audience such as when there are mismatches between the narrator's mentation and the audience's experience, disorientation may occur. For instance, in *My Brother's Keeper* (2017), the use of multiple voice-overs and non-linear sequences can lead to disorientation in focalization; • self-other differentiation and homodiegetic narration: the effectiveness of *Surviving 9/11* (2021) lies in striking a balance between Guzman-McMillan's homodiegetic tale and the audience's freedom to explore the spatial frames irrespective of her vocal presence and guidance.
The stasis of the second-person narration in 3DSC: Locus	• **negative locus** (NL): delivered by a passive deputy focalizer, with no access to the viewer's thoughts; • **reverse external locus** (REL): addresses the audience with a general "you," where the narrator is aware of the viewer's presence but has no access to its thoughts; • **reverse internal locus** (RIL): addresses the audience with a specific "you," where the narrator is fully aware of the viewer's presence and is an actant in the narrative;

	• **external locus** (EL): ocularization by a heterodiegetic narrator who is not present at the scene and does not access the characters' consciousness; • **internal locus** (IL): semi-immersive, depending on the viewing platform, with oscillation between deputy focalizer and REL; • Genettian 'zero focalization': not applicable in 3DSC due to the lack of access to the cVR viewer's thoughts; • 'locus': a fusion of fixed physical position and focalization, inherent to 3DSC to describe the unique narrative situations.
From Locus to Spear Ocularization	• the destruction of the transcendent space between the film screen and the audience exists in 3DSC; • the viewer is constantly intradiegetic within the story space, regardless of the second-person schematics applied; • triangulation in 3DSC with the use of extradiegetic narration, second-person optical perspective and deputy ocularization enhances a sense of immersion; • 'spatial fidelity': the natural size and proximity of the setting in relation as they would appear in real life enhance immersion; • **spear focalizer**: the main extradiegetic focalizer who separates the spatiotemporal positions from the objects seen 'in focus' or at the 'center of attention through the use of extradiegetic narration by narrators who are not physically present at the scene but appear to be homodiegetic within the oscillating spatial frames as in *One Strange Rock* (2018).
Apex Narration in 3DSC	• narrative authority: neither the filmic narrator nor the extradiegetic-heterodiegetic narrator can be regarded as the narrative authority in *Crossing the Line* (2018); if the implied author brackets the narrative authority or a narratorial breach on the narrative levels exists, it warrants a different designation to compensate for the uncertainty as to what kind of narrator frames the narrative, thus: apex narration; • **apex narrator** resolves such a conflict by embodying multiple narrators and perspectives to create a more cohesive narrative; • split between ocularization (optical perspective) and auricularization (auditory perspective) in 360° films leads to potential dissonance and the need for an integrated narrative voice; • **narrative relay span***:* multiple narrators contribute to the narrative, each from their own perspective, to create a more comprehensive immersive experience.

Narrative Voice in 3DSC Revisited	• "situatedness" highlights the importance of the viewers' mental and historic sets in shaping their experience of the narrative; • 'voice' can distract from achieving immersive states and soundtrack is more immersive than off-screen narration • 'narrative distance' and **neuro-visceral immersion**: psychological and ideological facets strongly affect the viewer's sense of spatial presence and immersive states; • "multiperspectivity" on narrative layers is common in 3DSC; while providing diverse perspectives and, at times, fostering a deeper connection with the narrative, its metadiegetic texture may negatively affect immersion; • coherence and complexity of multiperspectivity sets forth the dominance of **locus** and reorientation through voice with its own vector for 'platial experientiality' stringent upon situatedness and auricularization of the apex viewer.

Perspective in Platial Experientiality

Self-other differentiation is crucial in connecting with characters dispersed in spatial frames. Its visual reference of geopositioning is that of a deputy focalizer, most of the time, and as such, apart from the optical point of view, it carries various levels of attitudinal point of view, expressions of personal philosophy, and ideology.

That is, on its fundamental level, perspective is optical, "created by filmic techniques…as one means of visual communication between the filmmaker and the spectator, [by the three types of optical point of view], the omnipresent, omniscient narrator point of view, the invisible witness perspective, and the character-glance", while its "attitudinal point of view…based on the political, historical, religious, philosophical, ideological perceptions and even gender-biased views of the filmmaker as an auteur in relation to the characters and the happenings within the diegesis" (Andrews, 2014:10) contributes to the interpretation of the former. The 3DSC environment in this respect is no different, but with a nuanced and important feature: self-other differentiation in the processes of geospatial orientation significantly enhances perceptual and experiential facets, whereby perspective is permanently linked with experientiality. Thus, in *Africa's Pristine Delta: The Okavango Experience* (2018), as recounted by Steve Boyes, a South African conservation biologist, who leads a multidisciplinary expedition through the Okavango River Basin to collect data in order to suggest strategies to conserve the delta for the animals and for one million people who rely on it, the deputy focalizer status is set from the start.

The opening shot starts with a little bird sitting in what appears to be a large pool. As Steve Boyes talks about his experience, the placement of a deputy focalizer seems a bit strange: at times, the viewer feels in their natural habitat (when a lioness comes up), but at other times, when the camera is higher or lower than normal, it feels as if one is in the trenches, surrounded by animals. This makes it difficult to sustain any cognitive or emotional

engagement. The sequence of spatial frames (Fig.38) changes very quickly, and, in conjunction with an observer's position, looking down from a bird's eye view, then shifting back into a boat in the first-person perspective as a participant of the expedition, then again, as a deputy focalizer, as if watching from afar, and finally back, as a part of the team standing next to Steve Boyes who explains the expedition, is by no means helpful in establishing a particular optical point of reference. Whenever the ideological aspect is added to the equation,

Figure 38: *Africa's Pristine Delta: The Okavango Experience*, National Geographic (2018). Oscillation in perspective: Deputy Focalizer, "trench" point of view, the first-person perspective, and active participant.

even in the presence of natural surroundings with the speaker on the left or right, at the appropriate height and distance, self-differentiation controls the flow of the narrative and the depth of engagement. One of the creative experts who happened to be a former Ukrainian military combatant, after having watched the VR episode, had noted:

> "I had my own sense of time. I felt as if being there when all the actions were within my field of vision, in front of me, and I did not need to turn the head. Changing shots too soon was not a pleasant experience. I loved the fireplace scene; it reminded me of my military bootcamp days, all the camaraderie we had…fireplace, the sense of warmth in my childhood. I did not care for the talker, I really wanted him to be off" (Field and Code Note # 89)

The **optical and narratorial dissonance**, which the expert had apparently experienced, can be influenced by the oscillating aspects of perspective many Cinematic VR films are constructed with, but it is not sufficient on its own to negatively affect neuro-visceral immersion. One explanation is that oscillation, while abnormal as a narrative rhetoric in 3DSC, is deployed as the extension of platial experientiality since it is space that orientates narration, and not the other way around. Absent of narration, oscillation in perspective, contained within the **oscillation ocularization** (optical focalization) as experienced by the audience may negatively affect immersion and confuse the audience. Thus, in the *Episode V: Into the Fire* (2016) from the *Invisible VR* miniseries, produced by Doug Liman, the director of *The Bourne Identity* (2002) and *Edge* (2015), the story revolves around the Ashlands, a mysterious New York elite family that had lived in relative ambiguity until its patriarch died, and which had left altruistic granddaughter Tatiana to take over the family empire in opposition to her dissenting uncle Gordon and a burgeoning. In this particular episode, Tatiana and her boyfriend Grey are on the run from Gordon and his men.

The opening shots of the apartment where Tatiana and Grey initiate their escape are from a low angle camera position, a rather awkward geospatial position (Fig. 39). It is not quite clear whether the audience in such a close proximity is expected to be a witness or a participant in the ordeal. When transposed to the exterior, the audience's ocularization shifts between being a deputy focalizer in 'participatory story-space' (more of an active witness) and being one in 'surveillant story-space' as a mere observer, colored by a strong specter of self-other differentiation. Whether the oscillating ocularization is unescapable in the 3DSC narratives in the future, albeit interesting on its own as the angles of viewing are rewinded back (looped in time) from different locations (Fig.40), it remains to be seen. But what is clear from then onset

Figure 39: *Invisible - Episode V: Into the Fire*, 30 Ninjas (2016), at 01:25.

is that self–other differentiation does not bode well with oscillation in perspective, especially in optical one: on its own, oscillation in perspective and narration can be effective when used in traditional format but in 360° sphere is significantly altered by the quirks of narrative voice, a more detailed dynamic of which is expounded on further.

Oscillating Narration in 3DSC

Oscillating ocularization must then be somehow tied to voice as the regulating agency in order to sustain the sense of presence for long periods of time, at least for six minutes, as each episode of *Invisible VR* runs. But in practice, current filmmaking techniques, rooted in orthodox practices, compound the reduction in immersion because they rely heavily not only on oscillation in perspective but also on oscillation in narration. The peculiarity of narration in the 3DSC milieu is most vivid in the anticipation of a deputy focalizer to inhibit the surveillant story-space only. Notwithstanding the spectator's innate propensity to embody a

Figure 40: *Invisible - Episode V: Into the Fire*, at 02:20. Oscillating Ocularization: Deputy Focalizer in Participatory Story-Space (above) switches to being one in Surveillant Story-Space (shot below).

witness, its deputy ocularization as a rhetorical agency is also present in the participatory story-space, even though no narrative level is being transgressed. While the latter is expected to support a willing participant, **an optical and narratorial synchresis**[39] (which would be a desired effect with respect to immersion) rarely occurs when extra- or homodiegetic narration oscillates. Despite the friction, when oscillation is framed by an 'apex narrator', an immersive

[39]*Synchresis*: a spontaneous and irresistible weld produced between a particular sound event and a particular visual event when they occur at the same time, the term advanced by Michel Chion in his *Audio-Vision: Sound on Screen* (2019).

state may ensue. But to properly understand the 'apex' regulatory mechanism, it is necessary first to address the varieties of second-person narration as they appear in 3DSC.

The stasis of the second-person narration in 3DSC: locus

What once has been sparingly used as narrative device in cinema, be it *Peeping Tom* (1960), *Dark Passage* (1947), or *Lady in the Lake* (1946), appears to have a strong comeback in Cinematic VR; *the Leader Dog* (2019), *Nowhere: A cinematic virtual reality experience* (2017), *First Impressions: a virtual experience of the first year of life* (2017), and *the Hydreous* (2019) are just a few amongst many 3DSC examples where the protagonist talks to audience (deputy focalizer) or the implicit viewer (implied audience) directly. Partially, the reservation in use of the second-person narrative situation in classical cinema may be attributed to the "cutting-off performed by the frame" (Chatman, 1980:96), a technique that separates the "discourse-space" (a black void from the screen) from "story-space" (implicit and explicit), if Chatman's typology is considered. In 3DSC, on the other hand, story-space *is* discourse-space, and not a separate spatio-temporal unit, processed as internal focalization addressed by 'you'. In this regard, Ceplitis (2018) draws attention to Mary Frances Hopkins' and Leon Perkins' article *Second Person Point of View in Narrative* (1981) that characterizes the narrative "you" as ""an actant by definition" and therefore "internal to the story" (whereas the addressee in most third-person narratives is external to the story)" (Fludernik, 1994:285).

Fludernik (1994:285), in the framework of 3DSC films, presents rare but straightforward cases of the second-person narration where we see "plural forms of narrative "person" [to exit] both in the homo - and the heterodiegetic realms [because] we learn nothing explicit about the narratee as such… we do not know what he thinks of these events as he is told them", all the while he takes part in the events recounted to him. Such an inherent capacity of 'you' to address a narratee as well as denoting a fictional protagonist, as it accommodates "a variety of "you's" and a variety of "I's," and a combination of these [moving] along and across another boundary line, that between the discourse and the story" (Fludernik, 1994:286-288), makes the second-person narration a natural habitat of 3DSC, in what, Fludernik (1994) dubs to be a subjunctive mode of narration (Ceplitis, 2018). But to speak of the second-person narration in the traditional sense, it would be a misnomer, since the first-person intradiegetic optical perspective here is at odds with the extradiegetic discourse. It would also be inappropriate to label as a second-person deputy ocularization, a purely visual look found in *Fifty Shades Darker: The Masquerade Ball* (2017) (Fig.41) where the elegant masked ball that takes place at the Grey family's mansion invites the audience to participate but with no access to the viewer's thoughts Neither is the schemata of the *First-Ever 3D VR Filmed in Space: One strange Rock* (2018) (Fig.42) may be boxed into the second-person ocularization and narration, which, in turn, is strongly present in *The Recruit- R U In* (2018) (Fig.43), an immersive 3DSC experience, directed by the former creative director for Digital Domain David Rosenbaum, that puts the audience in the seat of a second-person addressee who is interviewed for an opening in the secretive world of a high-level, technologically sophisticated agency, presumably CIA. The office where the interview is conducted is fraught with **skewed proxemics** and tilt shift effect, but it does not in any way diminish the

Figure 41: *Fifty Shades Darker: The Masquerade Ball,* 5th Wall Agency (2017), showing Christian Grey and Anastasia Steele at the Grey family mansion, at 02:15.

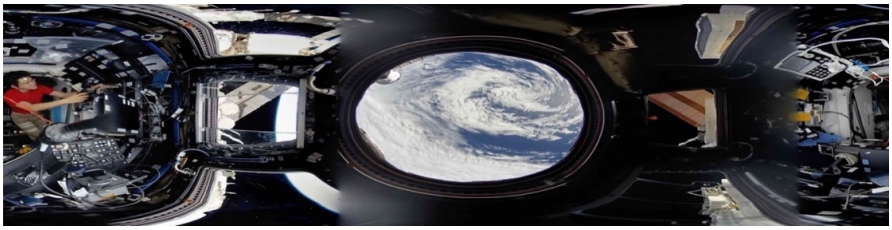


Figure 42: *First-Ever 3D VR Filmed in Space: One Strange Rock*, National Geographic (2018), showing the International Space Station interior, at 01:48.

cohesive and coherent application of the second-person schemata, where the viewer is properly addressed as 'you' and acknowledged his first-person optical experience (Fig.43).

Figure 43: *The Recruit- R U In*, MetaverseVR (2018), at 01:10.

To properly frame the fluctuation in the second-person narrative use in 3DSC in conjunction with the first-person ocularization, a new term is needed, a modification of Fludernik's (1994) subjunctive mode of narration, which dissertation designate to be **locus**, the fusion of 'loci' (physical position) and focalization (perspective), for, in 3DSC, focalization is an inherently spatial attribute. If strictly conceived in Genette's terms, 'locus' is mostly an optical device: Genette had insisted that although narrative was solely the product of an act of narration, in film it opens new avenues for narrative research, for film cannot represent thought, "or, when it does, it has to resort to language to express it" (Fludernik, 2009:102). In other words, the crucial difference between the Genettian 'who sees' in

literature and film as opposed to that in 3DSC, is that in the latter it can be best expressed with 'who sees from which loci?', intradiegetically. To support the proposition, the author of the dissertation had conducted a case study where the five targets of the set of loci have been distributed along their immersive capacities (Ceplitis, 2018) in order to be used in subsequent theoretical coding phase with his original 3DSC prototypes (**Table *6***).

Negative Locus (NL). This type of ocularization is delivered by a passive deputy focalizer, modified from Caracciolo's (2011:122) model, the one whose "embodiment is mediated by a persona (typically an anonymous visitor, or traveler), who has access to the fictional world without being a character of the story". The connotation 'negative' is proposed by the dissertation, since the viewer, as a deputy focalizer, in focalized by no one: in literature, a deputy focalizer is still narrated and focalized by an extradiegetic narrator and/or the implied

Table 6: Set of Loci in 3DSC.

Negative Locus	**External Locus**	**Internal Locus**	**Reverse External Locus** *(addressed as implied audience)*	**Reverse Internal Locus** *(addressed as specific 'you')*
Immersive	*Non-Immersive*	*Semi-Immersive*	*Immersive*	*Immersive*

author; in 3DSC, the real author may focalize only hypothetically as he/she has no access to any information regarding the implied viewer or a deputy focalizer (Ceplitis, 2018) such as in *Fifty Shades Darker: The Masquerade Ball* (2017) or *The Leader Dog* (2019) where the geospatial position is that of a reclusive bystander witnessing the events from at least six feet. In either film, negative locus is alternating with the second-person a second-person ocularization. Furthermore, it is important to note that the Genettian zero focalization is not considered in 3DSC, since an omniscient narrator, who has unlimited access to all the internal thoughts of all the characters and to past and future events (Genette, 1983:208), is mostly a literary device, which is fairly deficient in VR settings due to having no access to the thoughts of a viewer who is part of a diegetic story-space.

External Locus (EL). Ocularization by a heterodiegetic narrator, the one who is not present at the scene but reports as if the story was told in the third-person, controlled by the perspective of a narrator who possesses no capability for accessing the characters' consciousnesses (or does not communicate it) (Schmid, 2010:92). In classical films an "'objective' or 'behaviorist' narrative" is represented by either an *off-screen narrator*, also *voice-over narrator*, an unseen narrator's voice uttering narrative statements (narration, description, comments) (Jahn, 2021) but when applied to 3DSC, it presents a non-immersive narrative situation, for the narrator is outside the diegetic space where the story takes place. A typical instance of external locus can be found in many VR documentaries, particularly the ones produced by New York Times virtual reality division (NYT VR) or VR-VICE such as *10 Shots Across the Border* (2016) by Ben Roffee, which tells the story of the killing of a 16-year old Mexican, Jose Antonio Elena Rodriguez, at the border between Mexico and the United States, most precisely at the border fence that divides the two cities of Nogales, to

raise many ethical, jurisdictional and philosophical questions. Narrated by Elias E. Lopes, the film begins with a flyover of Nogales and then a moving shot through the city streets on the Mexican side; he is never present at the location and, thus, he focalizes externally.

Internal Locus (IL). In the case of internal focalization in Cinematic VR, it is semi-immersive depending on whether the content is viewed on desktop computers or in VR glasses. The reason why internal locus is still a semi-immersive instance, even when HMD is used, is due to the shifting levels of immersion when a viewer constantly switches between 'consciousness-attribution' and 'consciousness-enactment': consciousness-attribution involves the adoption of a third-person perspective, seeing or imagining the characters "from the outside—just as we see real people from the outside" (Caracciolo, 2014:118) and consciousness-enactment rests on the viewer's experiential backgrounds to understand another characters' experience" (Ryan and Thon, 2014:235); it is a demanding mental process required from a viewer, intensified by following a story, rather than 'experiencing' it, which makes immersion incomplete and/ or patchy (Ceplitis, 2018). For instance, in *The Click Effect* (2016) by Sandy Smolan of the New York Times VR division, which documents the "click" communication of dolphins and sperm whales one hundred feet below the ocean's surface, the audience follows marine researchers Buyle and Schnöller whose voice narrate the picture. When they do appear in front of the camera, the narrated voices function as a voice-over; in no time do they ever speak to the camera, which makes *The Click Effect* a perfect reflector-mode narration, but when the film is viewed on desktop or portable tablets, there is no a passively-interactive deputy focalizer: the experience is non-immersive (Ceplitis, 2018).

Reverse External Locus (REL) and **Reverse Internal Locus (RIL**). Both types of loci are suggested to be attributed to an exclusively 3DSC settings where the audience is addressed in the second-person with "general 'you'" (REL) and specific 'you' (RIL). In REL, a viewer is the implied audience present at the scene. The narration can be visual, as textual overlays, or a voice-over, or a combination of all, as seen in *6x9: A Virtual Experience of Solitary Confinement* (2016) by Guardian VR.

The film begins as a figurative narration, where a third-person 'reflector' character addresses a viewer (in the second person as "you") inside the cell: "Welcome to your cell. You are going to be here for 23 hours a day." Whether the speaker is a jail officer, another cell mate, or a voice in the viewer's head, is unclear. The addressees switch and vary from officers to other cellmates in what appears to be an explicit multiperspectivity: sometimes the picture is narrated to a viewer, and other times, to someone else in the prison. Eventually, it returns to the first speaker ("after a while, things start to slip"), but then suddenly, the first-person narrator becomes another first-person narrator. There are a few homodiegetic narrators who tell their own individual stories; they all talk, scream, shout, bang, and eventually black out. Finally, when things return to normal, the heterodiegetic narrator (a psychiatrist) speaks up, who might or might not be the implied author of the encounter. Under REL, a narrator or the implied author is unaware or has no access to the viewer's thoughts or presence in 360° virtual space (Ceplitis, 2018). By contrast, **reverse internal locus**, an exclusive 3DSC form of focalization addresses the audience with "specific 'you'". Under RIL, a narrator or the implied author, while having no access to the viewer's thoughts, is fully aware of the

audience's presence, placed in the narrative context and in the physical world of which he/she is an undeniable actant. Narrative instances where RIL is used are deemed to be the most immersive of all (Ceplitis, 2018). For instance, in *Fifty Shades Darker: The Masquerade Ball* and *The Leader Dog* (2019), as mentioned earlier, negative locus alternates with RIL and REL, respectively. In *The Leader Dog*, the story is that of a homodiegetic narrator (Jerome Serres), a musher since 2009, who travels 300 kilometers across the Alps mountains to the challenge of one the hardest sled dogs' race of the year. He speaks in configuration of REL, addressing the viewer in the second person, in general 'you'. Although there is a translator present between the intradiegetic and extradiegetic levels (a male voice outside the embedded story-space), the constant oscillation between being a deputy focalizer and an active participant through RIL does not necessarily add anything to the sense of presence. In fact, it creates disruptions in coherence.

In *Fifty Shades Darker: The Masquerade Ball*, in turn, the deputy focalizer, while spatially participating in the ball, is not one of the invitees, initially, but once he is inside the mansion, he is acknowledged by the ballers coming up in RIL configuration, and then reverting back again to negative locus in the finishing shot in which a couple disappears upstairs, roughly ten meters away. The physical and optical distance from the couple is telling: in spite of being one of the invitees, the viewer will never belong to the upper-class kind. One must add here, however, that although RIL is active in *Fifty Shades Darker*, it is generally less effective than the one in *New Force* (2018), the 3DSC prototype shot by the author of the dissertation for re-focused coding to combine second-person perspective and spatial presence. It directly addresses the audience within the narrative while engaging them in the political discourse of connivance.

The film is set in the cold and stark setting of a "novostroika" (working class Soviet era buildings) in Imanta, where a young girl, wandering through the lifeless concrete corridors, becomes entangled with a charismatic yet unsettling young man. The initial scenes are framed through her perspective, as her curiosity leads her deeper into the labyrinth of the building, away from her family's safety but as the narrative transpires, the focalization shifts—first subtly, then more dramatically—towards the man, capturing his calculating gaze as he seduces and ultimately violates her. The film's unsettling pre-climax comes when the man looks directly at the audience (Fig.44), his piercing gaze breaking the fourth wall, accusing the viewer. This moment marks the rich realization of RIL, where the audience is no longer a passive observer but is implicated, forced to confront their own complicity. The allusion here is clear: by supporting neoliberal policies that prioritize profit over people, the viewer is complicit in the systemic forces that enable such violence, mirroring the girl's tragic fate.

Finally, one must add that there is a designated state, called "aRIL", which is a betwixt state between REL and RIL, which is linked to auricularization in 3DSC.

Figure 44: *New Force* (2018), directed by Aigars Ceplitis, at 01:48.

Oscillating Focalization and Ocularization on Narrative Levels

Home Sweet Home: This is why you should never abandon your parents (2020) by the RT 360 team, in partnership with Starost v Radost (which may be translated as Happy Elderly Age), a charity fund, brings the viewer into one of the nursing homes in the Moscow region to witness personal accounts of pensioners who feel very lonely and abandoned. Left on their own, these elders often do not get to talk to anyone throughout their whole day, except for themselves.

Their homodiegetic narratives oscillate, and, although their lodgings change, due to the **synchrony of narrative setting and spatial frames**, the overarching narration sustains the impression of a cohesive tale. The heterodiegetic female narrator, in the opening shot, addresses the implied narratee somewhat specifically, in a betwixt state (aRIL), the one between REL and RIL, and linked to auricularization in 3DSC. The different state between the two is in enunciation: REL is mostly extradiegetic, homodiegetic, or heterodiegetic on an intradiegetic level in narration, the second-person with a general 'you', whereas RIL talks to the viewer specifically; in the intermediate state, the specific address is narration only, the intradiegetic audience is implied ("look around this is where you will spend away from your loved one…now your place is here, at the nursing home") without the narrator pinpointing it in space. While the audience, fixed in in the middle of a nursing home, is forced to look around in response to the heterodiegetic narrator, the narration itself is tied to *oscillating spatial frames*, one of the reasons why jumping from one exterior to another does not feel so jarring. In fact, *Home Sweet Home* is actually one of the most effective 3DSC experiences due to a very good spatial configuration against the intersection of accurate proxemics and REL. When an older war veteran Fyodor Barabanov recollects his past in a stream of consciousness, the perspective of the witnessing viewer shifts between internal locus, REL, aRIL, and a deputy ocularization, depending on a spatial frame one is in. At times, though, one feels as if being a journalist, an active deputy focalizer, playing chess with the Fyodor in a **participatory story-space**, saturated in **experiential fidelity** (Fig.45). All narratives, with the exception of extradiegetic *apex* and female heterodiegetic **subaltern narrators**, oscillate;

it is the enfolded **spatial frames summarized container** controlled by the latter type of narrator preserves coherence. The varied 'subaltern' narrators who translate the homodiegetic narrations of *Home Sweet Home* are outside the immediate diegetic environment. Such a layering strategy is not unusual. The dissertation would frame it in terms of oscillating focalization on narrative levels.

In *The Weekend Soldiers* (2019) by Targo, for instance, the narrative constitution seems to be similar to that of *Home Sweet Home*, but what is different is the amount of homodiegesis permitted and the extent by it may give consideration to the uppermost, 'apex narration'. The main homodiegetic narrator Renaud Labarde, a police officer from the town of Liège in Belgium, is a "weekend soldier". He spends his Sundays dressed up as a WWII American soldier as if still living in 1944, in order to reenact the last German offensive of the Second World War, the Battle of the Bulge. He is a part of 200 volunteers who come from Benelux countries armed with the wartime weapons, bazookas, tents and trucks. For him, the re-enactment is both a mode to connect to the fading past and to pay a tribute to the people who liberated Europe. His intradiegetic presence is controlled by his voice-over ("When we're re-enacting, we know we're not risking anything. Back then, they didn't know if they would return back home. We can re-enact the scene, but we could never re-enact how they'd feel"), whereby he is not visible at that time of his homodiegetic narration, as opposed to other times when Labarde talks directly to the camera in disposition of REL. More accurately, his homodiegetic framework is far more complex; his narration oscillates between REL and the plural form of a homodiegetic authorial narrator (Fig.46), "indicatively and in the form of

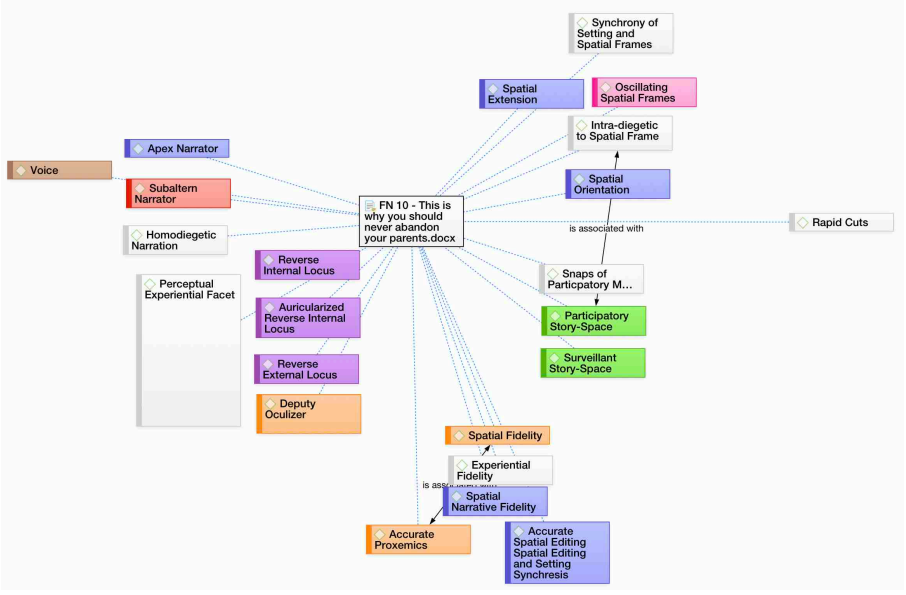


Figure 45: Code Tree for *Home Sweet Home* (2020).

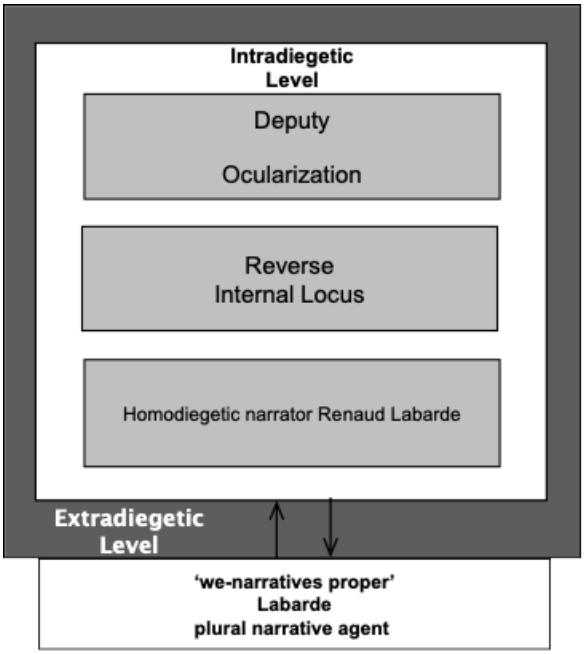


Figure 46: Oscillating Focalization in *The Weekend Soldiers* (2019).

pluralis auctoris" on a par with Bekhta's (2017:105-107) 'we-narratives proper', a form of her "performative 'we'", a more complex reference to a communal or collective storytelling voice whenever he speaks on behalf of his 200 comrades. The utility of Bekhta's model, the construction of a plural narrative agent as a performative act that constitutes a unified collective, when applied to narrative levels in 3DSC is that "we-narrative is characterized by a shifting perspective [on] both hetero- and homodiegetic levels at once, disclosing the contents of individual characters' minds "that which can only be known by an external heterodiegetic intelligence"" (Richardson, 2009:154–155, as cited in Bekhta, 2017:107-118). Renaud Labarde, in line with her interpretation of narrative embedding, is a typical extradiegetic-homodiegetic narrator, we-narrator proper, where his extradiegetic aspect an additional communal force of placing the narrator outside his representation.

From Locus to Spear Ocularization

What is important to scrutinize in these varieties with respect to 3DSC is the separation of the spatiotemporal positions of the main diegetic (*spear*) focalizer and the objects seen 'in focus' or at the 'center of attention', be it a second-person narration by an extradiegetic address (a), a second-person optical perspective (ocularization) and narration (b), or a second-person deputy ocularization (c) (Fig.47). In each instance the separation is intensified by what Sobchack, (1995:54) refers to as a "transcendent space", a space exceeding the individual body, a black void between the film screen and the audience, effectively destroyed in 3DSC. The viewer is constantly intradiegetic within the story space, irrespective of the second-person

schematics applied. Thus, in the *First-Ever 3D VR Filmed in Space: One Strange Rock (*2018) (Fig.42), a 3DSC episode of the ten-part cinematic series by National Geographic in partnership with Humaneyes Technologies and shot by the European Space Agency's (ESA) astronaut Paolo Nespoli aboard the International Space Station (ISS), the viewer can explore the ISS as it orbits at 17-thousand miles per hour. The segment is narrated extradiegetically by former astronauts Chris Hadfield, Mae Jemison, Mike Massimino, and Nicole Stott in oscillating succession. Apart from Paolo Nespoli, they are not present on the scene, albeit their narratives deceitfully appear as homodiegetic within the **oscillating spatial frames**, where the audience is *inside* the frame of the story-space. The guile is processed by means of a variety of 'you's' and a variety of 'I's' ('when you on abord of the space ship, you are well aware of the passage of time your heart is beating…I took a look at the planet…"), as a stream of consciousness fluctuating between the second-person and the first-person address, all the while the audience feels deeply immersed[40] due to **spatial fidelity**, the natural size and proximity of the setting, regardless of paying attention to the narration or even confused where it is coming from. The main thrust of intradiegesis, by means of the first-person intradiegetic ocularization (Fig.47), is geared towards self–other differentiation.

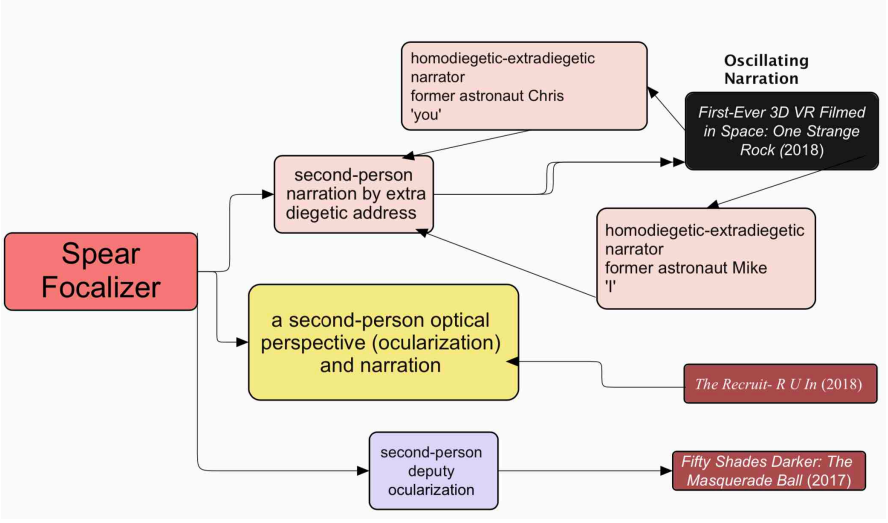


Figure 47: The separation of the spatiotemporal positions of the main diegetic (spear) focalizer.

Homodiegetic Narration in 3DSC Revisited

In *NYTVR Predicting Antarctica's Fate by Studying the Ross Ice Shelf: A Shifting Continent* (2017), released on the NYTVR app and shown during the 2017 Tribeca Film Festival, a virtual reality crew tracks down an expedition tasked with studying the receding

[40] Field Note # 205: "I was trying to located who was speaking. The shots are great but moving motion sickness is very strong, unpleasant to watch. When you look through the window it is a great shot, I feel immersed, since the situation is real: size, setting; even when he speaks in a stream of consciousness, I am still myself, a participant. When I am inside, I don't pay attention to much to his voice. The speed up shots are there (when watching through window) and they do not work. Exterior shots are scary and no immersive."

ice shelf. The story is narrated homodiegetically by Kristy Tinto and Nick Frearson, who are part of the expedition team. The homodiegesis oscillates between the two in addressing **deputy ocularizer** (the audience) as 'you' more specifically. But when Frearson talks about the expedition followed by a female researcher who starts speaking without any visual reference even when rolled in 360°, **narratorial disorientation** and **optical fission** crops up; the strategy to introduce multiple speakers must be matched to homodiegetic elements in spatial frame, otherwise an extradiegetic narration fosters ruptures for when a secondary speaker is introduced he or she immediately moves onto intradiegetic level, and unless the deputy ocularizer sees any of them, their optical absence feels strange. In part, the 3DSC format, due to its spationarrative extensions, is intolerant to any misalliance between homodiegetic narration and deputy ocularization as well as both in juxtaposition to voice as narratorial perspective.

In literary format, the conflation of narratorial perspective and narration has been observed by Fludernik (2009:145), who rejects the collocation of homodiegetic perspective as nonsensical, as the term can only be applied to people, especially when considering complex stories, such as Charles Dickens's *Great Expectations*: in these stories, narrators can be extradiegetic-homodiegetic, like the older Pip, who narrates his earlier life experiences extradiegetically but from the first-person perspective, focalized internally through the mind of the child Pip. In 3DSC, in turn, if echoed, these elaborate narrative hierarchies are prone to disorienting the audience. For instance, the production scale of *My Brother's Keeper* (2017) is sufficient enough to pack the spatial frames with a multitude of objects and subjects to gaze upon; if a multi-layered voice-over is added to the non-linear sequences, the disorientation in focalization is all but assured.

The fictional story of two estranged brothers, Ethan, 19, and Jackson, 16, who find themselves fighting on opposing sides of the American Civil War, and both dying in the Battle of Sharpsburg (Antietam), reflects on the most vicious battle in American military history, whose re-enactment of the 1862 bloodbath, shot on Virginia cornfields, had required of 150 actors to somewhat match the original 100 000 fighting force. The dominant second-perspective, with the establishing lines "brother, where are you, why did you leave the house", supposedly written before the commencement of the battle but recounted in flashbacks by Ethan, is, in fact, an extradiegetic-homodiegetic "hypermodal narrative unit" (Fig.48) similar to the narrative scheme used in Dickens's *Great Expectations*.

It should be noted that an extradiegetic-homodiegetic or homodiegetic-heterodiegetic narrator is an oxymoron according to orthodox narratological canons, as such narrative flows are mutually exclusive. However, some narratology theorists, such as Herman (2011:66), indicate that such dogmatic boundaries have become blurred, as "narrators can be extradiegetic-homodiegetic...extradiegetic-heterodiegetic, [or] intradiegetic-homodiegetic, [or] intradiegetic-heterodiegetic." Therefore, the 3DSC format introduces its own form of narrative positioning characteristic of immersive media, where the viewer's physical presence within the story's spatial framework (intradiegetically) is maintained while preserving the narrative distance traditionally characteristic of heterodiegetic narration. For example, in the film *Limbo: a virtual experience of waiting for asylum*, the narrative oscillates between the

female narrator's direct address to the viewer and first-person narratives, creating what could be termed a spatially integrated binary narrative. Whether this strategy deepens or adds to the neuro-visceral immersion is, perhaps, a matter of discourse, but the complexity of the oscillating narration, where both brothers address each other as 'you' (but from the point of a viewer as 'he'), and that cannot be precisely placed in the timeline of the events, only increase spatial and narrative confusion. Add to it the ocularization by the audience that exists metadiegetically, the narrative layering becomes precarious.

In *Oil in Our Creeks* (2017), from Contrast VR, filmed in Bodo City, Nigeria, to show a destructive Shell oil spill and its effects on the land and its communities by means of hand-painted animations and stereoscopic Cinematic VR, uses homodiegetic narration at its narrative core. The opening shot with Lessi Phillips, the main homodiegetic protagonist, is ocularized from the perspective of a deputy focalizer who is literally sitting on her lap in **asymmetric proxemics**. The perspective feels odd (Fig.49). Although the consecutive shots are delivered supposedly from her first-person perspective, the ocularization mismatch between being on her lap and her homodiegetic narration is somewhat mitigated by **synchrony of setting and spatial frames**. The actual first-person perspective is the one from a deputy ocularizer, and not from that of Lessi.

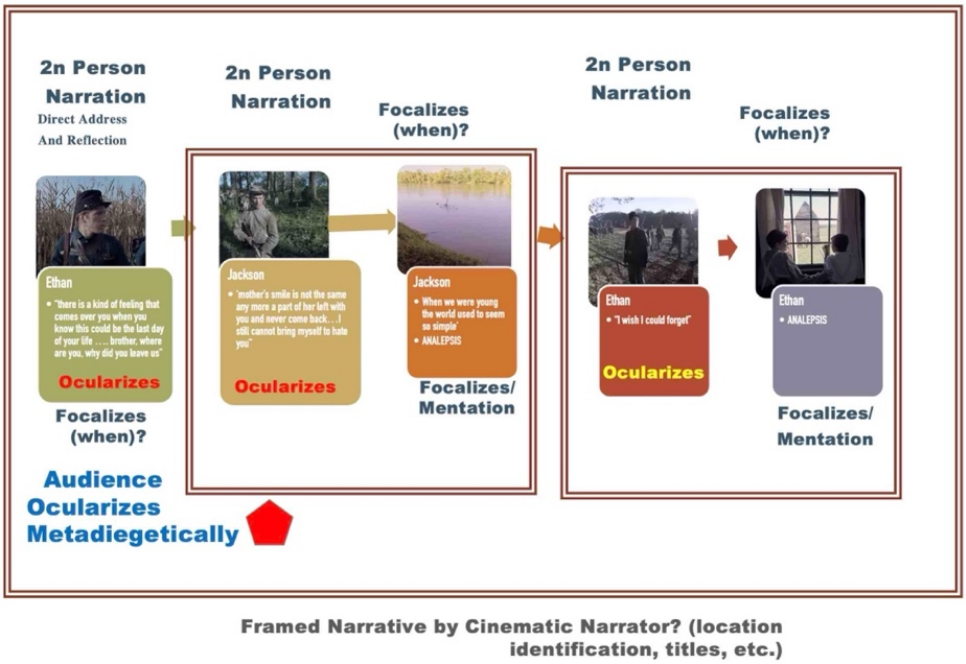
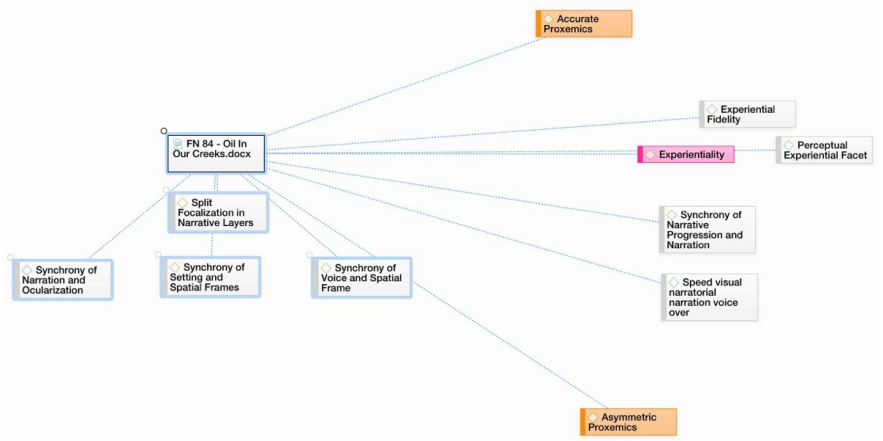


Figure 48: *Narrative Layers in My Brother's Keeper* (2017).

Figure 49: *Oil In Our Creeks,* Contrast VR and Al Jazeera English (2017), at 00:25.

Traditionally, the first-person narration occurs when the narrator of a story is also a participant in it or an autodiegetic first-person narration does when the narrator is also the protagonist (Giovanelli, 2018:28). Therefore, according to the conventional narrative schemata, the audience is only a distant witness to the events, all the while the visual field is *focalized* by the cinematic narrator and *ocularized* by the audience, but not beyond its deputy designate. In order to truly speak of the first-person perspective, however rare, an 'apex narrator' must orient the narrative. There are, in fact, four aspects of homodiegesis as a *Split Focalization in Narrative Levels* (Fig.50): a homodiegetic narration itself, the first-person deputy ocularization, an instance of FCD (textual overlays and title cards), and an instance of the "online homodiegetic mentation" (animation sequences mentally seen by Lessi), processed as **fusion of voice and spatial** frame ocularized by a deputy focalizer.

In *Surviving 9/11: 24 Hours Under the Rubble* (2021), a 360° tribute to the last survivor rescued from the rubble at Ground Zero Genelle Guzman-McMillan who, 20 years after September 11, relives and narrates a complex virtual reality journey told by way of 360° archive photographers from the 1990s in order to allow the audience to be immerses in New York City prior to 9/11, the narrative configuration rests upon a two-fold homodiegesis: through an AI-restored 8K 3D footage, which provides an impressive sense of presence at the Ground Zero from the first-person perspective and by means of her voice-over. Her homodiegetic recount of the heartbreaking events—"I'm originally from Trinidad and Tobago, but I wanted to live out the American Dream. I always wanted to be that girl, to come to America and make it big…. then 9/11 happened…It's difficult to talk about because all the memories come rushing back. I remember being there on the 64th floor…I was trapped there for 27 hours"—demarcates the narrative layer on which when she operates but Genelle Guzman acts chiefly as a protagonist on the narratorial level. Very little of her is physically present in any of the spatial frames when the key events are parlayed; at these particular moments, her voice-over recedes into the background haze as what (Jahn, 2021:40-41) would refer as "online homodiegetic mentation", a mental image of the narrator, her discourse here-and-now, her emotional state as well as her mindset that drives his perception of the narrative,



53 FN 84 - Oil In Our Creeks.docx

Quotations:

53:1 I feel strange sitting in her lap 53:5 Good speed and voice rhythm. 53:6 3D effect in a soccer yards works great you feel presence 53:7 Voice heterogalssai works because she speaks slowly. 53:8 When she speak "now I see mango trees", the audience actually see mango trees that is her vision. 53:9 The last shot of an oil spillage is powerful. 53:10 Her voice-over is separate from the audience and self differentiation works. 53:11 Spatial frames work because of setting 53:12 Strange geospatial position

Codes:

● Accurate Proxemics ● Asymmetric Proxemics ○ Experiential Fidelity ● Experientiality ○ Perceptual Experiential Facet ○ Speed visual narratorial narration voice over ○ Split Focalization in Narrative Layers ○ Synchrony of Narration and Ocularization ○ Synchrony of Narrative Progression and Narration ○ Synchrony of Setting and Spatial Frames ○ Synchrony of Voice and Spatial Frame

Figure 50: *Code tree and codes linked to Field Note Oil in Our Creeks* (2017)

all the while the ordeal is ocularized and experienced (Fig.51). One could argue though that the audience exhibits an "online heterodiegetic mentation", a third-person counterpart to the homodiegetic one (Jahn, 2021:41) but such a designate does not work in 3DSC because there is no online mentation for the audience, nor is there any agency to monitor or confirm it exists. All one can speak of is a paired "offline mentation", a "jump from *discourse here-and-now* to *story here-and- now*" (Jahn, 2021:39) one by the speaker, the other, by the audience.

In *Surviving 9/11,* the latter could be termed as **deputy offline mentation** (experiencing 'I') that is intrinsically linked to deputy ocularization (seeing 'I'), running concurrently with Guzman's offline mentation (recollecting by 'her') (Fig.52) but not echoing it since this split is rooted in the triangulation of 'deputy offline mentation', 'platial experientiality', and 'self-other differentiation'. The effectiveness of homodiegesis narration in *Surviving 9/11* rests upon the relative aloofness of its speaker and the extent of 'self-other differentiation'. When the narration is obtrusive, the effect is less than immersive.

Figure 51: *Surviving 9/11: 27 Hours Under the Rubble,* TARGO (2021), at 01:55. Deputy Offline Mentation, showing Genelle Guzman-McMillan recounting her experience.

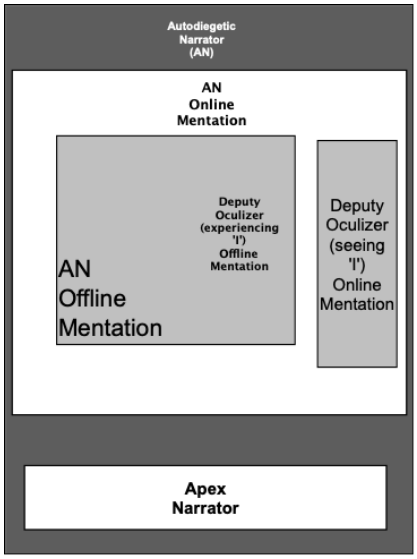


Figure 52: *Surviving 9/11: 27 Hours Under the Rubble.*
Mentation Processes on Layers

In the official selection of the 2018 Tribeca Film Festival, and narrated by Oscar-winning actress Lupita Nyong'o, *My Africa* (2018) brings the audience into an elephant sanctuary in Kenya to witness the relationship between wild animals and the communities that safeguard

them for their own sustenance and the survival of their ecosystem. The focalization is that of Leripe, at least presented by the filmmakers as such, but the ocularization is entirely stringent upon what is defined as a "proper distance", the level of proximity, not just a geographical or social aspect, which requires the user to emotionally and morally disengage at times with the issues and characters involved (Kukkakorpi and Pantti, 2020:3, as cited in Silverstone, 2007). Not in vain, witnessing a lioness snatch her prey (Fig.53) feels so immersive and even cognitively haptic, as seen in the form of hCtA when the snoot of a baby elephant attempts to grasp the 360° camera (Fig.54). The presence of the apex narrator in 3DSC brings forth two important aspects: it gravitates towards the stasis of the second-person narration in stereoscopic spherical films and a structural friction between a homodiegetic state and a third-person narration where the former is ocularized by a deputy focalizer.

Figure 53. *My Africa*, Vision3 and Conservation International (2018), at 01:46.

Figure 54: *My Africa*, at 02:45.

Apex Narration in 3DSC

Not only does the designate 'apex' help to instruct the audience to realign itself with a specific narrative level either as a participatory agent or a witness, but also does it make more fathomable the point of view of an implied narratee. Conversely, the absence of it is prone to scenarios where the narrative agent is locked in a perpetual metalepsis, as in *Clouds Over Cidra* (2015), where the voice-over of a twelve-year old girl in Zaatari shifts from the homodiegetic narrative level unto the extradiegetic level that can hardly be perceived in the first-person perspective. Or to put it differently, in 3DSC, there can be the first-person narrative situation ('ideological facet' and 'voice), but *there cannot be the first-personperspective from the point-of view of its narrator*, if the first-person narration is present at the same time: in such a configuration, we can speak of the first-person narrative, a third-person perspective, and a deputy perspective of the viewer (as in the second-person). But, if a homodiegetic narration is accompanied by the first-person ocularization and the perspective of its narrator is, by design, in the third-person, who, then, frames the whole narrative? It certainly cannot be the implied author, nor is it the cinematic narrator (Chatman, 1990:115), nor a filmic composition device (Jahn, 2021) because they do not adequately explain the extradiegetic framing in 3DSC that requires it to encode various structures of narrative layers, where he or she acts as the uppermost-bracketing agent or, in less anthropomorphic terms, the agency or 'instance' that tells or transmits everything—the existents, states, and events.

In his latest revision of narrative levels, Jahn (2021:7) considers FCD in conjunction with viewing the film from the vantage point of possible audiences. At the same time, his updated typology of FCD is somewhat limited to traditional forms of media. Self-other differentiation, the awareness of one's own character in 3DSC as a separate person, while preventing the audience from losing sight of their own experiences through representations of others (Coplan and Goldie, 2011:16), is a unique feature in 3DSC used to measure the focalization of a narrator and the ocularization of a viewer.

For instance, in *I Am Rohingya* (2018), released by Contrast VR, in which the focus on a story by Jamalida, as she tells the persecution of the Rohingyas, a Muslim ethnic group who have been living in the Buddhist-majority nation of Myanmar for centuries, the self—other differentiation[41] is essential in order to counterbalance any **split focalization in auditive layers, confusion in focalization, disrupted narrative progression**, and **asymmetric geospatial proxemics**, to mention just a few narratological concepts that have emerged as a result of initial coding.

The second-person narration, mixed with analeptical digressions in the form of animated perspective by Jamalida, is hardly efficient. While she talks to the camera, to the imaginary narratee, the audience is forced to look around; out of sheer curiosity and because of the amount of visual detail to be absorbed, ending up with the **split in narratorial and visual**

[41] "self—other differentiation, one keeps separate one's awareness of oneself and one's own experiences from one's representations of the other and the other's experiences…without clear self—other differentiation, we are almost certain to fail in our attempts to empathize" (Coplan and Goldie, 2011:16).

tracks and **oversaturation of visual information**[42], her voice-over becomes superfluous and unneeded. The monoscopic insert shots are not particularly immersive, and, whenever Jamalida refers to her orientation as "I", her perspective does not correspond to the self-other differentiation of "I", attributed to the viewer. The only time the dissonance, the narratorial conflict between "I" in the first-person ocularization and homodiegetic narration (Jamalida's perspective) is properly addressed is with animations that reflect her flashbacks or *mentation*[43]. Standing on the banks of a river, her voice-over recalls the tragic events, while she closes her eyes, her ocularized scenery becomes that of a viewer (Fig.55) or whenever ocularization is matched to the information presented by her voice-over. One may rightfully deduce from this is that a homodiegetic or heterodiegetic narration in 3DSC possesses spatial and 'kinesis' extensions: when homodiegetic narration occurs, the objects are expected to be related to the subject matter discussed, otherwise any movement from spatial frame to spatial frame risks to be a mere flânerie. In the context of narrative schemata with respect of Jamalida's mentation, we can speak of *psycho-optical synchresis,* derived from its auditory kindred based on the principles of Michel Choin (2019)[44].

Notwithstanding to its presence, the narrative configuration is a complicated and confusing one since, as an apex narrator, Jamalida encapsulates the narrative, but the narratorial constituent of a translator-narrator belongs to FCD, outside the narrative layer at which the audience operates (Fig.56). Had its narrative constitution designated a single, unified, stable, and distinct humanlike voice that would have mediated the whole narrative discourse à la *frame* relator, the "narrating agent of all films (with or with- out voice-over)" (Kozloff, 1989:43) (Fig.57), the narrative would have been, perhaps, more dramatic. But even

[42] Due to the pogroms in 2018, more than 500,000 Rohingya refugees, mostly women and children, had fled to neighboring Bangladesh, overcrowding in makeshift settlements on the border town of Cox's Bazar.

[43] *Mentation* is mental activity in online mode: a narrator's online mentation is usually presented in the narrative mode of comment (Jahn, 2021:40).

[44] Choin in his *Audio-Vision: Sound on Screen* (2019) describes *synchresis* in terms of a forged cluster combining synchronism and synthesis, a spontaneous and irresistible weld produced between a particular auditory phenomenon and visual phenomenon when they occur at the same time, irrespective of any rational logic that permits filmmakers to make the most subtle and unsual audiovisual configurations.

Figure 55: *I Am Rohingya*, Contrast VR and Amnesty International (2018), at 02:45.

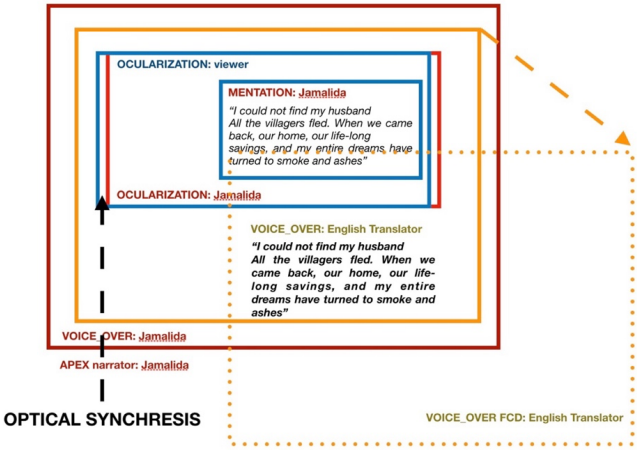


Figure 56: Narrative Layers in *I Am Rohingya*.

the denominative 'apex' is still much preferred, as it incorporates more precisely various independent or partial narrators, each narrating a different phase of a total action sequence, a pattern labeled as **Narrative Relay Span**, in order to mold the same events in diverging ways, each from his or her own standpoint, into what (Margolin, 2014, as cited in Hühn, 2014) terms as "plurivocal and multi-level narration", while (Kozloff, 1989:25) points out that voice-over narrators are never responsible for the primary diegesis, even if "he or she were the mouthpiece of the image-maker either for the whole film or for the duration of his or her embedded story". Because 3DSC, in its current form, is fundamentally a "polyperspectivized" medium, hermetically sealed by an uppermost narrative frame, but, unlike a rectangular flat film format or literature, is regulated by its geospatial attributes, where the audience is assigned an autonomous ocularization, the 'apex' narrative may resolve the awkwardness in narrative layers that the narrative structure of many cVR films is exposed to. Or, to put it another way, the current 3DSC narrative strategies carry an inherent conflict, whereby the uppermost chain of narration in the hierarchy, whether it is a cinematic narrator or an FCD, is ambiguous. And even though FCD is genderless and pronoun-friendly, as it may face the challenge of anthropomorphization (Jahn, 2021:8), the main predicament with FCD is that it imposes the perspective upon the viewers whose 'self-other differentiation' dynamics do not permit it to have. In *Crossing the Line: Untold Stories of Refugees Stuck at the Border* (2018), shot by RYOT Studio for Human Rights First group that sheds light on the plight of immigrants, brings the audience face to face with the refugees, namely, Jose, who was forced to flee Honduras after the local gang threatened him and his son, Frederic, who let the Democratic Republic of Congo after militants had raped his wife and shot his daughter, as well as Sister Edith who provides help to asylum seekers. In part a live action documentary,

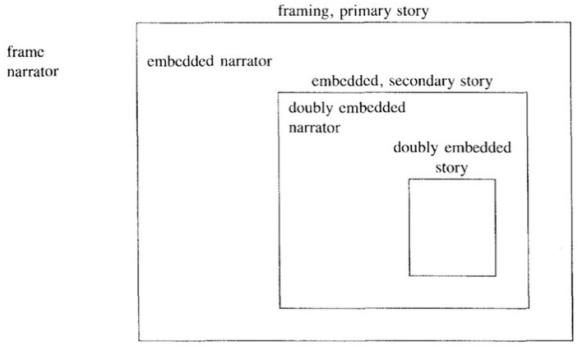


Figure 57: Narrating agent in films (with or with- out voice-over).

in part, animation, the film is communicated by the voices of the before-mentioned homodiegetic narrators giving testimonies in Spanish. The *covert* extradiegetic-heterodiegetic narrator (Keen, 2015) who traditionally may be present the entire time, visible only in occasional narrator comments and in passages (Hansen *et al.*, 2017) brackets the narrative in English (in voice-over) only at the beginning of the story, but the female narrator's presence is felt, nevertheless, throughout the ordeal. The basic schemata of its narrative layers (Fig.58) is somewhat similar to the "narrative authority" typology in Cervantes' *Los Trabajos de Persiles y Sigismunda* (1617) provided by (Williamsen, 1990:112), where extradiegesis by "an authorial narrator" encapsulates real author, all the way to private narrators.

At surface, *Crossing the Line* is the first-person account, as given by Edith, Jose, and Frederic in what may rightly regarded as in instance of "an intradiegetically and multiperspectivally focalized [fiction] embedded into the hierarchically superior perspective of a heterodiegetic-extradiegetic narrative voice [which] does not necessarily presuppose a multiperspective fragmentation of" it (Huebenthal, 2020). While in Cervantes' narrative such a hierarchy, indeed, would not necessarily cause a fragmentation, it does so in *Crossing the Line,* through the **dissonant ocularization** and auricularization, split auricularization, and **split in narrative constitution** on narration and visual tracks. The textual overlays that act as a voice of translator narrator are the dominion of filmic narrator (FCD (Jahn, 2021) or the film's production team). Ocularization is that of the viewer in spherical space, but oscillating focalization and auricularization is split between the homodiegetic narration by Jose and Frederic and soundscape by its filmic narrator on the intradiegetic track. The oscillating perspective, carried by the voice-over, is that of analepsis, their prior experiences, while the textual overlays by the filmic narrator (Fig.59) are recounted in present tense. To confuse the narrative levels even further, the narrative authority here is bracketed by the implied author; nether the filmic narrator, nor extradiegetic-heterodiegetic, can be regarded as such; and, in fact, there is a "narratorial breach" on the extradiegetic levels. The breach warrants a different designate to compensate for the uncertainty as to what kind of a narrator may frames similar narrative constitutions, not limited to the dissonant ocularization and auricularization, and to minimize the inherent friction between implied and authority narrators, the dissertation uses **apex narrator**.

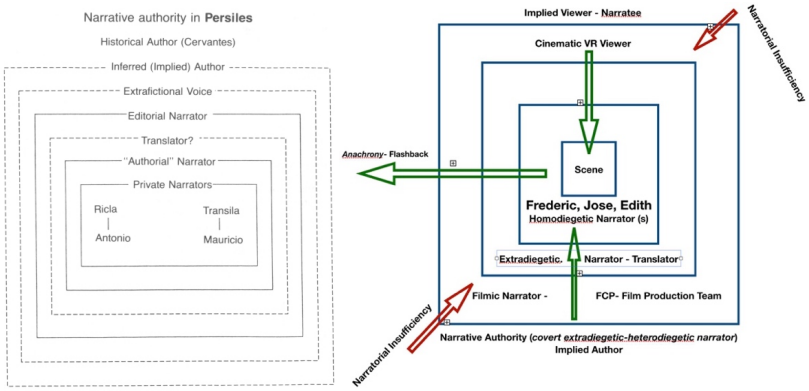


Figure 58*: Crossing the Line: Untold Stories of Refugees Stuck at the Border* (2018) narrative schemata.

Figure 59. *Crossing the Line: Untold Stories of Refugees Stuck at the Border*, XR Portal (2018), showing asylum seekers at the US-Mexico border, at 01:45.

Narrative Voice in 3DSC Revisited

In classic framework, narration is understood as "the activity of selecting, arranging, and ordering story material in order to achieve specific time-bound effects on a perceiver", i.e., as a continuous process based on two principal formal systems, subject and style, which the spectator uses to frame his or her hypotheses and deductions (Cutting, 2021:262, as cited in Bordwell, 1985). The viewer's active participation in this process is crucial, and, in contrast to Chatman's (1980) model, where the process of narration is grounded in the classic communication diagram with a message being passed from sender to receiver, the audience in 3DSC is Bordwellian, if you will, in so far as it uses his "inferential model of narration", the product of specific organizational principles, historical factors, and viewers' mental sets on the bases of "plausible" (Bordwell, 1985:62) schemes she or he has at hand.

Notwithstanding the similarity, the spectatorship form Bordwell (1985) advocates is permanently extradiegetic, whereas in the stereoscopic 360° setting, the inferential model of narration is intensified by visceral and haptic experience, intradiegetically. The imposition of voice-over as a regulatory agency by no means guarantees immersive effects other than not

only it may reorient “situatedness” for the viewer, but also, and most importantly, sustain coherence, indispensable to the 3DSC spectatorship, whenever the oscillation on narrative levels negates the purpose for which cVR exist. Thus, in *Limbo*: *a virtual experience of waiting for asylum* (2016), its 'situatedness', a specific discourse frame, works within explicit cultural, institutional, and genre-based protocols, and historical socio-spatial relations to maintain both coherence and its corresponding neuro-visceral immersion throughout the nine-minute ordeal. Having been created by conducting interviews with asylum seekers from twelve countries while they wait in limbo, living on 5 pounds a day and unable to work, the voices on the audio tracks of Limbo belong to real refugees and their immigration lawyers and barristers. Their plight has been reconstructed using innovative 3D point cloud technology. The whole drama, nevertheless, is intensified by a female heterodiegetic narration intradiegetically. She utters “you left your life back home because your life was in danger…you are an asylum seeker” in addressing with ‘you’ more specifically, as RIL, intermittently followed by a homodiegetic-heterodiegetic character who addresses the audience with ““in this country people doesn’t know you”, also in the form of REL, all the while reverting back to the heterodiegetic narrator with her “this is your street…they, like you, are waiting… like you, are in limbo”.

Some of the second-person statement as REL are coalesced with the first-person homodiegetic-heterodiegetic narration (“I was really scared I would never return to my country”). The narrative layering is almost similar to the multiperspectivity of *6x9: A Virtual Experience of Solitary Confinement* (2016) where a few homodiegetic narrators tell their own their own individual stories, with the difference rooted in the enunciation: in *Limbo: a virtual experience of waiting for asylum*, they are homodiegetic-heterodiegetic since in no time they can be recognizable. The strongest elements of RIL are the ones of flashback sequences as online mentation by one of the asylum seekers when he is being interviewed by a border agent; at that very moment deputy ocularization ceases and a full immersive state of RIL occurs.

Now, the homodiegetic-heterodiegetic narrator is an oxymoron according to the orthodox canons of narratology, since such narratorial streams are exclusive. However, rather than violating narratological principles, the 3DSC format introduces a new form of narrative positioning that is specific to immersive media where the viewer's physical presence within the spatial frame of the story (intradiegetically) is maintained while also maintaining a degree of narrative distance that traditionally characterizes heterodiegetic narration. In *Limbo*, the narrative oscillates between direct address by the female narrator to the viewer and first-person accounts, creating what could be termed as **spatially-integrated binary narration**.

It is also important to note that the female heterodiegetic narrator is intradiegetic within the story, in which case, the cinematic narrator would be extradiegetic. But in order not to conflate the cinematic narration or an instance of FCD with the one for 3DSC format, it would be appropriate to call her to be an *auxiliary to apex* (subaltern) *narrator* addressing the *apex viewer* (Fig.60).

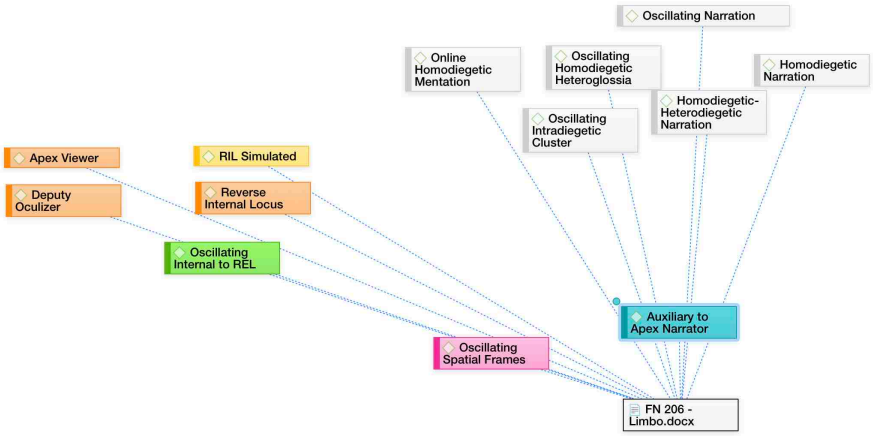


Figure 60: Code Tree for *Limbo: a virtual experience of waiting for asylum* (2016).

The perspective of the apex viewer here oscillates between the deputy ocularization and a full second-person participation, while **synchresis in online mentation and deputy ocularization** takes place when the images of the online mentation shots of destructed buildings are seen and described by one of the homodiegetic narrators, while being optically witnessed as the deputy ocularization. Hence, the coherence and complexity of oscillating perspectives predictably gravitate towards the dominance of the 'locus' and reorientation through voice where the degree of 'platial experientiality' that some aspects of voice may extend is stringent upon situatedness and auricularization of the ‘apex viewer’. Not in vain does (Mildorf and Kinzel, 2016:12), the exponents of audionarratology, borrow the term ‘situatedness’ from David Herman (2009:17) who claims that narrative is a mode of representation situated in a specific cultural, institutional, or genre-based protocols, shaped by the same historical socio-spatial relations, and as such, non-diegetic sonic space is outweighed by the viewer’s auditory perspective, auricularised on different narrative layers (selected audibility of sound on intra- and extradiegetic levels), since he or she is always placed geospatially in a diegetic environment. Because sound behaves differently in cVR, “voice”, central to the act of narrating, may distract the audience from feeling the sense of presence and conflict with the narratorial functions, while soundtrack, curiously enough, is more immersive than an off-screen narration, which, in traditional cinema is a part of diegesis, but in 3DSC, it negates the immersion, since an extra-diegetic narrator, while commonly used, is not particularly effective in 360º stereoscopic spherical cinema (Ceplitis, 2019).

Such a peculiar aspect, furthermore, redefines the spatial dynamics at play; ‘deputy’ ocularization must be referenced apart from the **narratorial oscillating focalization** (linked to the narrator and rarely fixed). But to compensate for the multiperspectivity of a narrator against the viewer’s geospatial positioning, where voice is a part of narrative distance and the narrative act (the process of narration in VR, that may be or not contain a voice-over, and is infused with psychological and ideological facets), locus of a deputy actant is either fixed or

oscillating (Fig.61). Thus, in Wes Anderson' *Isle of Dogs: Behind the Scenes* (2018), produced by Paul Felix & Paul Studios and Fox Searchlight, which places the viewer inside the miniature world of a stop-motion animation film. While the crew of the film works around the set, its optical focus is a series of on-set interviews with animated dog puppets who populate the trash-filled island. The voice-over interviews feature famous actors such as Bryan Cranston, Bill Murray, Tilda Swinton and Edward Norton as they represent their respective dog characters. Bryan Cranston introduces his character Chief to the viewer in the second-person, as RIL, but his description of the dog is recounted the third person, all the while visually it appears the dog speak of himself. So does the same type of address is delivered by Edward Norton with respect to his Rex, which is confusing in terms of narrative layering, technically speaking. But in practical terms, as long as the deputy ocularization is fixed and the auditory track is structured consistently, as a voice-over addressing 'you' more specifically (spear focalizer), the divergent duration (animators at work in "acceleration", as opposed to the dogs speaking as "scene") has no detrimental effect on immersive qualities and presence.

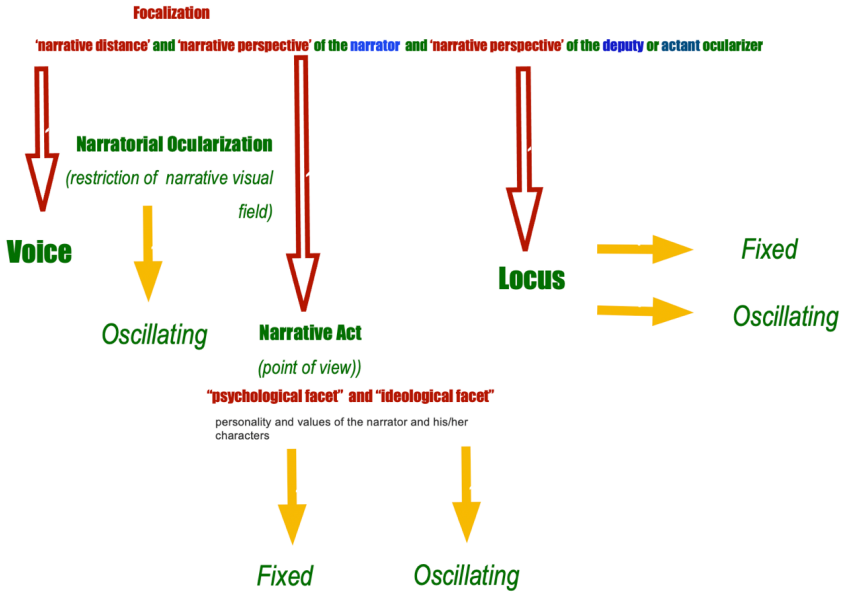


Figure 61: Oscillation Schemata in Narrative Layers.

4.6. Summary of Research Findings at the Re-focused Coding Phase

The immersive experience in 360° stereoscopic film is fundamentally 'platial', with the viewer deriving meaning from the spaces they inhabit as well as carrying the psycho-physical and contextual attributes of narrative engagement, linking the narrative structure with

particular cultural, political, and ideological proximities of the audience. While both space and perspective dominate in 3DSC, space is more significant than perspective in 3DSC, as it is continuously reconstructed as a chain of spatial frames that acts as a binary cluster, encompassing ontological, operative, cognitive, and politico-ethnic planes, while also serving as a catalyst for the phenomenological experience of cVR spectatorship. The core element of this experience is the spatial orientation of the visual field, allowing the audience to reconstruct themselves in each subsequent spatial frame, as it connects space to perspective. In this equation, the **deputy oculizer** is important typological element in 3DSC whose geospatial position is, situated at the "bull's eye", on the intradiegetic plane and contributes to the kinetic quality of the 3DSC narratives.

"Self-other differentiation" is key in 'platial experientiality' because it serves as a visual reference for framing the viewer's perspective in a multifaceted process. This is evident in the *Invisible VR* miniseries, which showcases how oscillating perspectives within 3DSC narratives can lead to disorientation, especially when self-other differentiation is not well accounted for.

The concept of **oscillating perspective** is further developed to reflect the shifting viewpoints experienced by the viewer throughout the 3DSC storytelling with various point-of-view codes, introducing the unique **aRIL** (an auditory geopositioning between **REL** and **RIL**), which denotes an address to the narratee, REL, primarily an extradiegetic, homodiegetic, or heterodiegetic perspective using general 'you' in narration, and finally RIL (reverse internal locus), which involves a more direct address to the user and is deemed to be a natural habitat of 3DSC space.

The dominant narrative configuration in this context gravitates towards RIL, where the homodiegetic status of the viewer is shaped by platial experientiality and deputy ocularization as well as influenced by the viewer's bodily-orientational crux and the presence or absence of a second-person perspective.

Whenever the strategy to introduce multiple speakers is considered, it must be matched with homodiegetic elements in the spatial frame. Otherwise, an extradiegetic narration fosters ruptures when a secondary speaker is introduced: he or she immediately moves onto intradiegetic level, and unless the deputy ocularizer sees any of them, their optical absence feels strange.

Certain aspects of the story when told from a second-person perspective along with a first-person narratorial voice within the story should not be conflating the cinematic narrator or FCD. Under such a schema, it would be best to describe the narrative situation as controlled by an 'auxiliary to the apex' (**subaltern**) narrator addressing the 'apex viewer' to enhance the immersive state.

Finally, it is important to note that the degree of 'platial experientiality' in relation to voice is contingent upon the "situatedness" and "auricularization" that the apex viewer has. Because sound behaves differently in cVR, "narrative voice", central to the act of narrating, may distract the audience from the sense of presence and conflict with the narratorial effects, while soundtrack, curiously enough, is more immersive than an off-screen narration, which, in traditional cinema is a part of diegesis, but in 3DSC, it negates immersion.

CHAPTER V: THEORETICAL CODING - RHIZOMATIC PROTOTYPES IN 3DSC

5.1. Theoretical Coding Phase

Bryant and Charmaz (2019:79) stress that theoretical concepts do not simply arise from the data alone but require "theoretical coding", the classification of data with the help of existing theoretical models through a variety of analytical processes. The procedure of theoretical coding, through a constant comparative approach, continues until the point of "theoretical saturation" (Kenny and Fourie, 2015:1271). Here, Bryant and Charmaz (2019) suggests a recursive process between theoretical coding and saturation to develop a contextually rich theory; rather than proceeding linearly, theoretical coding and saturation interact cyclically, in back-and-forth movement, to serve as the pivot for building explanations firmly situated within narratological context.

A number of dominant categories from the re-focused coding stage (Fig.62) whether it be it **Auricularization as Orienting Device, Experiential Facet in Perceptual Affinity, Experiential Facet: Psychological Affinity, Experiential Facets as Signifier, Gaps in Viewing Time, Platial Extensions as Accurate Proxemics, Rhizomatic Viewing in Potentia,** or **Summarized Spatial Frame Container as Setting**, to name a few, have been moved and merged into the code groups (Fig.63) to form a basis for the final narrative typology. Following the analysis of the residual data and fine-tuning the selected codes in the theoretical coding phase groups, the next step is not only to establish the blueprint of the typology, but more importantly, to create the original rhizomatic 3DSC prototypes that would deepen the understanding of the phenomena and progress the emergent theory to saturation. In the last stage, coding data and the 'theory-generating expert' interviews are processed using "abductive reasoning", which also includes "thematic analysis" and "deductive reasoning". Not all, but most essential codes related to space, time, and perspective are selected to move onto the "saturation" stage and tested in the rhizomatic space.

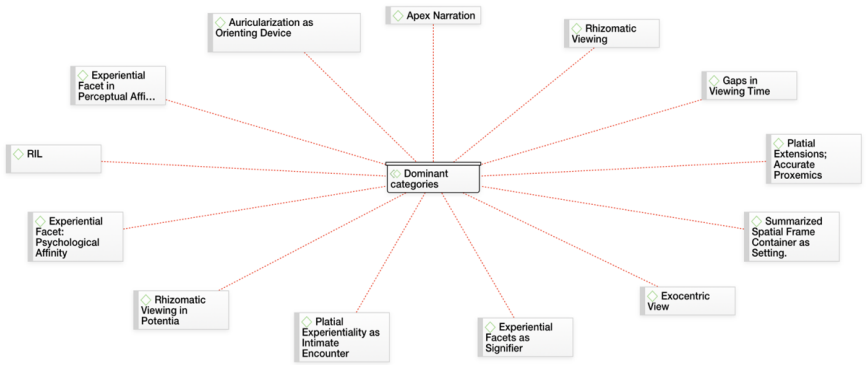


Figure 62: Dominant narratological moved to theoretical coding phase.

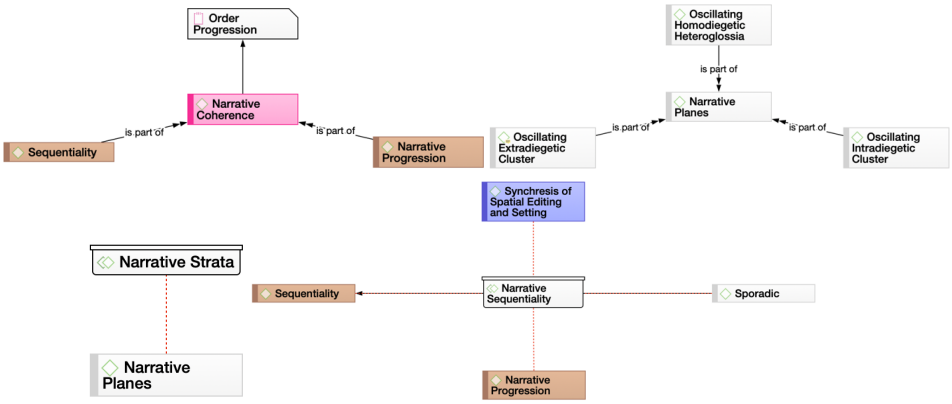


Figure 63: Code Trees and Dominant Code Groups.

5.2. Artistic Process

5.2.1. Impetus for Rhizome of *'Gaslight' Narratives Neo-noir* (2022): Socio-economic Landscape and Austerity in the Baltic States

The first impetus for the 3DSC rhizomatic installation, *'Gaslight' Narratives Neo-noir* (2022), has been the expansion of new vectors of narratology and its fusion with immersive technologies that bring readers and viewers inside a story, geospatially and cognitively, by blurring boundaries between reality and virtual spaces, and between real spaces and alternative ones. At the heart of the discussion lies the concept of *'Gaslight' structures*, which signify the demise of impartiality in the perception of narratives due to the very 'modus operandi' of progressive virtual technologies, disguised as various 'immersive' scenarios, that significantly alter storytelling techniques within the framework of cVR, Extended Reality (XR), or Mixed Reality (MR). Ultimately, the goal is to undermine the critical thinking abilities of the audience through misdirection, contradiction, and cognitive programming, both in terms of content and form (Ceplitis, 2022). The secondary, most important, and emotionally charged reason for creating the 3DSC prototypes in a rhizomatic configuration has been the tragic economic effects violently imposed upon the peoples of the Baltics in 2008.

'Gaslight' Narratives Neo-noir is a political, anti-gaslighting statement in the Brechtian spirit, aimed at exposing the destructive economic austerity policies that have been imposed on the national population without proper judicial and institutional oversight, and that have had dire consequences with a clear indication of an impending collapse. It is, indeed, as Bertold Brecht would coin it, "not a mirror to hold up to society but a hammer with which to shape it" (Herold, 2014:125). Its target is to deconstruct false economic neo-liberal prophecies, heralded as an economic miracle team both in public discourse and in *How Latvia Came Through the Financial Crisis* (2011) (Åslund and Dombrovskis, 2011), a self-styled

quackery of sorts for neoliberal economists and financial commentators such as Robert Samuelson of The Washington Post, and other neoliberal advocates in The Wall Street Journal and The Economist, and elsewhere, let alone the then-IMF head Christine Lagarde, who had proclaimed it as "an inspiration for European leaders" (Sommers and Woolfson, 2014:24-25) on June 5, 2012.

Latvia's "success" has meant, first and foremost, that the Swedish banks were paid without any private debt write-down on the over 4.4 billion euros borrowed from the EU and IMF to keep its government running on life support during the 2008 crisis (Sommers and Woolfson, 2014:24), at the expense of the public. This rescue package benefited foreign banks more than the Latvian public since the public debt as a percentage of GDP was very small in the Baltics when the crisis hit but during the bank rescue it increased in all the Baltic States, and painfully so in Latvia where its debt rocketed from 10.7 percent of GDP in 2007 to 42 percent in 2012 (Blyth, 2015:224). To add insult to injury, the IMF loan, tellingly so, was not signed in Latvia's capital Riga or in any other financially impartial third country but rather than in a small conference room of Arlanda airport, as "a kind of auction" on demand, at the very last minute by the Swedish Minister of Finance Anders Borg ("they did not even bother to go to downtown Stockholm") (Hilmarsson, 2018:2).

Another tragic residue of "Swedish rescue" was that it has created "the formation of bifurcated labour market" (Woolfson and Sommers, 2016:2), where in the absence of any sensible strategic state policy for economic development, the very few "high-end jobs that were created were limited to financial services, privately funded research and development, corporate management, and to a few upper level niche markets" (Woolfson and Sommers, 2015:6). As a result, the foolish economic policies have directly, and, by proxy, created a new type of "nomenklatura", the Soviet style *aparatchiks* (functionaries), who prefer the education in "social sciences (management, accounting, law, economics, etc.)" (42%) over engineering and manufacturing oriented education (13%):

> "Access to, and with that authority over, the distribution and management of these EU funds are signal characteristics of strategic and highly coveted employment positions…A number of these sought-after positions are associated with prestigious perks, such as business travel to various European capitals, extensive networking with EU officials, with national and international business representatives, and with representatives of transnational institutions, such as the World Bank and the World Health Organization. The social interfaces generated in this process initiate what C. Wright Mills (2000) called the 'circulation of elites': from strategic government positions to lucrative jobs in banks, investment agencies, transnational corporations, 'free market' think tanks, opinion-forming positions in the mass media, and with the possibility of returning to government employment in direct or advisory capacities according to changing political administrations' preferences for their own trusted personal networks." (Woolfson and Sommers, 2015:8-9)

Notwithstanding the obvious economic policy troubles in Latvia, many in EU and US mainstream media, in defense of the ruling 'nomenklatura', keep insisting, in a classic gaslighting manner, that the ruling class had no choice. While, traditionally, 'gaslighting' concerns various forms of psychological manipulation in which a targeted individual or a group is forced to question their own perception, and sanity through misdirection, contradiction, and lying in order to achieve a specific goal, in Åslund's case there is no reverse gear, even when the detrimental objective has been long achieved. It is the purpose of *'Gaslight' Narratives Neo-noir* to dispel any remaining doubts that the cited "success story" is nothing more than a facade.

In decoding the "success story", Sommers and Woolfson (2014:24) make a costing remark: "every crisis attracts carpetbaggers and every personal failure pines for Scott Fitzgerald's "second act"". With Latvia's economic crisis in full swing, the traveling snake oil salesman Swedish economist Anders Åslund, "a man who on the run up to the 2008 financial crisis was on his way to being forgotten as advisor to Boris Yeltsin's failed economic program for Russia", has seized an opportunity to resurrect his reputation as a policy analyst and consultant by depicting austerity as a success story, a universal model for the rest of Europe and the Unites States to emulate (Sommers and Woolfson, 2014:24). It is quite feasible that Åslund alone wrote *How Latvia Came Through the Financial Crisis* to gaslight the Latvian public and to speak on behalf of the speculative, primarily his native, financial sector. Whomever of the two wrote the book and to what extent is an illustration of "what Albert Hirschman—exit theoretician per excellence—elegantly called "an oppression of the weak by the incompetent" (i.e., by the EU politicians) and "an exploitation of the poor by the lazy"" (Sommers and Woolfson, 2014:74). The wider implications of their deeds are ominous; "in terms of the demographic balance, Latvia's survival as a nation is in doubt (Sommers and Woolfson, 2014:38), and the ensuing long-term economic landscape marred beyond repair. The tragedy is that in defense of his policies, the former Prime Minister of Latvia Dombrovskis has famously exclaimed:

> "The greatest pleasure in life is doing what people say you cannot do... Latvia's experience of social adjustment has convinced us of the universal advantages of carrying out as much of the belt-tightening as possible early on. Hardship is best concentrated in a short period, when people are ready for sacrifice…Latvia succeeded because it concentrated the social adjustments in the first eight months of crisis combat." (Åslund and Dombrovskis, 2011:118-119)

To which the Nobel Prize laureate economist Paul Krugman just as famously replied: "They have made a desert, and called it adjustment" (Krugman, 2011). The *Rhizome of 'Gaslight' Narratives Neo-noir* is a daring ode to his stance.

5.2.2. The apparatus in production and exhibition of *Gaslight' Narratives Neo-noir* (2022)

Video delivery option

In view of the high resolution and availability requirements set forth in the dissertation, the 3DSC prototypes produced for field experiments were captured using an Insta360 Pro camera at its maximum resolution of 6400 x 6400 pixels in 3D, with playback recorded at 60 frames per second and exhibited via Samsung Gear VR and Oculus Quest 2 at 5700 x 5700 pixels in 3D and 29.94 frames per second. To reduce simulation fatigue, videos were kept at a maximum length of 6 minutes. However, to minimize the accommodation-vergence effect and visuo-vestibular conflict resulting from image stitching, no camera movements were incorporated into the cinematic techniques applied. Because the Insta360 Pro avoids TSPW, it ensures a natural sense of proximity, making objects appear as they would in real life. This particular camera choice adds to the perception of presence in 3D space and enhances the narrative immersion in *'Gaslight' Narratives Neo-noir* (2022).

Audio delivery option of spatial sounds

To replicate the sonic experience of standing in a 360° spherical space at a specific geospatial location, "positional audio recording" was deployed using both the onboard audio capture system of the Insta360 Pro and the tetrahedral microphone by Sennheiser AMBEO VR (Fig. 64). This omnidirectional technology is configured into a spherical array to capture the acoustics of a room or space with great accuracy. For panning control in the final mix during the post-production stage, three easy-to-use plugins were utilized within the Reaper software: Facebook 360 Spatial Workstation, dearVR Pro, and dearVR Micro with the final output in AmbiX B-format. These were used to manipulate the audionarratological parameters of sonic 'situatedness' and 'auricularization'.

Figure 64: Tetrahedral mics from Core Sound and Sennheisser and dearVR Pro (Source: Sennheiser, 2024).

5.2.3. Production Process: Making of the Rhizome of *'Gaslight' Narratives Neo-noir* (2022)

While traditionally, 'gaslighting' concerns various forms of psychological manipulation in which a targeted individual or group is forced to question their own perception and sanity through misdirection, contradiction, and lying, its purview has mostly been the interest of psychology, popular culture, films, texts, and politics (Williams, 2020). Yet, gaslighting as a narrative device in cVR where the boundaries between reality and fiction are more easily created to neutralize logic with the effects of surprise, confusion, self-doubt, or disappointment that emerge subconsciously in dealing with complex narratives, is still a fairly unique niche the dissertation attempts to fill. Because immersive technologies now enable their audiences to be exposed to various kinds of visions of the future, from the experimental and realistic to the quixotic and evocative, the rhizomatic installation of *'Gaslight' Narratives Neo-noir* explores a set of projections for the emerging vectors of narratology, whereby, in almost apocalyptic manner, it warns against the unchecked dominance of 'gaslight' narratives in all forms of mediums, which shape the global political and social climate to the point where 'gaslight' narration aims to destroy the world as we know it, with or without the aid of virtual apparatus.

The installation itself has been comprised of six short 3DSC prototypes, no longer than approximately 5 minutes each, to compensate for the loss of time, while the viewers would navigate the stations, so that the total viewing time would not exceed 40 minutes, all the while the specificity of the prototypes would not be influenced by the regulative conditions of the installation site but rather from the allegories and cinematic codes they are subjected to.

Initially, nine 3DSC prototypes had been produced to be used for the installation, but in view of the prospective VRISE effects and limitations of the scope of the Thesis, six had been chosen as the most optimal for prolonged viewing, approximately 32 minutes in total time. Albeit all prototypes somewhat address various forms of focalization, the core films used in the installation for the particular narrotological category are *Taxi Driver* (2019), *Departure* (2018), and *Ascenseur Pour L'échafaud 2014* (2017), that, as a matter "a *shifting field of vision* from a world that always exceeds it…[with] a specific and mobile engagement of embodied and enworlded subjects/objects" (Sobchack, 1992:62), or the so called 'Bifurcated Body', address the oscillation in perspective as well.

The premise of *Taxi Driver* is simple enough: the audience is a client who has just taken a cab. In the course of the ride, the audience is forced to hear a lengthy charade on the wisdom of life, from none other than the cab driver himself. Customarily, as it happens in the country, where the inhabitants are used to waiting and are often forced to wait, the cab driver gets out at some point to attend to his own business. Typical of the milieu, where no one knows who does what and why, another man, whose face the audience barely sees, is suddenly snuffed out, while the radio host in the background discusses the inflated salaries and bonuses that the public radio administrative staff receives. Upon committing the murder, the cab driver simply returns and continues to lecture his client (the audience) on how to proceed in life. The interaction is optically anchored in a specific focus on the audience as if the underlying motto

was “listen what I say, and not what I do!” The address is visually direct, leaving no doubt that the taxi driver *knows who* the viewer is and why she or he is *being taken for a ride* (Fig.65).

Figure 65: *Taxi Driver* (2019), directed by Aigars Ceplitis, at 00:45

Figure 66. *Departure* (2018), directed by Aigars Ceplitis, at 02:53.

In a similar technique, *Departure* deploys a shifting perspective to address the neoliberal economic policies enacted in 2008, that still are taking place and rapidly depopulating the already weak economic structures in Latvia. The whole film is shot through the perspective of a deputy focalizer, the presence of whom is only acknowledged in the shot when the family picks up its suitcases to forebode the viewer to be the next departing candidate (Fig.66). The film ends with the symbolic replacement of the departing family being lowered to the state of an insect crawling onto the camera lens, into the very eyeball of a viewer (Fig.67). The effect then becomes deeply immersive and creepy.

Both films use ambisonic sound design with the aid of Dear VR technologies and the Reaper platform not only to orient viewers in the diegetic space, but most importantly, to create diegetic shifts from ocularization to auricularization in the second-person perspective

and excavate the auditory "situatedness" specific to Latvian cultural, institutional, and genre-based protocols, which incidentally are shaped by their historical socio-spatial relations through the positioning of the radio signal in *Taxi Driver* or the screechy crawl of the insect in *Departure*.

Figure 67. *Departure*, at 04:14.

The third 3DSC*, Ascenseur Pour L'échafaud 2014* (2017), echoes Louis Malle's 1958 original crime film about the murder of a wealthy arms dealer. However, the connection is loose, as its overall approach uses the *lingua franca* of Herluf Bidstrup social satire, and, more appropriately, it is a neo-noir spoof about the dire political corruption in Latvia.

The plot centers around a policeman who enters the second floor of a large business complex and hears a commotion; he proceeds to investigate the source of a sound. Then, a shot reveals a half-dead body being dragged through a hall. It is unclear whether a victim is male or female, but what is clear that the audience is led to believe that the events occur on the same floor. It is when the actual killing occurs, unseen by the audience, and the policeman is nowhere to be found, the panning of the view (if the audience chooses to shift the perspective) reveals the third floor, in fact, and, finally, the bloody torso dragged into the gallows. The choice of shifting fields of vision here is deliberate: in the 2014 parliamentary election, a leader of a major political party had been elected through a backdoor channel. Having suffered serious embarrassing defeat in polls, a fictitious narrative was concocted that allowed the person to retain the seat. Furthermore, the continuation of the political career is assured with the appointment of ambassadorship upon completion of the final term in office in 2018, in spite of the individual's overwhelming unpopularity. And, hence, this film is in reaction, a testament to the political hijacking.

Ascenseur Pour L'échafaud 2014 plays with perspective where the spectator, being a mere witness, a bystander to the crime, is unwilling silent participant due to his or her inability to fully deploy the innate hCtA (Fig.68), with which some VR technologies, particularly those in video-games, are naturally endowed with: in this regard, a technological handicap of 3DSC becomes a serious narrative advantage. A similar strategy was deployed in *Experience*

Something Different (2020), in partnership with Group Riga Innovation Group, which the author of the dissertation directed and wrote the virtual reality simulation to help high school students understand how a child with autism perceives the school environment (Fig.69).

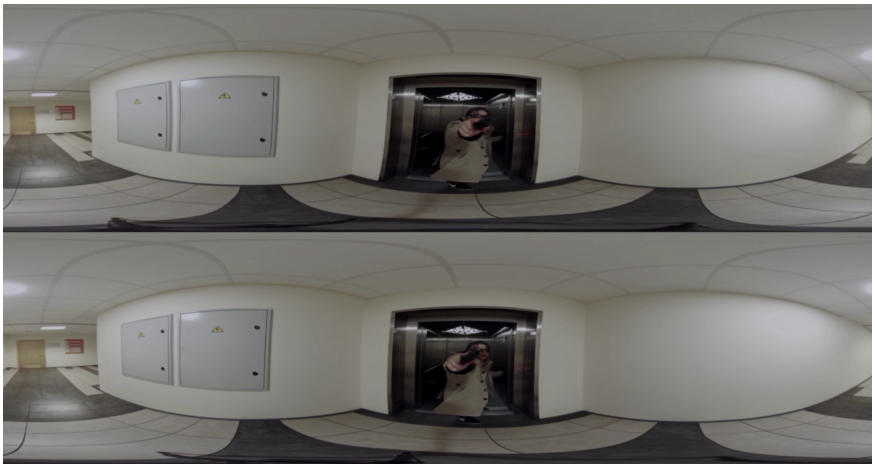


Figure 68: *Ascenseur Pour L'échafaud 2014* (2017), directed by Aigars Ceplitis, at 03:23.

The simulation was created based on autism research. The viewer has an opportunity to embody an autistic child with all the feelings of being overwhelmed, frustrated, and disturbed by the bright lights, eyes, and every little sound that makes one want to scream and get out of the classroom. The classmates' chatter, designed and enhanced by Dear VR ambisonic mix is meant to create a storm in one's head, and one cannot focus on what the present teacher is saying, along with the colorful posters on the walls, which seem to dance and blur, making one feel dizzy. In addition, this 3DSC work was shown several times to people with these disorders and then adjusted to make it as close to reality as possible. The video had also received an ADWARDSMMXX Creative Excellence Award in 2020 and was deliberately

Figure 69: *Experience Something Different*, RIG (2020), directed by Aigars Ceplitis, at 02:30.

used as a part of the *'Gaslight' Narratives Neo-noir* to test whether RIL does indeed provide the most immersive perspective, even under the rhizomatic spectatorship setup. Likewise, the 2019 3DSC version of the original *Peeping Tom* (1960) employs a complex focalization strategy for the audience to assume a passive deputy focalizer role in the perspective of the 'negative locus' (Fig.70). As the woman immersed herself in watching an erotic film, her imagination conjured an imagined "peeping Tom" figure, blurring the boundaries between fantasy and reality, although initially the viewer is not aware of the young man's actual status. Oscillating between the restricted 'reverse internal locus' (peeping Tom talking directly to the camera in the second person) and NL (in close physical proximity to the woman), the viewer

Figure 70: *Peeping Tom* (2019), directed by Aigars Ceplitis, at 01:27; 01:36.

is an unwitting witness to her psychological unraveling as the female protagonist descends into a self-imposed Stockholm syndrome, becoming both captor and captive of her own desires. Here, the narrative structure leverages a sense of voyeurism and complicity, as the protagonist's psychological descent is observed, particularly when the woman rises to seek out her imagined stalker, the audience experiences a jarring shift in perspective, realizing the fabricated nature of her fantasy as well as the depth of her psychological disturbance. She peeps out of the window, looking for the young man, so does the audience also peers along, pressed against the cold window at an extreme height where peeping from outside is hardly possible. As a result, the immersive effect meanders, both quirky and unsettling.

The perspective in all three, *Ascenseur Pour L'échafaud 2014, Experience Something Different,* and *Departure*, as it has been detailed extensively throughout the Thesis, is linked

to the "geopsychic exploration"[45] of spatial frames. Akin to "cinematic chronotopes," the time-space etymology and the dynamics of cinematic experience in 3DSC rest upon the perspective-space designation, expressed through the spatial extensions of platial experientiality. It is a bittersweet irony of the latter, then, unless one comes from the depopulated country side of Aluksne, the place where *Departure* was shot, the depth and emotional charge, could escape one, and the film might strike the viewer as a mere flânerie throughout pastoral landscapes. To compensate the prospective lack of the neuro-visceral and situational nature of these narrative acts, another 3DSC prototype *Opportunities* (2021) had been made, which targets the implied audience, irrespective of their cultural, political, and social proximities, but structurally coherent in order to pass along as being a "natural narrative situation".

Opportunities was initially a commissioned assignment prototype, as a part of the cVR production course that the author of the dissertation teaches at RISEBA, the purpose of which was to investigate the effects of mentation and some new modes of multi-level aesthetics that transform physical spaces based on the audionarratological attributes that a particular 3DSC attempts to signal. Written by the author of the Thesis and produced by his fellow artists Artjoms Kutirjov and Sen Vlad, the four-minute film builds on the concept of blending disparate spatial frames into one consistent narrative setting to create a virtual continuity from a wide range of proximities with different textures, scales, and densities.

The intimate living quarters of the main characters are combined into a series of assorted spaces, each with a specific past guided by the type of social significance to each character, while the setting itself is adjusted to reflect the collective rejection in the society they are forced to commune in. The mentation in a gradual transitioning from one spatial frame into another, where "each pause in movement makes it possible for location to be transformed into place" (Tuan, 1977:6), makes each location a site of dejection, the aesthetics of which are operated by means of the junction: places, voice-over narrations, and superimposed placeholders of archived footage to orient the depth of 'natural' setting. The delivery of platial experientiality is stringent upon the cohesion of narrative levels the junction is comprised of, and the deriving coherence. Here, the triptych offers an opportunity to witness the Russian mentations by a Second World War veteran, the poignant sorrows of a former box champion, now-a-drug-addict, and the fading memories of the Latvian deportations by a woman (Fig.71) whose grandson happened to be a co-author of the film. The film opens and ends with the voice-over by the neoliberal prime-minister of a party whose policies have contributed to the poverty rate of 23.5 %, as of 2023. The content of his speech borders on a grotesque tragedy: the hyperpatriotic attempts to assure the local residents of equal opportunities for all in a land where discrimination is rampant and any political opposition is effectively subdued. The 3DSC prototype *Opportunities* builds on the understanding of 'time' as history made, and to

[45] Giuliana Bruno (2002) describes cinema as a form of 'geopsychic exploration', a cartographic process serving the probing of spaces; his definition begins to challenge the boundaries of a defined architectural space – that of the cinema – and opens itself up to seeing movement-based spatial recognition and consumption as a process that shares common ground with a much larger territory, such as a city (Bruno 2002:15, as cited in Koeck, 2013:5).

be made as well as the combination of inner projection and its architectural representation in which the audience is an active participant by means of "re-centering" within geometrically coherent space. The dynamics of the relationship to the spatial frames is that of a unique gaze in an area of friction, between the observer's perspective in *"direct experience* (the "centering" and bodily situating of existence in relation to the world of objects and others)" (Sobchack, 1992:4-5) and its echo image of "the subjective and objective poles of a 'viewing view' and 'viewed view'" (Sinnerbrink, 2022:123), i.e, the human existence in the spatial container of *Opportunities* is meant to prolong and repeat the cycles of illusion through the sensory materiality that explores the overlapping relationships between virtual reality and human experience. By contrast, *Once Upon a Time in Bolderaja* (2022) is a "direct experience" amplified through **audioacoustic flânerie**.

The film retraces the sequence of events that led to the 1977 rape and killing of a teenager in a post-Soviet suburb of Riga that looks frozen in time; it uses a reenacted voice-over of the killer who recounts the tragic of events of that day. There are no actors playing out the scenes; instead, the audience is visually placed at the actual sites where the rape and killing occurred, as if mentally and emotionally the audience is witnessing the crime. The narrative structure is

Figure 71: *Opportunities* (2021), written by Aigars Ceplitis

somewhat complex as it contains an oscillating perspective that is an offline mentation of the killer reflecting on his life in two parallel oscillating mentations: the narrated flashback by the

killer and its duplicate, reconstructed by the viewer since the audience hears the re-enactment without any optical witnessing being in place (Fig.72). The use of auricularization and ocularization as narrative devices is crucial here, as it creates conditions for metaleptic oscillation between the two forms of focalization, between consciousness-attribution and consciousness-enactment. The audience hears the recount of the killer on the extradiegetic level (something other characters do not), but his precise recounting of events during the killing is auricularized by all, or to put it differently, his voice-over is auricularized intradiegetically where his narration is carried out hetero-homodiegetically because (a) the killer does not indicate that he actually hears the conversation replayed in real time to the viewer who witnesses the unfolding events, and (b) although he is part of the story-world, optically he is never seen in the configurations meant to evoke metalepsis.

Feyersinger (2010:67) in his *Metalepsis in Animation*, establishes many different types of narrative metalepsis based on the variety of directions and modes of transgression in ontological realms. His typology can be effectively applied to the design of 3DSC spatial frames, where the fictional and virtual become increasingly fluid and permeable. Such as, for

Figure 72: *Once Upon a Time in Bolderaja* (2022), directed by Aigars Ceplitis, at 01:17; 03:26.

the killer who narrates the story, the suburb of Bolderaja represents an "abased place", one beyond repair and redemption, reproducing what it has always reproduced since 1977. For the killer's friends, Bolderaja remains a "shaded place", the empathetic space of hauntology that

takes us inside the sensibility of a character "trapped in a sense of loss, usually because of death" (D'Adamo, 2018:262), but for the author of the Thesis, Bolderaja represents a somewhat "tainted place", for it was in these same spaces that he had spent his early childhood, perceived as the most carefree, loving, mischievous, and bright place. It is for this reason that, in the making of the film, he chose not to use a full re-enactment of the horrific events of 1977, as the contemporary violence is not what Bolderaja stands for him.

5.3. Data Collection

"Abductive reasoning" offers a balance between the data-driven approach of inductive reasoning while still considering existing theoretical knowledge in conceptual refinement and integration in a continuous back-and-forth movement (Conaty, 2021). At this stage, the Thesis deployed analytical techniques such as diagramming, memo-writing, and deep coding to visualize the final 3DSC typological elements and prepare the core narratological categories for saturation testing.

ATLAS.ti was used to significantly narrow coding tree elements that could be effectively integrated into the emerging theoretical structure while remaining open to new insights and modifications as needed around a central phenomenon or core category, be it 'kinaesthetic aspects of 'place'' or a 'deputy flânerie', to name a few.

5.4. Analysis of Research Findings at the Theoretical Coding Phase

The immersive nature of 3DSC transforms cinematic movement into clusters of places defined by kinesthetic experiences, with pauses for physical reflection and movement as potential. By applying Gabriel Zoran's (1984) model of spatial dynamics, 3DSC's narrative perspective fluidly oscillates between first- and third-person points of view, highlighting the relationship between physical and experiential states. The following analysis aims to solidify the proposed matrix for the narratological attributes of 3DSC, as given in the table below.

Table 7: Narratological categories in Theoretical Coding Phase

Compared Categories	Key Aspects
Kinaesthetic aspects of 'place' in 3DSC	• narrative levels: 3DSC incorporates topographical (static), chronotopic (movement-based), and textual (signified within the narrative) levels of spatial construction; • oscillation in perspective: viewers experience an "I can and I cannot" oscillation, projecting them into realms of movement possibility while acknowledging their bodily limitations; • **platial kinesthetic experience**: 3DSC is physically static but experientially kinetic in a succession of physical and cognitive pauses; • "self-other differentiation" remains crucial for immersion and empathy, with 3DSC emphasizing a second-person perspective within a first-person narrative.

Deputy flânerie from place to place	• in 3DSC environments, platial experientiality favors pause over movement as core attributes of spatial frames, and is socioeconomically contextualized; • 'platial experientiality' involves oscillation between "exocentric" and "egocentric" views, that is, an exocentric view is a detached perspective, while an egocentric view is a personal, first-person perspective from a fixed position out • 3DSC prototypes like *Departure* (2018) use shifting perspectives to anchor viewers within socio-historically accurate environments, transforming narrative settings into exocentric places; • **egocentric flânerie** is an exploratory, wandering experience akin to an ethnographic journey where each spatial frame is experienced intimately and subjectively; • **proxemics** defines the precision of object placement in 3DSC affecting narrativity and immersion.
Narrative perspective reconfigured in 3DSC	• sound and perspective are linked through the proxemics and kinetic properties, where the viewer acts as both "hearer" and "narrator" via auricularization and **geolocatory perspectivations**; • *oscillation* and *auricularization*: while narrative settings can have an 'oscillating locus,' they cannot contain "oscillating auricularization" since auricularization in 3DSC is tied to a specific narrative layer.
From implied author to '**apex** narrator' refined	• the traditional covert extradiegetic-heterodiegetic narrator can lead to multiperspective fragmentation in 3DSC; • the 'apex narrator' in 3DSC differs from the 'implied author' or 'filmic composition device' (FCD) by focusing on the audience within the diegetic container, rather than on authorship.
Metaleptic oscillation and 'egocentric' views	• the effectiveness of metaleptic approach depends on factors like object proximity, ideological and perceptual proximities, and cohesive narrative structuring, ideally guided by 'apex' narration.

Kinaesthetic Aspects of Place in 3DSC

The physical placement in 360° 3D environment from which ocularization is possible renders the platial 360º stereoscopic cinema physically static but experientially kinetic, perceived as a phenomenon of an internal cinematic movement, by means of the first-person perspective in which their socio-cultural practices correspond to the bodily-perceptual level of one's own experiential background. Any spatial extension and its stereoscopic prowess are greatly influenced and, at times, fully governed by the caliber of experientiality a particular film may afford; in other words, experientiality in 3DSC is platial, haptic, and tactual.

The Greek term κινεῖν or *kinema*, in itself, suggests an architectural space in which human body is a part of a visual system that allows us to perceive a sensation of '"movement', as a

stem of *kinematic*, *kinetic* and *kinaesthetic* (Koeck, 2013:5)[46]. Without the 'kinaesthetic aspect', the 360° is only hypothetical. If 2D filmic space is a *mise-en-abyme* of a three-dimensional space on the level of a two-dimensional frame (Weihsmann 1995:9, as cited in Koeck, 2013:31), then 360° in 3D has no concern for the latter, whatsoever, since it is already a three-dimensional *geopsychic* space of a bona fide cinema. The kinesthetic experience of such a space gravitates towards the virtuality of what can be seen as a complex qualitative experientiality of places in relation to the body's proximity and gaze through movement, whereby the geospatial position of the audience, situated at the "bull's eye", is positioned on the intradiegetic plane, and contributes to the kinetic quality of the 3DSC narrative by navigating and morphing spatial frames into personal places. Furthermore, mentally, such an experience is both haptic and platial; haptic due to the presence of hCtA, and platial due to space orientating the narrative act as a succession of pauses stringent upon various levels of "natural" proximities, both literal and experiential. While the narrative space in 3DSC can certainly be manipulated though its functions according to the filmmaker's visual style and purpose, where one might emphasize the historical and sociological aspects of a cityscape, another might stress the textures, surfaces, materials, and patterns of a modern city, as in classic cinema (Andrews, 2014:18), the actual experience of 3DSC space is narrativized by the viewer's geospatial position through kinesis. Through the coordination of movement, this individualized experience harmonizes the perceptual realms, presenting either a predetermined or diverse visual journey through space and time, with spatial connections and conveying exhibition messages of a collective perspective. In such an equation, mobility is a key, as it affects perspective: if the body is positioned in a certain way, then things will appear differently, including the places in which they appear. Notwithstanding the optical illusion and its bearing on the organization of human space, space itself is *experienced directly* (Tuan 1977:11), as a network of *movement* and the body, explored within *primary* space. In addition, the second type of space, *orienting* space, provides context for the primary space (places of action). This type of space is intrinsically kinetic, with the main difference in virtual environments being that there is no orienting space to speak of in 3DSC, where each spatial frame serves as both primary space and orienting space simultaneously.

The invocation of three levels of spatial construction with respect to totality in primary space, based on Gabriel Zoran's (1984) model[47], is very useful in communicating the dynamic qualities of space in 3DSC.

The first two levels correspond roughly to the definitions of place and space, seen as the product of movement between places: in "its topographical structure, [space is] all potential—it is neutral, with regard to any specific movement. In contrast, the chronotopic determines

[46] "we engage with spaces and places in our daily life in ways that are essentially *cinematic*. The Greek term κινεῖν or *kinema*, meaning 'to move' or 'movement', also appears in the word stem of *kinematic*, *kinetic* and *kinaesthetic*. The term *cinema* signifies an architectural space in which we become part of a visual system that allows us to perceive a sensation of *movement* and in which we are *moved*" (Koeck, 2013:5).

[47] space as a static entity on a *"topographical level" (a), as a* structure imposed by events and movement on a *"chronotopic level" (b), and, finally, on* a *"textual level",* the structure imposed on space by the fact that it is signified within the verbal text" (c) (Zoran, 1984:315, as cited in Punday, 2017).

defined directions in space [and] the movement may be reversible" (Zoran, 1984: 318-319, as cited in Punday, 2017:99-100).

The anachrony in movement in 3DSC is sustained by the 'textual' level, not only in the form of an immediate voice-over, but also as narratorial comments and reflections, through offline mentation. Therefore, space in 3DSC is perpetually dynamic through "I can and I cannot"[48] equalization, which feeds the root of experiential states in 3DSC, the expressions of hCtA. The in-between immersion it fosters, neither entirely active nor passive, bears resemblance to live theatre, more so than to cinema, where the viewer is co-present with the actors and objects in the 360° space, and where the position of the audience and the surrounding narrative is configured in multiple ways to evoke different experiences, using all possible technologies, up to light field and real-time volumetric film. It is as if the forces at work are somewhat similar to Caracciolo's (2011:6) strategies of "consciousness-attribution" and "consciousness-enactment", with "oscillation between a third-person stance, wherein we attribute some experiences to a character on the basis of expressive cues, and a first- person stance [in imagine undergoing]", subjected to "a fictional world through the narrow gap between being ourselves and not being ourselves" (Nayebpour, 2017, as cited in Caracciolo, 2012).

But such an oscillation in narrative perspective is not entirely germane to text based medium. As the dissertation argues, self-other differentiation, a crucial step for immersion and empathy for subjects, is never lost in 3DSC, even if the audience is a mere observer in the third-person point of view. What is more appropriate to speak of in 3DSC is the second-person perspective framed by the first-person narrative container which reshuffles the dominance of spatial concepts in favor of 'place', as something specific and immediate in a physical location, with its existence being either real or imagined and constantly reinterpreted. In not only encapsulates the presence of hCtA but also **Tactuality**; if the first is reflective of desire to move in place, the latter is reflective of a burning desire to haptically grasp what is an immaterial three-dimensional abstraction in place.

Deputy Flânerie from Place to Place

For a child, his mother is "his essential shelter", his primary place of existence (Tuan, 1977:29), expressed by a pause in movement becoming a place. Likewise, the pause becomes a core attribute of spatial frames in 3DSC environments, devoid of temporal extension, on the basis of which one may legitimately argue that 360º stereoscopic cinema is essentially platial. To better illustrate the binary of platial and spatial connotations, it can be mapped directly to the conception of physical space, while place is chiefly an experiential space where objects and relations are used to represent space in a form that is understandable by humans through their socioeconomic activities, at specific sites (or spatial frames for 3DSC)—marketplaces, universities, family rooms, nightclubs, malls, cathedrals, and so on and so forth—, and in

[48] Tait (2020:94) claims that "*I can* and *I cannot*…propels [the audience] outward into the movement [it observes] and backward into [its] own capacity/incapacity, [by] projecting [it] into a realm of movement possibility that frees…body's limitations (its *I cannot*) by vicariously eclipsing [it]".

“doing so, the participants (both material and human) interact within a particular place and emanate elements of their own nature” (Hillis, 1999:83, as cited in Cascelli, 2017:152). This nature, although communal in its socioeconomic stratum, remains rooted in the first-person perspective and, in terms of location, as a place. For this reason, spatial frames are not typically perceived as landscapes, even though visually they may seem that way; instead, they serve as a backdrop where the concept of being centrally located in relation to other objects in space is controlled by 'proxemics' and the dynamic politico-ethnic virtuality.

When speaking of ‘proxemics’, the author of the dissertation does not use the designate in terms of social transactions within surroundings as defined by Hall (1966), these being intimate, personal, social and public, the total span of which ranges from approximately zero to eight meters (Hall, 1966, as cited in Dooley, 2021:100). The Thesis uses ‘proxemics’ in terms of precision of the objects in 3D space to affect various narratological factors are in play.

The accuracy of proxemics has a symbiotic relationship with the speed of movement between spatial frames, timewise slow enough to anchor one's belonging to the environment and given prominence by the sheer accuracy of the objects near and far away. In this narrative setting, the accurate function of its operational plane and its stable socio-historico-geographic environment morphs the set of ‘participatory story-spaces’ and ‘surveillant story-spaces’ into an ‘exocentric place’. Scarcely experienced as a landscape (although optically one might take it for an ‘egocentric place’ with a passage *in potentia*), these proximities, actual and codified, underline the platial experientiality in a rather sustainable fashion. In this equation, platial experientiality and perspective are linked, contained within **egocentric flânerie**, a kind of ethnographic exploration of “embodied space”. The previously illustrated examples are all a substantiation that space in 3DSC is mostly thought of as a chain of spatial frames, sovereign in essence, only loosely relevant to issues of temporality, and unambiguously platial. It becomes consequential that the dominant majority of those who perceive spatial frames in terms of ‘place’ exhibit a propensity towards a stronger involvement with the cVR environment and a more distinct expression of empathy towards its subjects, whether it has been intended or not. Hence, the graph proposed by the dissertation suggests the binary of ‘space’ and ‘narrative perspective’ in 3DSC, with ‘platial experientiality’ being the core to drive immersive states (Fig.73).

Oscillation is a part of the matrix, a shifting nature of one's point of view between 'exocentric' and 'egocentric' views, 'ocularization' and 'locus', 'auricularization' and 'situatedness', all the while the set of proximities enhance or decrease the sense of presence on site. Whether the letter is a dominant attribute largely depends on the accuracy of object proximity to the central vector (the audience), the ideological, cultural, and perceptual proximities, as well as the cohesive structuring of narrative levels, preferably regulated by 'apex' narration.

For instance, in *Opportunities* (2021) the three different ‘places’ that are framed by one consistent ‘spatial frames summarized container’, a type of narrative setting to create a range of proximities with different texture, scales, and densities. The opening spatial frame that shows St. Jacob's Cathedral in front of the barricaded Parliament building, narrated by the

former prime minister, suggests an acknowledgement of the sacrifices that society has made in order to create opportunities. As the audience moves from the exterior to interior, from the public to private, the gaze of the deputy actant is nevertheless 'exocentric'. Here, the triptych offers an opportunity to intrude and gaze at the intimate living quarters of the main characters, combined into a series of assorted spaces, each with a specific past, guided by the type of social significance attached to each character. A gradual transition, deputy flânerie from one spatial frame to another, makes each pause in movement a site of an inescapable architectonic influence, particularly the Soviet panel buildings the majority of the working class in the capital still lives in, an influence one schizophrenically wants to erase, redesign, to cancel out.

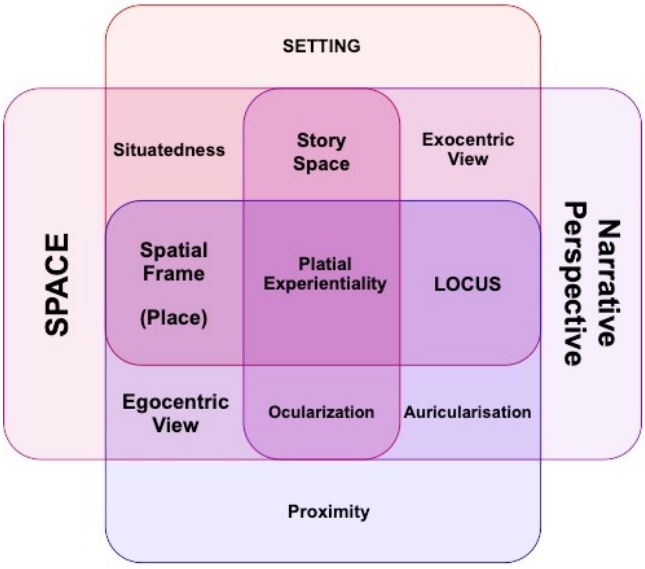


Figure 73. Attributes of *Platial Experientiality* in 3DSC

Once the prime minister finally speaks again in the final bracket, set against the cinescape of St. Jacob's Cathedral, his uplifting Westerner's speech sounds as if it is coming from the halls of the Political Bureau of the Central Committee of the Communist Party. In terms of its operative attributes, *Opportunities* (2021) acts as a "surveillant scene" with a deputy oculizer present (termed in the re-focused coding as 'surveillant story-space') as well as being framed by an extradiegetic *apex* narration (perceptual slant by the filmmaker) that gives an immersive depth and experiential fidelity to the 'natural' setting.

Hence, the matrix for the attributes of platial experientiality in 3DSC can be reconfigured to include narrative layering. A crucial difference from Ryan's (2016) conception of story-space, where it is relevant to the plot, including all spatial frames plus all the locations mentioned but not visible in the scene, as well as that of Chatman's (1980:96-97) where story-space is semi-literal (cutting-off the space by the frame), and, as in verbal narrative, abstract, requiring a" reconstruction in the mind", is that, in 3DSC, story-space is literal and the

reconstructed part is in the form of mention by the narrator and the audience; that is why it is more appropriate to speak of story-spaces in 3DSC, be it surveillant or participatory, as a succession of scenes (Fig.74).

Narrative Perspective Reconfigured in 3DSC

It has been noted earlier that whenever one moves around and positions oneself in narrative space, it may result in narrative communication, even if the intention was not there. It is as if by pausing within a spatial frame, a particular perspective is immediately bound to be closely tied with experientiality. Each pause not only becomes an isolated event, situated at a particular socio-cultural vortex, as is the case with the 3DSC films *Taxi Driver* and *Opportunities*, but also its orientation responds to a wide gamut of perspectives. 'Situatedness' is, thus, expressed in a specific location in 3D space as well as the vortex under consideration.

It is important to remember that sound primarily functions in spatial terms, in conjunction with perspective, through the proxemic and kinetic properties of both the "hearer" and the "narrator" (Lutostański, 2016:120). In 3DSC space, however, the viewer is both "a hearer" and "a narrator" through the processes of auricularization and **geolocatory perspectivations** (Fig.75). Not only do the events transpire in social settings, where space requires attention to the conditions of one's physical and 'perspectivized situatedness' in relation to other bodies and objects, movement and access in space, but, in practical terms, they also gravitate towards the set of loci where oscillation may run parallel to auricularization but never as a form of it.

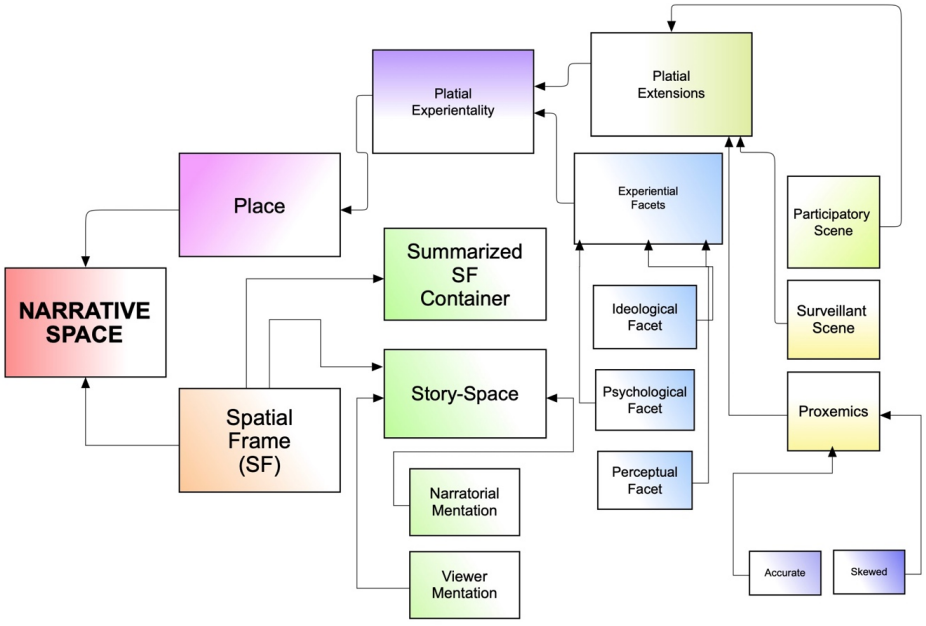


Figure 74: Processes of Narrative Space in 3DSC.

In other words, one can have a narrative setting where the 'oscillating locus' predominates, but one cannot have an instance of 'oscillating auricularization' because 'auricularization' in 3DSC is set to a particular narrative layer, while oscillation in perspective can be metadiegetic. For instance, in *Taxi Driver* and *Ascenseur Pour L'échafaud 2014* (2017), the prevailing 'geolocatory perspectivation' is RIL. In the letter, the audience's point of view oscillates between RIL and 'negative locus' (between being a 'spear focalizer' versus 'deputy oculizer'); in either case, auricularization is still set to the narrative layer, where the audience hears what the characters hear, while in *Once Upon a Time in Bolderaja* (2022), the heterodiegetic offline mentation of a killer recounting a rape he committed, is homodiegetic in terms of auricularization. What follows, then, is the need to distinguish between 'oscillating locus' and 'oscillating narration' in terms of a user designate.

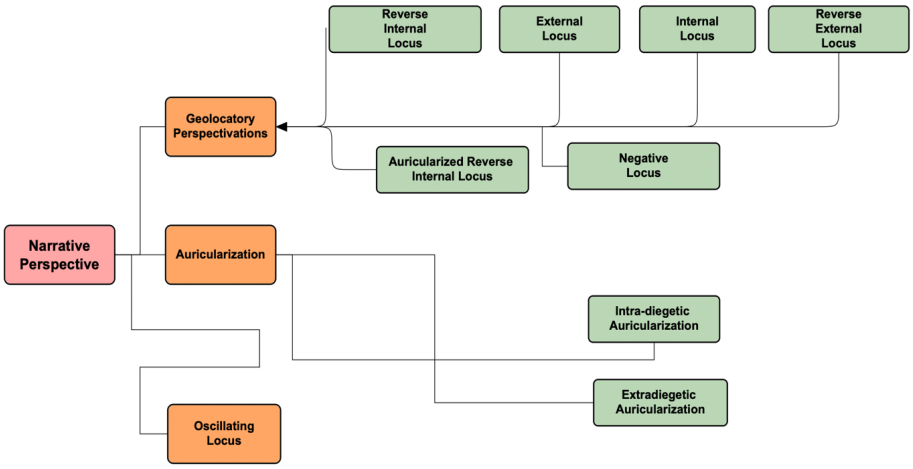


Figure 75: Processes of Narrative Perspective in 3DSC.

From Implied Author to Apex Narrator Refined

Despite oscillation being a part of the current cVR narrative matrix, the evolving perspective in 3DSC is still shaped by the 'place' that orients the narration in 3DSC, rather than the other way around. In this equation, narration, whether it is verbal commentary, interactions among characters, or a special narrator character providing backstory information, exists within the diegetic 3DSC space if it is overtly active. That is, when a 'voice' is speaking but remains hidden in the discursive shadows, neither the 'covert narrator' (Chatman, 1980:197) nor the 'implied author' is sufficient terms to support narrative focus in 3DSC space.

As stated earlier, in cinema, the 'implied author' is conjectured from the tonal variations, narrative design, and the entire range of codes to create a clear mental image (Hale, 2009), an agent who appears to have invented various aspects of narration (Bordwell and Carroll, 1996:253); be it Kurosawa, Tarantino, or Antonioni, they are the key creative force behind all editing, grading, sound design, and writing decisions. But such a designation does not

sufficiently explain the uppermost narration in 3DSC space where the audience realigns itself with a specific narrative level either as a participatory agent or a witness. The covert extradiegetic-heterodiegetic narrator, for instance, who traditionally may have been present the entire time, visible only in occasional narrator comments (in voice-over), may presuppose what Huebenthal (2020) refers to as "multiperspective fragmentation". In 3DSC, it occurs through the split of ocularization and auricularization, as well as a **split in narrative constitution** between narration and visual tracks. The distinction may seem confusing at first. In order to reduce the natural friction that comes with multiple perspectives and to prevent confusion between the implied author and different narrators, both on and off-screen, the use of filmic compositional devices, various focalization techniques, and ocularization, the introduction of an apex narrator in virtual environments simplifies the complexity of narration for the audience in 3DSC. What sets 'apex narrator' apart from the 'implied author' or FCD is the diegetic container where the target exists: the latter two are authorship-oriented, while the apex trajectory is from the author to a more specific audience. In addition, instead of focusing on tonal variations, narrative design, and various codes that determine its cinematic appearance, it is the 'apex narration' that provides structure and maintains coherence, essential for a strong sense of presence in 3DSC.

Metaleptic Oscillation and Egocentric Views

As stated earlier, the optical slant for the audience in *Opportunities* is predominantly an exocentric (landscape), gazed upon by a deputy actant but in an extruding ('spear') mode due to the very confined spaces the audience experiences. By contrast *Once Upon a Time in Bolderaja* (2022), is experienced as mostly an 'egocentric' (cityscapes) gaze, even though that gaze is "sequestered" (reclusive) since it deploys Low's (2014:23) mode of flânerie. Its narrative structure is somewhat complex as it contains an oscillating perspective that is a layered offline mentation; the heterodiegetic offline mentation of a killer recounting a rape he committed is homodiegetic in terms of auricularization (the audience hears his recount on the extradiegetic level, something other characters do not), but his precise recounting of events during the killing is auricularized by all, or to put it differently, his voice-over is auricularized intradiegetically, where his narration is carried out hetero-homodiegetically. The presence of the killer is, thus, sketched by the audience based on the spatial attributes of platial experientiality with its roots in the perceptual and psychological 'natural' affinity that the shabby, working-class milieu provides, in a kind of metaleptic jump. This has a divergent effect, depending on the cultural environment one is exposed to. Whether the letter is a dominant attribute largely depends on the accuracy of object proximity to the central vector (the audience), the ideological and perceptual proximities, and the cohesive structuring of narrative levels, preferably regulated by the 'apex' narration itself.

CHAPTER VI : SATURATION- FINALIZING 3DSC TYPOLOGY

6.1. User Testing in the Rhizome of *'Gaslight' Narratives Neo-noir*

One of the most critical aspects of any exhibition design is the way space is contextualized. Both the 3DSC prototypes and the environment itself, as well as the coherence between the two, are significant for the experiential viewing, particularly when a new model is presented to advance alternative modes of being-together, which may explore potential modifications to the constructed narratives. Not only do such installations contribute to the VR discourse as an aesthetic medium, but they also tap into the augmentation of architectural representation where physical structures offer the audience an intimate encounter with space and perspective, both individually and as members of the whole.

Each viewer can affect the various narrative outcomes according to the socio-cultural norms he or she exhibits, making the rhizomatic installation a dynamic flux of a "*sociopetal* space, which tends to draw people together, and a *sociofugal* space," which tends to push them apart (Lawson, 2007:140-141).

User testing was conducted in the Aisteres Hall of RISEBA Architecture and Media Centre H2O6 (Appendix K) supported by an accordant light display and projections. Having been splintered across the six rhizomatic (Fig.76) floor plan cVR stations (Fig.77), the immersive experience begins with one story, then, by "adding pieces on to it *ad infinitum*… "greater than the sum of its parts" and "a single cohesive story"…with the result ending in "fragmentation—the story has been broken into pieces" (Phillips, 2012:15), ends with another of one's choosing. The aim of the transfiguration for the audience is to fill in the gaps in this fragmentation by introducing potential extra details in plot that is not based on itself, per se, but rather than on "complex fictional worlds which can sustain multiple interrelated characters and their stories" (Jenkins, 2007:2-3), through the digital technologies that are more democratic and participatory (Harvey, 2015:201). The setting of the "democratic" is important if one considers that the world the installation inhibits is the kind of the dark milieu Lombardi's *Narrative Structures* (1994-2000) six years before his death in 2000, before 9/11 had mapped. If the drawings of *Narrative Structures* ("how-the-world-works") embody *rhizomatic narrative kinetics* and its propagation in public space, then the Rhizome of *'Gaslight' Narratives Neo-noir* (2022), with its distribution of Oculus Quest 2 interfaces, switch and expand dynamically as it connects multiplicities within the public space and the narrative space locked inside each alone. In reflecting one separately, one actually contemplates on all of them simultaneously; the focal points are not the loops, but the lines that connect them, which in turn, connects to the audience and generates a further movement within, along the axis x, y, z to become a part of rhizomatic connections in 360° space, where the established social order revealed is a *political underground stem* (rhizome), with all its corrupted complexity the audience has no control over. The dynamics here at play are a part of the inverse projection, that is, the 360° setting inverses the projection, "a frame…

[that]…reveals an inward movement [in] an effort to bring the subject inside" (Lee, 2015:1), in virtual kinships by means of new technologies rather than via physical interactions in space. When the typology of narrative processes in 360° stereoscopic cinema may be used in modern

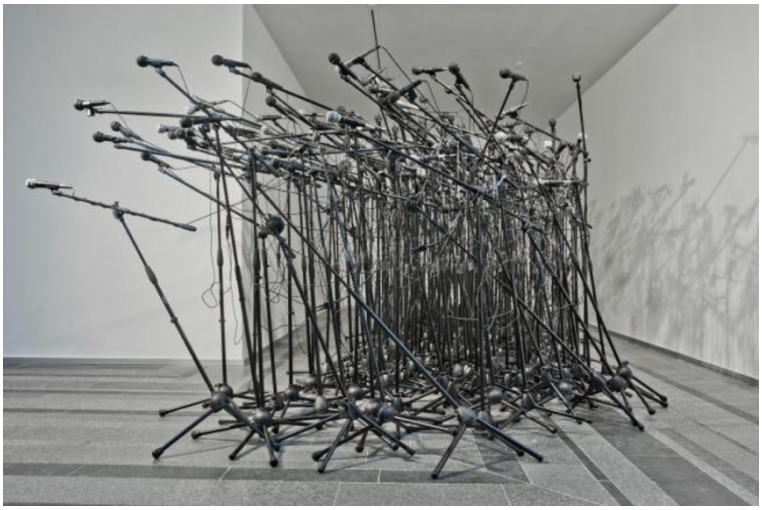


Figure 76: Rhizome of Mic Stands.

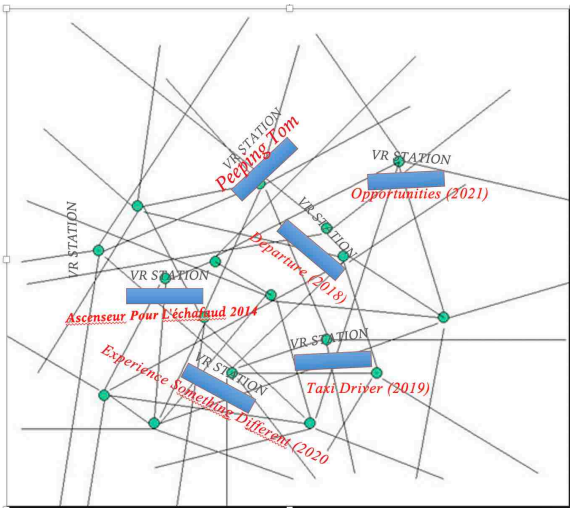


Figure 77: Floor Plan of the *Rhizome of 'Gaslight' Narratives Neo-noir* (2022).

video installations it is expected to initiate "perceptual shifts and invokes an alternative mode of social engagement of the self with the other, and even with the others within the self" (Lee, 2015:2), that is, it becomes, rhizomatic expression of installation mediated multiplicities that "present not a single linear narrative, but rather a progression of multiple spatial, temporal,

and diegetic…plurality" (Lee, 2015:6), in which a spectator is no longer a subject of viewing experience or an addressee, but a built-in shapeshifting constituent in the entire installation design. On one hand, such a place presents alternating areas of what is deemed to be the *centripetus,* the binary of 'sociopetal' and 'sociofugal' spaces, which tends to draw people together, and, with the latter, to throw them apart, "just as centrifugal force throws objects away from the center of a spinning axis" (Lawson, 2007:140-141) (Fig.78). The place is

Figure 78: A 'sociopetal' space in the tropical climate of Singapore (Source: Lawson, 2007).

kinaesthetic in so far as the connections are made along the x-y-z axis under the default cognitive activity hCtA, constrained by one's inability to move within the six degrees of freedom. On the other hand, the communal **rhizomatic spectatorship** (Fig.79) the place

Figure 79: The communal rhizomatic spectatorship of *'Gaslight' Narratives Neo-noir* (2022).

creates in order to move away from the *tell-narrative* towards the *experiential* narrative to explore the neuro-visceral immersive states in public domain becomes “the ideal aesthetic form for an era of collective intelligence” (Jenkins, 2007:4), the ‘Bifurcated Body’ of Sobchak’s (1992) “viewing views”. While rhizomatic at its core, its narrative matrix provides its viewers with the architectural platform of tapping into spaces with different scales and densities but at a high resolution, close enough to the authenticity of human vision. As one moves from a spatial frame to another, a particular identity is confirmed or rejected through the synthesis of various perspectives, assorted on narrative levels to produce a new reality, the interaction with objects via *modus operandi* that “has no beginning or end; … always in the middle, between things, interbeing, intermezzo” (Deleuze, 1987:46), forming a mass of roots, and having multiple exit and entrance points simultaneously. The movement is also in opposition to the pure liner progression in the map, full of plateaus and vacant spaces, where rhizome may be broken and shattered but will reconstruct from a new.

6.2. Measurement

‘Saturation’ represents a critical juncture where data collection and analysis converge to form a comprehensive theoretical framework. In its context, 'abductive reasoning' fine-tunes the process that originated during the theoretical coding stage (Walton, 2014), whereby researchers might initially start with 'deductive reasoning', but as data collection and coding transpires, 'thematic analysis' comes to the foreground (Denzin and Lincoln, 2017:429), which then cycles back to deductive reasoning to identify emerging narratological patterns that may not fit neatly into predetermined categories. As the research reaches theoretical saturation, abductive reasoning helps to determine the theoretical model finalized during saturation and to provide a blueprint for key typology categories in narrative constitution that would enable ‘episodic neuro-visceral immersion’ for prolonged periods of time, particularly under a rhizomatic spatial configuration of social space.

Initially, nine 3DSC prototypes have been produced to be used for the installation, but due to the potential VRISE effects and the limited scope of the Thesis, six were chosen as the most optimal for prolonged viewing, totaling 32 minutes.

On the narratological level, each particular prototyped addressed and tested the immersive aspects of a particular narrative category, the most important one distilled during the theoretical coding phase. On the content level, each 3DSC examined certain mechanisms of ‘gaslight’ operations as a part of narrative constitution and narrative as well as its psychological influence to scan the ideological, emotive, behavioral, and reasoning patterns of the selected viewers (theory-generating experts). The **Immersion/Narratological Factors Questionnaire** (Appendix L) focused on seven key narratological categories that the Thesis author considered crucial in substantiating the emerging typology in 3DSC: ‘apex narrator’, ‘auricularization’, ‘situatedness’, ‘focalization’, ‘oscillating ocularization’, RIL, and ‘space’. "Theory-generating experts" completed the INF questionnaire by using a Likert Scale to assess the Immersive Factor (IF) for each of the previously mentioned narratological concepts.

"Virtual Reality Release of Liability" form for the study was obtained prior to the commencement of the study in complying with state laws and municipality regulations for human subject research, to ensure the test meets the requirements set forth in the regulations on public welfare. Semi-structured interviews were conducted to elicit additional information with respect to the INFQ questionnaire that was used as a guide to verify the validity of proposed typology for 3DSC environments.

The interviews lasted for 35 minutes, whereby the collected data reached the point of ***saturation***, that is, when no new significant perspectives emerged from the interviews. The interviews were video recorded and the audio track was transcribed using Sonix software:

> "Speaker 1: Question it was question more of like this was sort of prototype. This is not hypothetical prototype that people in the future might be watching just snippets of the film and the society and the mind gets very fragmented right now. So… it's that we collect stories in bits and pieces. And so this format is more receptive as opposed to sitting like and watching film for 25, 30 minutes or an hour when the mind already functions in the way that you…yes…you need to watch small pieces as opposed to this. A question for more information.
>
> Speaker 2: You seem like, oh, this is from another movie. …. Yes, absolutely. Because I don't think anybody can sit and watch it like. But the thing is, is that I don't I don't know how soon we'll all be adapting to watching VR because it's such an awkward experience physically. Right. So, but if you're if you're talking about is this the future for VR to watch these shorts, little snippets of films? Absolutely. Sure. Why not? I would buy that if you were selling it, I would tell you, you know, I would not argue with you that was true.
>
> Speaker 3: But this particular set of like today is a prototype. You did nothing hands or didn't lose in terms of the quality of.
>
> Speaker 4: I mean, I guess only maybe just the ambient sound that you had going like, you know, maybe that added something like if you were sitting in your house watching it that way, you wouldn't be able to drown out other noises as easily because you don't have a sound system.
>
> Speaker 5: Saw a big plus that they are automatically connected. Because I think it would be a much different experience if all the movies were very different, like your show than the last one was about. But the common factor in these movies that worked, but even some small details in the films you didn't catch."

The transcript was cleaned to remove participants' names to protect confidentiality, and coded afterwards using ATLAS.ti to categorize the data. With respect to the advantage of the rhizomatic installation as an experiential viewing platform most experts agreed that it worked as a proof of concept because it allowed a sufficient time to process the information (Fig.80), and can provide a more social interactive experience than otherwise the solitude driven HDM platforms generally impose.

Figure 80: User testing in the Aistere Hall of H2O6 Media Centre.

6.3. Finalizing Narrative Typology in 3DSC

During the saturation phase semi-structured 'theory-generating expert' interviews, used right after the field tests and processed with "deductive reasoning" (referred to as top-down logic) methods (Walliman, 2021) within the "abductive reasoning" container (Walton, 2014), confirmed or refuted particular dominant narrative categories in 3DSC, and, thus, had provided a blueprint for the key typological elements in narrative constitution to support an episodic neuro-visceral immersion in 360° stereoscopic cinema, and if deployed under a rhizomatic spatial configuration. The particular typology of narratological poetics may address the entire inventory of narrative processes in 3DSC and helps the VR professional and narratologists to understand how the narrative is organized in particular format.

With respect to the last saturation stage of Thesis in its simulation to test some of the aspects of the narrative matrix in 3DSC rhizomatic space. The saturation phase that seeks to validate the typological structure of 3DSC predisposes the format to be primarily the dominion of the viewer where 'narrative space' and 'narrative perspective' edge out 'narrative coherence' and 'narrative distance' in order of their importance. Narrative space, therefore, requires a particular architectural setting in which the cVR discourse in its aesthetic connotation challenges the preexisting viewing modes while still preserving a communal aspect of spectatorship and a centered frame point-of-view.

For Genette (1983), space did not play a role in his typology, unless interpreted as a part of his 'narrative levels' grouping. His chief contribution is on the issues of point of view. In 3DSC typology (Table 8), by contrast, due to the audience being a part of diegesis, narratorial 'voice' is apar with 'ambisonic auricularization' since 3DSC predisposes the format to be narrated primarily by the spectator, and, as such, 'narrative space' and 'narrative perspective'

Table 8: Typology of Narrative Processes in 360° Stereoscopic Spherical Cinema

Narrative Space	Place - *egocentric*	Platial Experientiality	Platial Extensions	Proxemics	Acurate	Skewed
				Platial Dynamics	Participatory Scene	Surveillant Scene
			Experiential Facets	Ideological	Psychological	Perceptual
	Spatial Frame (SF) - *exocentric*	Summarized SF Container (SFC)				
		Story - Space	Narratorial Mentation	Viewer Mentation		
Narrative Perspective	Narrative Voice	Apex Narrator	Extradiegetic Narrator	Heterodiegetic Narrator	Homodiegetic Narrator	Oscillating Narrator
	Geolocatory Perspectivations	External Locus	Internal Locus	Reverse External Locus	Reverse Internal Locus	Negative Locus
					Auricularized Reverse Internal Locus	
	Ambisonic Auricularization	Intradiegetic Auricularization		Extradiegetic Auricularization		
	Oscillating Locus					
Narrative Coherence	Sequentiality	Linear		Sporadic		
	Narrative Strata	Narratorial Levels	Para-diegetic			
			Extra-diegetic			
			Intra-diegetic			
			Metaleptic Auricularization			
		Narrative Planes	Oscillating Extradiegetic Modality			
			Oscillating Intradiegetic Modality			
	Digression	Anachrony		Achrony		
Narrative Distance	Narrative Time	Immersive Stasis	Audiovisual Cognitive Stretch	Acceleration	Scene	Dimensional Gap
	Narratorial Perspicacity	Narratorial Ocularization		Chrono-Perceptual Scope		
				Chrono-Spatial Radius		
		Narratorial Enunciation		Extent		
				Reach		

of the audience, whereas ‘narrative coherence’ and ‘narrative distance’ are under the command of the narrator.

The macro categories that govern the most immersive states in 3DSC, thus, are ‘narrative space’, ‘narrative perspective’, ‘narrative coherence’, and ‘narrative distance’, with the former two being the core, i.e., if ‘space’ and ‘time’ are primary structuring principles of film, then, space and perspective as primary structuring principles in 3DSC. Furthermore, the spatial dynamics created in 3DSC act as binaries of "sociopetal" and "sociofugal" spaces that either draw the audience and objects closer or push them apart, the residual of which creates a matrix of ‘exocentric’ and ‘egocentric’ views, modulated by the ‘apex’ narrator.

In the 3DSC typology, 'narrative coherence' regulates **narrative strata**, which, in turn, regulates 'narratorial levels' and 'narrative planes'. Unlike traditional cinema, where narrative levels can be clearly separated through editing and framing, 360° video creates unique challenges as all levels must exist simultaneously within a succession of spherical places, where the viewer's ability to look in any direction at any time means that narrative planes and narratorial levels must be carefully aligned for coherence. This distinction has ramifications vis-à-vis Genette’s (1983) typology, where ‘narrative perspective’ is clustered under ‘narrative instance’, the actual moment and context of the narration, a temporal setting of the enunciation in narration, whereas in 3DSC, due to the audience being a part of diegesis, **narratorial perspicacity** is not viewed in conjunction with ‘perspective’ but rather grouped with the attributes of ‘narrative distance’.

The 3DSC typology also irons out the conflation of terms that exists in Genette’s (1983) and Jahn’s (2021) models of focalization with respect to verbatim and a purely optical perspective. The relationship between the “online perception” and “offline mentation” Jahn (2021) proposes is confusing in the context of 3DSC because the “primary mentation” (online), such as ocularization and auricularization, “the point-of-view co-ordinates of his or her “discourse here-and-now”” (basic stance: Here I am, telling this story)” refracts the recounted story to the imaginary perception (offline), be it events in “recollection, vision, hallucination, and dreams (without actual sensory data input)” (Jahn, 2021:39). While the perception is an offline mentation for the narrator, it is still ocularized in the present time *online* for the viewer. To avoid the perplexity, the 3DSC typology makes **narratorial mentation** a part of ‘narrative space’ analytical category, as opposed to being grouped with ‘narrative perspective’ since the narrator’s recount is spatialized and carries personalized experiences, unavailable to the narrator.

Narratorial ocularization and **narratorial enunciation** are two distinct aspects of communication rendering 3DSC: the former related to the audience, and the latter to the narrator. Narratorial ocularization refers specifically to the optical point of view, focusing on how the story is visually presented to the viewer, particularly relevant in film or XR formats. On the other hand, narratorial enunciation encompasses the broader idea of ‘who speaks’ or narrates the story, dealing with narrator's voice, tone, and overall perspective on the story being told (Patron, 2011).

While Genette (1983) primarily discusses "extent" and "reach" in relation to anachronies (analepsis and prolepsis) under the category of "narrative time", the author of the Thesis

codifies the terms as **chrono-perceptual scope** and **chrono-spatial radius,** respectively, for 3DSC environments under the category of "narratorial perspicacity", a part of "narrative distance". Since the structuralist view is that "narrative distance" refers to the physical and chronological distance, relationships, or emotional investment of the narrator to the events or characters of the narrative (Hogue, 2019:100), a more accurate, updated alternative is to use "chrono-spatial radius" that describes the range of narrative duration accessible to the viewer from his or her current physical, optical, and cognitive position in virtual space. Likewise, **chrono-perceptual scope**, in lieu of narratorial "reach", incorporates the temporal dimension of 3DSC narrative elements the viewers may perceive across both space and time beyond the immediate moment, encompassing past, present, and future elements in a multimodal sensory acquisition.

With respect to 'narrative time', the dynamics of 'audiovisual cognitive dissonance' in 3DSC environments are taken into account. Instead of a 'scene' (Genette, 1983), the 3DSC format processes any present recounts as a physical pause in a particular spatial frame; the compensation of a slowdown ('audiovisual cognitive stretch'), hence, explains the significance of the audiovisual cognitive aspect: what Jahn (2021) or Genette (1983) would consider a 'pause' in the narrative instance is 'achrony' in 3DSC.

In lieu of a 'narrative pause', the Thesis considers to use the designate **immersive stasis** to compensate for any stops in narrative time whenever the viewers explore the 360° space on pause, or an apex narrator does this for them with commentaries or other narratorial techniques.

With respect to the **oscillating intradiegetic modality** and **oscillating extradiegetic modality** that appear in 3DSC typology, the main distinction between both lies in their relationship to 'place' and the viewer's geopositioning. The oscillating intradiegetic modality operates within the diegetic space, where the audience exists within the spatial frames of the narrative rather than outside them, as it is when reading a book or watching a film. The intradiegetic modality keeps the audience neuro-viscerally immersed through spatial-narrative techniques such as ocularization and auricularization shifts, rather than camera movements. Meanwhile, the extradiegetic modality creates a meta-narrative situation that contextualizes or comments on the primary narrative without directly participating in it.

6.4. Summary of Research Findings at the Theoretical Coding Phase and Saturation

Through the lens of *kinema* and *kinaesthetic* movements within virtual spatial frames, the immersive nature of 3DSC morphs the cinematic movement, internally and physically, into the **kinaesthetic clusters of places**. The **topographic flânerie** that governs this process is accentuated by the succession of pauses, physical and reflective. By drawing on Gabriel Zoran's model to delineate spatial dynamics - topographical, chronotopic, and textual--the narrative perspective in 3DSC may be best designated as a fluid oscillation between the first-person and third-person point-of-views, that emphasizes the fluid relationship between

physical and experiential states. This nuanced narrative framing, characterized by an interplay of self-other differentiation, accentuates the significance of 'place' over 'space' in 3DSC, underscoring the immediate, cultural and ideological nature of experiential engagement within the format.

The immersive states are stringent on accurate *proxemics* in 3D space, where precision in object placement affects narratological factors and viewer experience. The author argues against **skewed proxemics**, pointing out disorienting effects in certain 3DSC films compared to more compelling narratives such as *Departure* (2018) which uses shifting perspective to address socio-economic issues and depopulation in Latvia, and by proposing a matrix for the attributes of platial experientiality in 3DSC. The matrix stresses that exocentric and egocentric views encapsulate narrative aspects in 3DSC films, whereas the concept of **oscillating locus** versus **oscillating auricularization** emphasizes the importance of maintaining narrative coherence, which ultimately is modulated by the **apex narrator**, with its impact linked to the Lefebrian gaze.

The narratorial mentation in the context of 3DSC format involve layers of storytelling within storytelling, with metadiegetic and intradiegetic elements, rhizomatic in texturw, in which the oscillating perspectives in 3DSC create a metaleptic level where the spectator becomes central to all narrative levels. The spatial dynamics created in 3DSC environments rest on the binary of 'sociopetal' and 'sociofugal' spaces that either draw people together or push them apart. The communal **rhizomatic spectatorship** fostered by these spaces encourages a shift towards the exploration of neuro-visceral immersive states in a collective intelligence era, ultimately creating an ideal aesthetic form for engaging with narratives beyond traditional viewing experiences.

CHAPTER VII: CONCLUSIONS AND RECOMMENDATIONS

The dawn of **360° stereoscopic spherical cinema (3DSC**) aligns with Sergei Eisenstein's prophetic vision put forth in 1948. Despite his declaration that "to doubt that stereoscopic cinema has its tomorrow is as naive as doubting whether there will be tomorrows at all" (Eisenstein, 2004), and in spite of views of Cinematic Virtual Reality (cVR) as the natural progression of cinema, claims to 3DSC's universality in narrative structure and production techniques remain exploratory. While 3DSC represents the next steps in immersive media, questions remain regarding conventions of storytelling, audience engagement, and creative workflow adaptation that are well-established in traditional film, i.e., the language of cVR is still under development, with vocabulary being created for each new application. The residual secondary effect is that cVR has indeed received the public attention it deserves, but the empirical research with respect to its screen grammar of narrative is still insufficient.

In tackling the narrative grammar impasse, this dissertation posits that the key lies in embracing a narratological framework. Consequently, this Thesis provides the first thorough analysis of narrative design utilized in 360° stereoscopic spherical cinema to identify specific narratological categories and their configuration in 3DSC space to deliver varying levels of neuro-visceral immersion.

Based on an extensive analysis of virtual reality artifacts and literature review, combined with the author's previously published case studies and the grounded theory methodology employed, this research has created a **formal narratological typology for stereoscopic 3DSC** that may help academia and professionals working in the Cinematioc VR domain to optimize immersive characteristics through the exploration of narrative structures, rather than just relying on the technological mechanisms employed.

Instead of viewing narratology merely as a *discipline* and theory of narrative, the dissertation deploys a rigorous methodological pipeline concerned with the universal characteristics of narrative media and narrative genres, its wide gamut of well-known forerunners, and the theoretical frameworks by Gérard Genette, Manfred Jahn, Monika Fludernik, Seymour Chatman, Edward Branigan, Eleanor Andrews, Amadeo D'Adamo, Marie-Laure Ryan, Marco Caracciolo, Henri Lefebvre, and Sophia Psarra, to name a few, in order to demonstrate the immersive vectors of narratology.

Furthermore, rooted in the practice-led approach, the dissertation proposes a niche inquiry into diverse narrative situations designed for 3DSC, based not only on rigorous existing studies and artifacts in the field, but also through a methodology grounded in field experiments. The goal is to reconcile the fundamental *raison d'être* of immersive technologies, which is the attainment of complete psychological and cognitive teletransportation, or 'episodic neuro-visceral immersion', with that of narrative engagement. This is especially important when the current 360° narrative system, as well as its visual configuration, opposes the very type of experience that it strives to deploy.

The core of the methodological design rests on the terms derived from the coding procedures as defined by constructivist grounded theorists, namely Charmaz and Bryant, their established initial, re-focused, and theoretical coding, resulting in saturation of the final typology in support of narrative theories and philosophical positions adapted to 3DSC. Because cVR can be an intensely cognitively saturating experience, the Thesis demonstrates a popular demand for short episodic series of five to six episodes, each approximately ten minutes long, without adverse health effects such as nausea, eye strain, headaches, vertigo, or physical injury that might otherwise illustrate the limitations of prolonged headset wear.

Such limitations relate to the mass adoption of consumer virtual reality being progressed incrementally, while still being limited for broader audiences due to first-generation hardware constraints and production complexities. Similar to personal computers requiring approximately twenty-seven years for widespread usage, cVR faces barriers, including interactivity issues.

A widespread argument is that the immersive and interactive nature of virtual reality is incompatible with traditional narratives, analogous to initial perceptions of incompatibility between stories and games. However, this dissertation counters that an overemphasis on interactivity potential overlooks cVR's narrative applications. The Thesis does not assert that design deficiencies or limited interactive tools are solely responsible for hindering the advancement of 3DSC, or that they are the root cause constraining immersion. Instead, the author emphasizes the original purpose of the format, which is to immerse the viewer in a virtual environment and provide a sensory, cognitive, and tactile experience that mirrors real-life situations.

A significant portion of fostering such a sense of presence is framed through an analysis of the dynamics between a low level of interactivity and immersion, balanced by a high degree of narrativity. In line with Hayden White's proposition that narrativity is closely linked to the impulse of imposing moral interpretations on reality and a particular societal framework (Wagner, 2020), thereby indicating the presence of a latent morality within narratology shaping historiography, the Thesis' practical foundation rests on the processual and constructivist nature of representation, the role of a particular ideological and perceptual facets, and the importance of narrative coherence in creating evocative and sensible narrative situations. To back this foundation, the 3DSC prototypes are designed with a thematic and artistic focus in mind that critiques the neo-liberal economic and social order through a Brechtian lens in rhizomatic installation, while its various narrative setups are tailored to address specific research questions.

The first research question, matched to the initial coding phase, looks into the degree to which one can effectively assess narrativity, in light of interactivity and coherence, and the most prevalent components of narrative constitution currently used in cVR (monoscopic and more general) and 3DSC (stereoscopic and particular).

At this phase, the Thesis questions the purported status of cVR as the ultimate "empathy machine" due to challenges in objectively measuring the subjective emotional responses of the viewers. The notion that cVR can automatically realign a viewer's sympathies with a subject after just ten or fifteen minutes is misguided. First, there are purely technical

intricacies that affect empathy; the overarching tendency to simply parrot editing techniques, both in shooting and post-production stage, that are effective in traditional cinema but aberrant in 360° milieu, is one. Another is an erroneous camera placement strategy, in terms of its height, the viewer position (standing/sitting), and the proximity of objects appearing in videos, where people being too close, or the camera being very low, has a detrimental effect on viewing and immersive experience. Second, the viewer's projected reaction depends on the entire array of interconnected factors; there is no guarantee that seeing someone in a sad circumstance via an HDM will trigger an empathetic reaction any more or less than a dramatic 2D still photo would. Finally, the fundamental flaw in the "empathy machine" model lies in its representational strategies, constrained by facets of focalization. Since the most important feature of the former is perspective-taking in the form of "visual" perspective-taking, "social" perspective, and "experiential" perspective-taking, all three, according to Copland (2011), would require "affective matching", "other-oriented perspective-taking", and "self-other differentiation". Each of these is crucial in empathy, but none is sufficient on its own.

In addition, self–other differentiation requires a rational distance between the thoughts and feelings of the empathizer and those of the target but such a Brechtian *Verfremdungseffekt*, the "Distancing (Alienation) Effect", runs contrary to immersive technologies, as it is strongly affected by a cross-cultural framework as well as ideological and perceptual facets. They also involve narrative situations that, in reverse, affect any prospect of empathy or even sympathy. Compounded by the complexity of narrative layering and amplified by the equal complexity of narrative control, immersion may be positively or negatively affected. For instance, the examination of unstructured interviews undertaken during the initial coding phase reveals that the distribution of voices across complex narrative levels poses a challenge to achieving immersive states in cVR. A clearer and less saturated distribution of narrative layers enables easier processing of visual and narrative stimuli in the context of the application of narrative design, where the introduction of a unique **haptic Call to Action (hCtA)** phenomenon takes place, triggering in the audience a visceral desire to act and move within VR environments despite the constraints of three degrees of freedom.

Through implementing hCtA, the dissertation demonstrates VR's narrative applicability beyond prior assumptions focusing solely on interactivity, and, hence, it does not presuppose the commonly accepted view of the so called "helpless distance", shared by many computer-generated virtual reality professionals and gamers (Wohl, 2017:103), whereby the inability to move in x-y-z space or inability to haptically interact with their VR environment negatively affects immersion.

During the initial coding phase, noteworthy among the prevalent narratological categories in the emergent narrative typology for 3DSC are 'space' and 'perspective,' with 'platial experientiality' being a pivotal element driving the interplay between the two. In their dynamics, spatial frames in 3DSC are seen as succinct spatial constructs, loosely intertwined yet heavily associated with a sense of place. Individuals who interpret these spatial frames as "places" tend to exhibit heightened cognitive engagement within the cVR environment and demonstrate increased empathy towards its subjects and objects. In terms of spatial extensions, 'Surveillant Story-Space' is also strongly associated with the characteristics of a

place, if seen from a third-person perspective, whereas ‘Participatory Story-Space’ is seen as both a place and a space from a first-person perspective.

The dynamics of space and perspective within 3DSC also present an opportunity to redefine cinematic chronotopes in cVR, diverging from conventional constructs inherent in literature and film save for a pivotal distinction: cVR operates within the realm of the present tense, with the concept of ‘stretch’, denoting a decelerated ‘audiovisual cognitive time’, representing a predominant characteristic of immersive states in cVR and 3DSC.

Furthermore, the framework that categorizes narrative time into “ellipsis”, “summary”, “scene”, and “pause” is not automatically transferable to 3DSC. In cVR spaces, acceleration is used to compress narrative information, but this can detract from immersion, as rapid shot changes hinder the viewer's ability to process spatial frames, as demonstrated in cVR works like *CNN VR's London's Heathrow* (2017) and *Everest VR* (2020). These examples highlight the tension between narrative speed and immersive experience, suggesting that acceleration may not be well-suited to the unique demands of 360° narrative systems.

From an optical and narrative perspective, existing narrative practices in cVR, especially in Immersive Journalism, are posited to excessively employ a third-person viewpoint without due consideration of its efficacy. Visual fidelity, textual overlays, and proxemics emerge as elements that can either positively or negatively influence immersion in 3DSC space, contingent upon the multifaceted interplay of cross-cultural upbringing, ideological inclinations, and perceptual modalities, alongside the viewers' subjective emotional engagement.

With regards to narrativity, coherence, and empathy, they collectively contribute to the immersive quality of 3DSC experiences. While the Thesis opposes the widely shared view of the virtual reality audience being an active narrating agent, since the spectator in 3DSC does not narrate, it admits that the audience plays a crucial role in narrativity through an interaction between a narrative agent and the viewer, by a paradox: either the freedom of a 'spear focalizer' (the viewer) needs to be constrained to create a coherent narrative, or one has to sacrifice its narrative per se.

Fortunately, for 3DSC, as the 3-DoF medium at the time of writing the Thesis, the constraint is given; what is more, coherence is required by the particulars of the format. By reviewing the initial coding data to better understand the extent of narrativity present in 360° stereoscopic spherical cinema, as well as the most often deployed elements of narrative constitution in 3DSC, it becomes evident early on that narrativity is not essential to the nature of Cinematic VR, while coherence is.

Coherence, substantially overlapping with narrativity, is indispensable for 360° stereoscopic spherical cinema, irrespective of the degrees in narrativity, which varies from being very low to medium high, and it is stringent upon the logic of narrative levels and the superiority of narrative setting, as the audience traverses from one spatial frame unto another. Whenever the structures in narrative layering are baffling, ocularization is disorienting to the audience, or the facets of focalization are askew, coherence is negatively affected; and vice versa: when homogeneity of a setting is maintained and sequentiality of spatial frames is remixed, coherence is hardly lost, even in cVR samples with low narrativity.

Ultimately, coherence in storytelling requires bonding to proper grammatical structure. But as stated previously, this dissertation initially identifies a conflation between the *narrative grammar* of cVR and the *cinematic grammar* used in 360° video production pipelines, which leads to an inadequate addressing of the core issue permeating the complex nature of cVR narrative, namely, interactivity may overstimulate users' awareness of the medium itself and their ability to make choices, while immersion requires an obliviousness to the medium, where the user is passively engaged. Some might argue this conflict stems primarily from incorrect design efforts and can be reconciled through deliberate interactive design considerations, since the very restrictions it fosters may generate new conventions for future cVR narratives. But interactivity, strictly defined in its widely accepted meaning, instills a conflict with narrative situations whenever the audience is permitted to become a part of a fictional world as either witness or protagonist. To put it another way, truly innovative immersive and interactive storytelling remains elusive due to the very use of interactive technologies because the ultimate goal of virtual reality technologies, immersion, is not always enhanced by interactivity: even when implemented at their best, there are only a limited number of storylines that the audience can pre-author. Instead, the strongest modulator of coherence in 3DSC is a proper configuration of narrative layers (a), controlled less by narration and a narrator, but all the more by the spatial extensions of **platial experientiality** (b).

Thus, with respect to the second research question of how space and perspective, being the most significant narratological categories in 3DSC, affect the narratorial functions of a narratee (i.e., the audience/viewer) who is geospatially placed at the "bull's eye" on the intradiegetic plane only, the expression of 'platial experientiality' comes into play before any other in narrative constitution.

First, space is in dominant position to perspective in 3DSC where it is being continuously reconstructed as a chain of spatial frames, sovereign in essence, unambiguously platial. Second, space regulates the 360° stereoscopic milieu and it tied to perspective; as opposed to *film architectonics*, where the "chronotope" (space connected to time) governs the filmic frame, is that in textual and oral transmission, the narration starts with the narrator and author speaking (or in film with a "filmic composition device"), whereas, in 3DSC, the narration does not commence until the audience had trespassed the film plane and had entered the diegesis where it orients itself, irrespective of time that transpires always in the present.

As for 'platial experientiality', this phenomenon is expanded and honed during the re-focused coding phase to not only reflect a space-based inquiry in conjunction with the use of coordination-system oriented artifacts, but also to precisely capture the immersive experience in 360° stereoscopic film. This experience is always orientational first, and fundamentally platial, as the audience, while technically anchored in trespassing frames, pauses and gives meaning to space by inhibiting it.

Platial experientiality in 3DSC also emphasizes the neuro-visceral and situational nature of narrative acts that connects a narrative form with its intended audience, based on the basis their cultural, political, and social immediacies. This link is not only metaphorical but also an ontological one, where space in 360° stereoscopic spherical frame acts as a binary cluster: at

one end of one spectrum, there is of split up of ontological, operative, cognitive, and politico-ethnic planes, and at the other end, a unique catalyst of cVR spectatorship.

Its core element is spatial orientation, which, from a narratological angle, follows a similar pattern in each subsequent spatial frame: when a shot changes, the audience reconstructs itself in a new place. But the audience not only wants to see and feel this new stereoscopic spherical place but also to act in it, with an eager desire to move with characters in the unfolding process of a narrative between *I can* and *I cannot*, which inevitably predisposes the geospatial position of the audience and its emotive state to a peculiar binary of homodiegetic status in 3DSC.

On one hand, this homodiegesis is directly tied to "self-other differentiation". This differentiation serves as a visual reference for geopositioning of the viewer's perspective, such as in the *Invisible VR* (2016) miniseries where **oscillating perspectives** within 3DSC narratives may lead to disorientation whenever self-other differentiation is not present. On the other, homodiegesis is regulated by the bodily-perceptual level of one's own experiential background expressing itself through ocularization in the first-person but prone to the **set of reverse loci**, i.e., intensified or decreased by the presence or absence of the set of the second-person perspectives concealed as homodiegesis, a **hypermodal narrative situation**, with **locus** at its core. Therefore, in 360° stereoscopic spherical film, there can be a first-person narration but there can be no first-person perspective, as it would be the case with the first-person shooter (FPS) video games.

In an FPS scenario, the scenes are witnessed through the eyes of the player's avatar in a first-person point of view (PoV), where the player cannot see themselves from aside. Alternatively, the player may also see the avatar's hand holding a weapon in the lower portion of the screen, or in some cases, the player may observe the avatar in a third-person perspective, where, if optical oscillation occurs, the player may feel thrown out of the storyworld.

In 3DSC, however, the first-person perspective is constrained; under no circumstances, the first-person witness in 3DSC become a narrator, as it would be in text-based media where a story of the main character could be told by another character observing the events since in cVR the audience does not narrate. Not only does the audience narrate in 3DSC, it also does not establish a direct relationship between the viewer and the subject of its perspective. Even if the first-person narrative is present in 3DSC, one can only speak of the split into the homodiegetic hypermodal narrative situation and a **deputy ocularization** in the form of a 'third-person witness'.

The shift in gravity from homodiegetic narration to 'deputy ocularization' in 3DSC can also be attributed to the dichotomy of access to a character's internal perspective, whereby in literature, both a reader and a homodiegetic narrator have access to the character's internal point of view, as opposed to the 3DSC milieu where the internal perspective of a viewer (a character on the intradiegetic level) is inaccessible to the narrator, who cannot possibly know what the character-viewer thinks. Here, the dissertation clarifies and expands on this distinction between the two seemingly similar but ontologically different second-person perspectives:**'reverse external locus** (**REL**) and 'reverse internal locus' (**RIL**). Rooted in Fludernik's (1994) interpretation of Leon Perkins' *Second Person Point of View in Narrative* (1981), the ontological distinction accommodates "a variety of 'you's' and a variety of 'I's",

and as the Thesis shows, what was once a rather rare narrative device during the Golden Age of Hollywood has been deployed with frequency in 3DSC (Ceplitis, 2018). The rationale is obvious.

First, in a 360º spherical frame, story-space *is* discourse-space, instead of being merely a spatio-temporal unit. Not only is the viewer a part of a diegetic space with a propensity towards internal focalization addressed as 'you', automatically triggered due to the very existence of a first person as a narrative agent, but 3DSC also accentuates the cognitive and biological aspects with which one engages in the world. Second, the set of second-person perspective variations - REL (general 'you'), RIL (specific 'you') - where a narrator or character, while having no access to the viewer's thoughts, is fully aware of the audience being present in the 360-degree virtual space (Ceplitis, 2018), as well as aRIL, a betwixt state between REL and RIL, and linked to auricularization in 3DSC—are all immersive. The difference between the latter two, in terms of sense of presence, is in enunciation: if REL is mostly extradiegetic, homodiegetic, or heterodiegetic on intradiegetic level in narration, and in RIL, the audience is specific, then, in the intermediate state, the specific address is narration only. The dominant narratorial configuration under such a schemata inevitably gravitates towards RIL, which, as a narrative technique, is not conferred by any technological device but by a second-person narration, a 'natural' condition of 360º stereoscopic spherical cinema (Ceplitis, 2018).

In addition, the Thesis findings reveal that the immersive properties of RIL facilitate the breakdown of barriers between two intelligent entities. Using Sobchack's (1994) terminology, these entities are "the seeing" and the reciprocal "seen," unified in a vision belonging to the third entity, the 'Bifurcated Body.'

This body, situated at the "bull's eye", is positioned on the intradiegetic plane and contributes to the kinetic quality of the 3DSC narrative by navigating and morphing spatial frames into personal places through a movement that is physically static but viscerally perceived as a continuous, episodic shot in a **kinaesthetic mode**. This navigation occurs on a topographical level through the succession of static spatial frames as cognitive mapping. Here, the **deputy oculizer**, a passive yet relocating actant in 3DSC, traverses a series of *kinematic* and kinaesthetic **justified spatial frames**, propelling the filmic experience into a three-dimensional representation of "geopsychic space." Mentally, such an experience is both haptic and platial: haptic due to the presence of hCtA, and platial due to space orientating the narrative act as succession of pauses stringent upon various levels of "natural" proximities, literal and experiential, contained within **egocentric flânerie**, a kind of ethnographic exploration of "embodied space" that lingers in immersive states.

Consequently, when considering the third research question about the most effective variables within the key typologic categories in narrative constitution that contribute to an episodic neuro-visceral immersion for longer durations, apart from 'platial experientiality', RIL, and **spear auricularisation**, the judicious incorporation of **oscillating voice** (in both oscillating and fixed narration), 'narrative layers', and "apex narrator', all geared towards supporting coherence, take precedence.

The distinction between the ‘apex’ and extradiegetic narrator reflects a significant hierarchical separation in narratological frameworks. The extradiegetic narrator operates outside the story world, maintaining narrative distance while employing either omniscient or limited knowledge perspectives. In contrast, the **apex narrator**, while essentially also extradiegetic, regulates multiple intradiegetic narrators and an extradiegetic narrator while maintaining ultimate control over the entire narrative architecture.

The macro categories that govern the most immersive states in 3DSC, in turn, are ‘narrative space’, ‘narrative perspective’, ‘narrative coherence’, and ‘narrative distance’, with the former two being the core, i.e., if space and time are primary structuring principles of film, then, space and perspective as primary structuring principles in 3DSC. This distinction has ramifications vis-à-vis Genette’s (1983) typology, where ‘narrative perspective’ is clustered under ‘narrative instance’, the actual moment and context of the narration, a temporal setting of the enunciation in narration, whereas in 3DSC, due to the audience being a part of diegesis, narratorial ‘perspicacity’ is not viewed in conjunction with ‘perspective’ but rather grouped with the attributes of ‘narrative distance’. Here, ‘narratorial ocularization’ and ‘narratorial enunciation’ are two distinct aspects of communication renderings in 3DSC. The key difference in the typological structure is the nature of 3DSC itself, which predisposes the format to be primarily narrated by the spectator. As such, ‘narrative space’ and ‘narrative perspective’ are allocated to the viewer, while "narrative coherence’ and ‘narrative distance’ are partially controlled by the narrator. The former, locked in the kinetic relationship with the succession of spatial frames, orients oneself by means of a pause, which, in turn, is bound to platial experientiality and ‘situatedness’, expressed as a signifier of a particular auditory perspective, where it is set to a particular narrative layer. The auditory perspective, therefore, does not oscillate, as opposed the optical one that can be metadiegetic.

With respect to ‘extent’ and ‘reach’ in narrative instances, the author of the Thesis codifies theses terms as **chrono-perceptual scope** and **chrono-spatial radius**, respectively, for 3DSC environments under the category of **narratorial perspicacity**, a part of "narrative distance".

Notwithstanding the metadiegesis, the immersive states demand accurate spatial relationships, as object placement influences narrative and viewer experience. The spatial dynamics created in 3DSC act as binaries of 'sociopetal' and 'sociofugal' spaces that either draw audience and objects closer or push them apart, the residual of which forms the matrix of ‘exocentric’ and ‘egocentric’ views. This encapsulates the narrative aspects in 3DSC films, with an **oscillating locus** maintaining narrative coherence, which, in turn, is modulated by the ‘apex narrator’, linked to the Lefebrian gaze.

The 3DSC typology presented during the saturation phase clarifies the confusion surrounding some of the latest categories in the discussion, such as Jahn's (2021) distinctions between online and offline perception or primary mentation. It shows that the narrator's recollections, flashbacks, or temporal digressions do not always result in an experiential state for the viewer, even though these elements still impact narrative coherence by eliminating “transcendent black” and shifting the audience from passive observers in the third-person perspective into a ‘second-person spear focalizer’, endowed with hCtA and **Tactuality** attributes.

On a practical level, the installation of *'Gaslight' Narratives Neo-noir* (2022) has been an ambitious attempt to investigate experimental narrative design with the aid of immersive technologies. The 360° stereoscopic film prototypes, made by the author, such as *Opportunities* (2021) and *Once Upon a Time in Bolderaja* (2022), to name a few, demonstrate how on one level, the narrativization of 360° stereoscopic space occurs by means of cognitive mapping, experienced as a "tour map", and, on another level, this process occurs via platial experientiality and a flânerie that rekindles a place based on one's particular cultural, political, and social proximities. Of all the prototypes cited, *Once Upon a Time in Bolderaja*, is most personal work. Its narrative structure may be somewhat complex as its contains an oscillating perspective that is an offline mentation, the narrated flashback, and its duplicate, reconstructed by the viewer since the audience hears the re-enactment without any optical witnessing being in place. Its use of auricularization and ocularization as narrative devices is crucial. For the one who narrates the story, Bolderaja represents an "abase place", one beyond repair and redemption, reproducing what it has always reproduced since 1977. For the protagonist's friends, Bolderaja remains to be a "shaded place", an empathetic space of a character trapped in a sense of loss, but for author of the dissertation, Bolderaja represents a somewhat "tainted place", for it was in these same spatial frames that the author had spent his early childhood, which still is perceived as being a most carefree, loving, mischievous and bright location. It is for this reason that in the making of the film, what is auricularized is not optically seen but imposed externally in a violent manner, which forces the viewer to erase spaces that are otherwise frozen in time.

Finally, delving into the diverse immersive states within the rhizomatic space has proven to be a formidable task. As supported by the 'theory-generating expert' interviews conducted in the theoretical coding phase, the collective intelligence present in **rhizomatic spectatorship**, rooted in phenomenological conditions, is significantly boosted by the neuroscience of empathy and shared experiences along the mirror neuron axis in the context of a networked digital society where VR technologies play a critical role in establishing a more democratic and participatory setting. It allows for the sustenance of multiple interconnected themes in 3DSC narratives through fragmentation, which directs the audience to fill narrative gaps by imagining extra plot details based on complex fictional worlds that can support interrelated characters rather than a single grand narrative.

In conclusion, the focus of this dissertation, its findings, and limitations still leave many opportunities for future research. First, the concept of the rhizome exists as a practical application, even though any narrative whose structure is argued to be rhizomatic has yet to fall into a well-recognized subcategory of narratology. Second, although there have been a few case studies attempting to develop a rhizomatic typology in cross-media, transmedia, and new media art, they are still at the investigational stage. This difficulty can be partially explained by the fact that narratology addresses categories such as the "implied author", "focalization", and "narrator", while the rhizome is evaluated based on an entirely different inventory of terms. Hence, the act of forming a connection with the rhizome carries inherent hazards, but, as Wallin (2010:83) elegantly put it, "creating a rhizome is an experiment that must be risked."

Due to the scope of the Thesis, this means that only a limited number of 3DSC prototypes can be created in relation to each narratological category surveyed. The time constraint and extent of the field tests have not allowed for both the analysis and simulation of long format cVR, anything beyond a twenty-minute cut-off, followed by the real-world evaluation of findings. This affects the validity of the conclusions; any future research in this regard should strive to evaluate the validity of the presented findings through similar narratological studies and seek to fine-tune them using complementary or alternative techniques. The categories of methods used and the methodology in the research may be criticized for being overly complex and not easily understood by those who do not specialize in the field of narratology. The dissertation would still have benefited from more rigorous simulations to expand the typologies for the 'narrative distance' category and its duress in the framework of narrativized, transposed, and reported auditory tracks, as well as prior, simultaneous, and interpolated narrations in the context of the dynamics for **audiovisual cognitive dissonance**.

360º stereoscopic spherical film, while still overcoming technical challenges to reach wider audiences, is well positioned to remain a uniquely impactful format due to its high-fidelity capacity to document reality in 12K and beyond that the computer-generated virtual reality is yet to match. The continuous research should involve other advancements in Artificial Intelligence (AI) and Volumetric Cinema to identify their own unique narrative categories in relation to the new vectors of narratology, topped off with a more rigorous narratological inquiry into audionarratological typologies set for ambisonic spatial environments. Though technical challenges remain, 360° stereoscopic spherical film stands out as a unique format whose narrative potential will only continue to expand; it will survive the test of time as technological innovations evolve.

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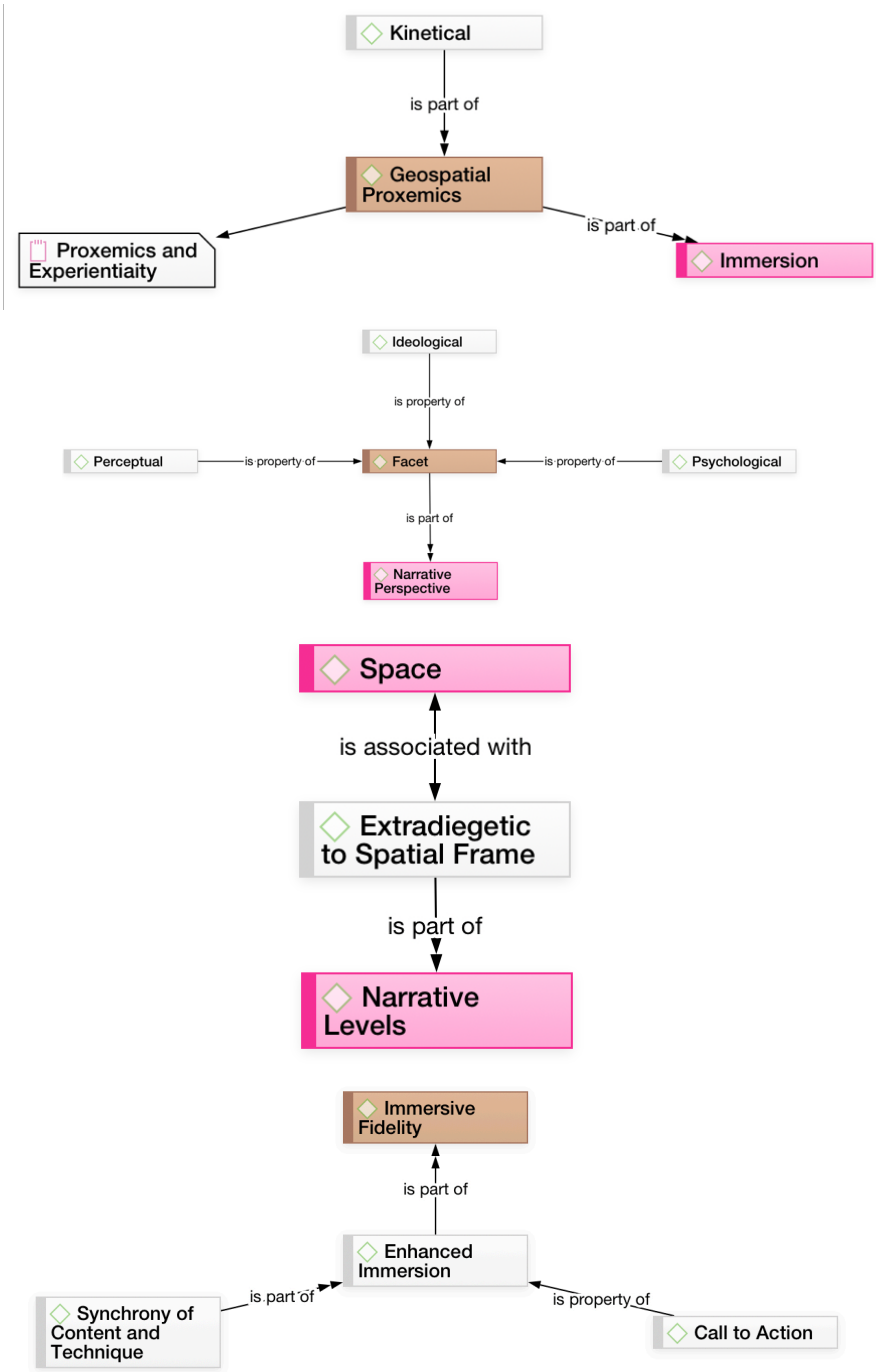
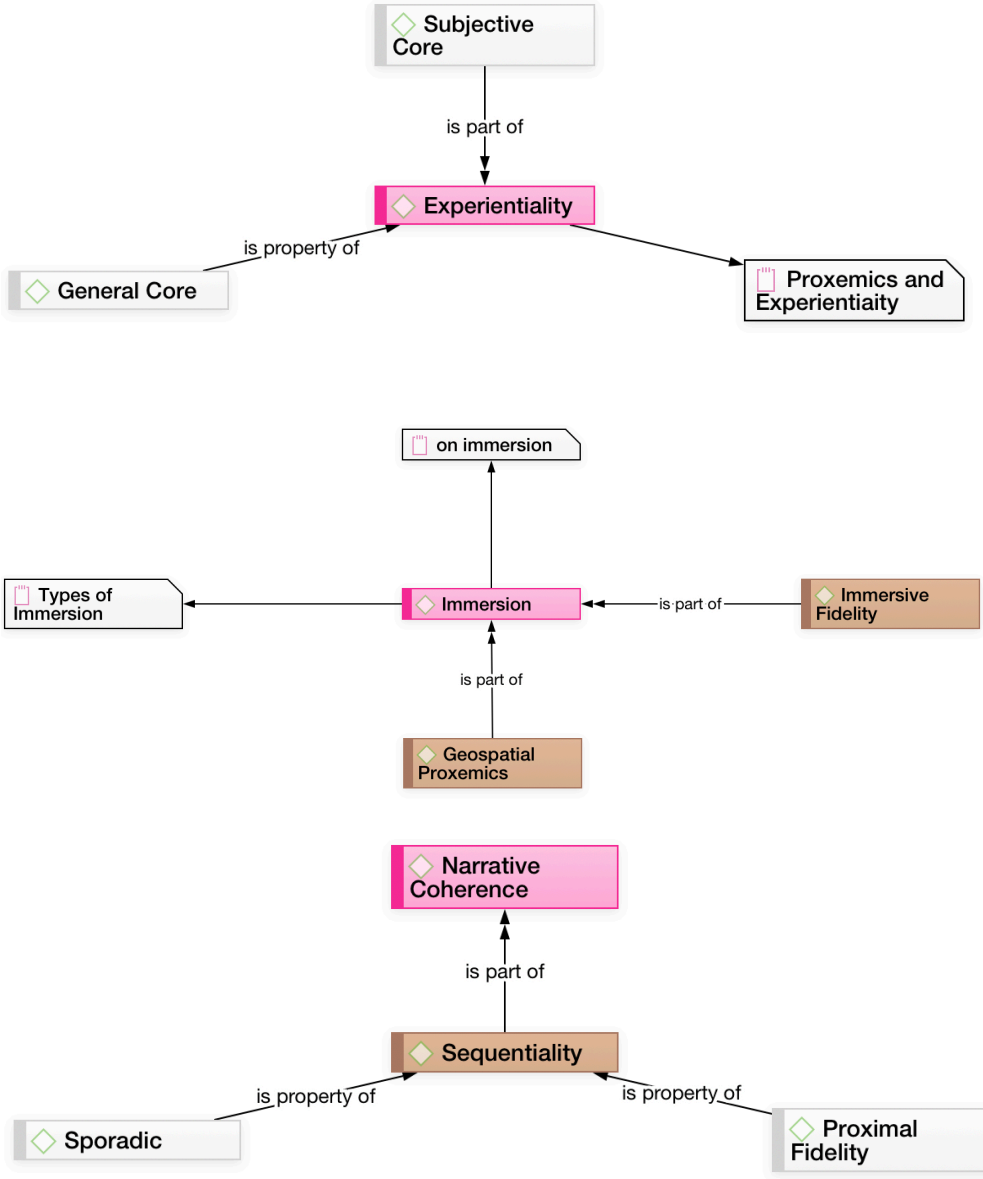
APPENDICES

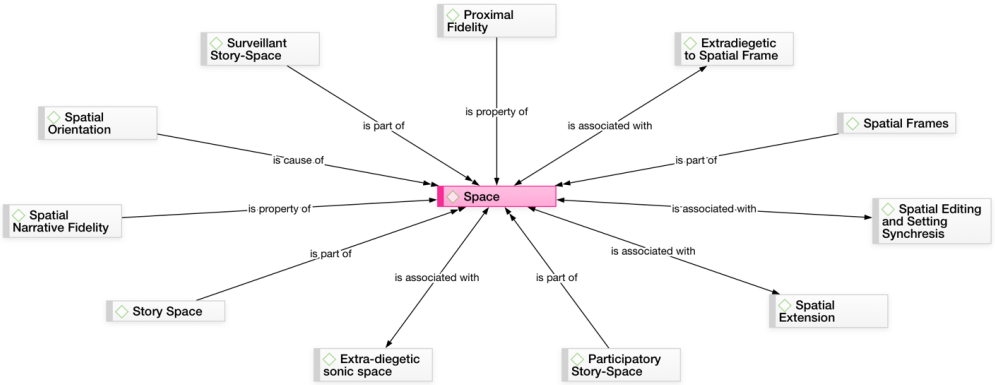
APPENDIX A: *a sample size (n = 89) in total for both initial and re-focused coding*

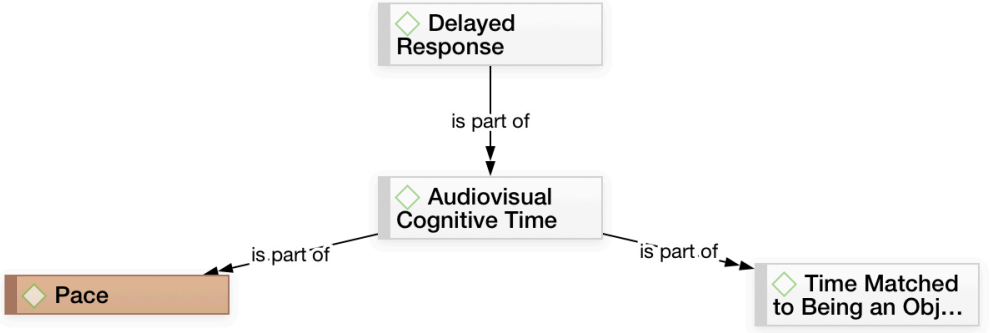
APPENDIX B: *RISEBA University Dance Studio: one of the test sites*

APPENDIX C: *preliminary typological node trees*




Subjective Core
is part of
Experientiality
is property of
General Core
Proxemics and Experientiaity
on immersion
Types of Immersion
Immersion
is part of
Immersive Fidelity
is part of
Geospatial Proxemics
Narrative Coherence
is part of
Sequentiality
is property of
Sporadic
is property of
Proximal Fidelity


Proximal Fidelity
Surveillant Story-Space
Extradiegetic to Spatial Frame
Spatial Orientation
Spatial Frames
Space
Spatial Narrative Fidelity
Spatial Editing and Setting Synchresis
Spatial Extension
Story Space
Extra-diegetic sonic space
Participatory Story-Space
is part of
is property of
is associated with
is cause of
is part of
is property of
is associated with
is part of
is associated with
is part of
is associated with


Delayed Response
is part of
Audiovisual Cognitive Time
is part of
is part of
Pace
Time Matched to Being an Obj...

APPENDIX D: *samples of a specific field note*

Field and Code Notes/ Memo

Charmaz Approach *Dreams of Dali (2016)*

Participant: **Sonja Ghantarchyan**

Sex: Female/ 22

Location: RISEBA

Prior VR experience: limited

Audiovisual Training: intermediate

7/12/18 Field Note

From Author: Enjoy the remarkable marriage of art and technology in Dreams of Dali, a virtual reality experience from The Dali Museum (St. Petersburg, FL), as you explore Dali's painting Archaeological Reminiscence of Millet's "Angelus." award-winning VR experience has garnered visitor acclaim, online praise and international recognition through a multitude of industry awards, including the prestigious Cannes Cyber Lion GOLD; a Webby People's Voice award; and a Facebook Silver award for Innovation, among others. ©Salvador Dali Museum, Inc., St. Petersburg, FL. Created for The Dali by Goodby Silverstein & Partners, San Francisco, CA.

I was feeling I was Dali's brain, I felt it…very immersed. Everything was happening around me was not dream but his brain I was his brain; so, I was very influenced by my prior understanding of his art, so I was involved. I also could not help thinking that this is what after-life is…absolute peace, you are with yourself, and the real life with all its problems does not destroy you…
great animation; you feel very natural…and it feels like 3D

7/12/18 Memo

Sonja Ghantarchyan very animated, wants to be through space very influenced emotionally, she wants to touch objects (haptic), rotates a lot. The interesting part it is one of the few animations that although done in 2D feels as if 3D, it is due to the triangulation of content (dreams), form (monoscopic 360), and something that is very familiar to us, dreams, dreams are also in 3D but they are more 2D images that feel like 3D experience. Another great thing about the video is, it is SINGLE location, the object move but not the location, and so you have an ability to see everything, the video is slow motion and feels natural.

Field and Code Notes/ Memo
Charmaz Approach

Africa's Pristine Delta in 360 - Ep. 1 | The Okavango Experience
Participant: HIZ
Sex: Male/ 19
Location: RISEBA
Prior VR experience: limited
Audiovisual Training: beginning
Selected by Forbes among the Top 15 YouTube VR Videos Of 2018[1]

15/04/19 Field Note
From the author: Today National Geographic premiers episode one of its new 360-degree video series, "The Okavango Experience." Over the course of three weeks, three filmmakers joined the National Geographic Okavango Wilderness Project team in Botswana as they surveyed the wildlife and ecosystems by canoe. The Okavango Delta is a freshwater wetland in northern Botswana that stretches some 1,200 to 3,000 square miles, depending on the season.

I felt very present when all the action was within my field of vision in front of me and I did not need to turn the head; I was not really annoyed by the fact the turning as much as by violent imposition of the turning: guiding the movement did not help. I have a frame in front of me, and I wanna preserve it, but when at the moment there is no guidance from the director where to look at, I have a choice, and it feels natural. I feel invaded, when someone forces me to turn…also, I have a problem with camera height. When I see the animals over me did not bother me because I could justify it since this is what you do when the animals see you, you wanna hide yourself Switching shots too soon was unpleasant, less immersive. ***I liked the fireplace, nostalgy for my childhood camp.*** *The length of the shots were not consistent and when the lions were eating could be longer. When you are immersed you wanna stay longer..felt rushed. The host of fireplace were the strongest since it related to my childhood. I did not care for the narrator, I really wanted him to fuck of*

16/04/19 Memo
the camera a big higher than normal; it is definitely on the level **engagement/engrossment;** then what is strange then you are surrounded by animals African deer, you are too low, as if you are in trenches, then next shot is very fast as if you are i**n a observer's position,** and you are looking down bird's eye view, and then shifts you are in a boat, which actually works, because you are participant, the problem is a narrator when you are in a boat then his speech feels natural but the shots changes and he continues to speak you feel the narration disorients you; then you are back i**n observer's position (oscillation).** Then there is **moving shot, a bit motion sickness, any time you are a participant in a boat, then there is again you are a deputy focalizer, as if watching, but** then at the end you see a speaker who explains the expedition; you are inserted in a spatial frame, immediate surrounding is natural since the speaker is to your left at right height and distance main narrator speaking **(physical object affinity/ contextual cognitive recognition), then** another to your right speaks and it still feels right (as long as proxemics are accurate). There was a problem at some point when the guy speaks and you are looking around to find him in the middle of the film: **the camera placement seemed odd.**
(interactivity of free choice); *also, I have a problem with camera height* (**visual geospatial proxemics**). *the animals see you, you wanna hide yourself* (action/ movement appropriate relative to the height). **Switching shots too soon out if immersion (AVC), tied to spatial frame.** *nostalgy for my childhood camps* (**experientiality**).

[1] https://www.zakato.com/portfolio-items/okavango/

APPENDIX E: *samples of the code lists with quotations*

ATLAS.ti

cVR Initial Coding

Codes (selection)

○ Proximal Fidelity

Quotations:

1:9 Proximity to main character is important to feel association, following the character physically in…

1:19 Suspension of disbelief is stringent upon geometrics and less on narrative.

2:4 I felt very present when all the action was within my field of vision in front of m

2:5 then suddenly you are in a human height where the lioness comes up, which feels very natural by the…

2:7 but then at the end you see a speaker who explains the expedition; you are inserted in a spatial frame…

4:6 the greatest shots are those in mine and in mine surroundings,

5:12 and when he says “this where it got real” this is the most powerful, because his voice matters the s…

7:16 While the selection of space is a good one, the annoyance is a result of too fast rapid cutting and…

9:9 It does feels natural due to proper natural space and proximity. The next shot on a dance floor sta…

9:10 again you static, while others are moving, does not feel quite right, especially since one hears wha…

9:18 one feels inferior (looking up at the staircase from the vintage point): you are never going be of t…

11:5 the place is great you sort of wanna experience the place on you own.

11:18 The shot of an airplane is great

11:19 The shot of an airplane is great because I feel that I am there

13:2 I like the fact that this is a music video…it does make me experience that I am a present there unob…

13:8 e presence is accentuated by right position from the objects.

13:12 Standing, because the kids were standing also gave a me a sense of presence. There was feel for cha…

13:16 proxemics are important.

13:17 the good arrangement of the objects

18:3 there are a few moments before a group of three young women appear, a bit surprised, but the fact th…

18:4 Theirs is the the second shot you see her actually waiting for her lover and so the second place fee…

18:5 Spatial configuration is affected by movement and arrangement of objects in relation to the viewer.

18:6 Suspension of disbelief is stringent upon geometrics and less on narrative.

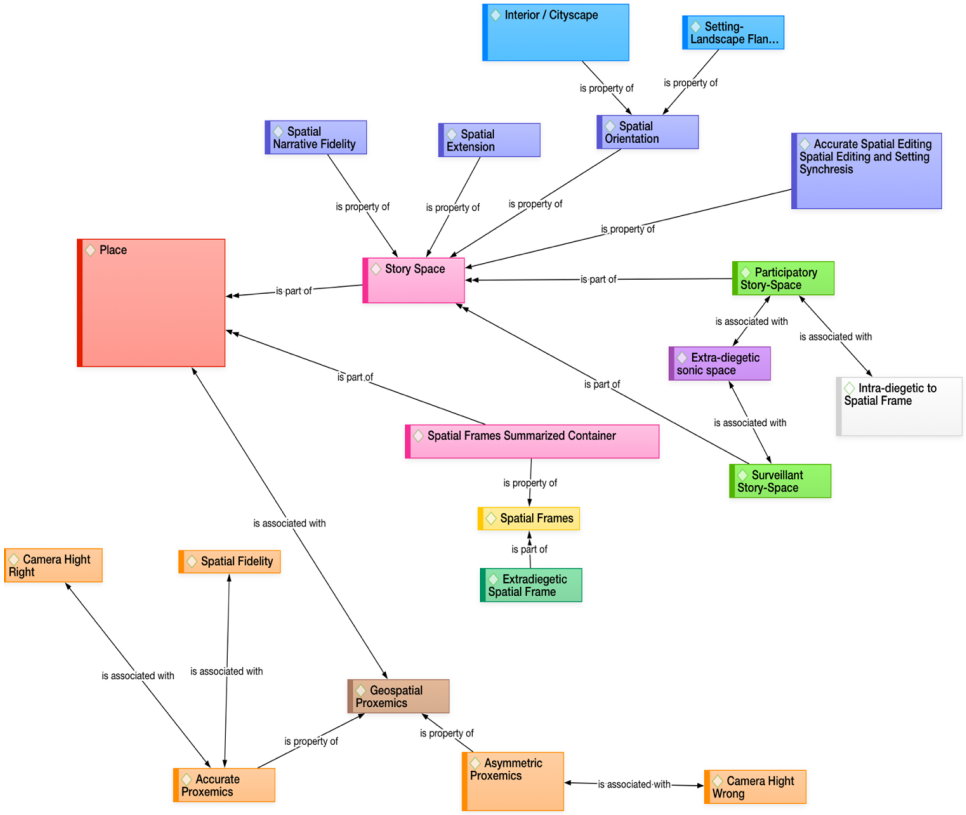
22:7 he's actually playing the chest but the chest is actually that's a very nice shot because you feel l…

22:15 actually one of the best VR films scene because it has narrative he has very good spatial configuration

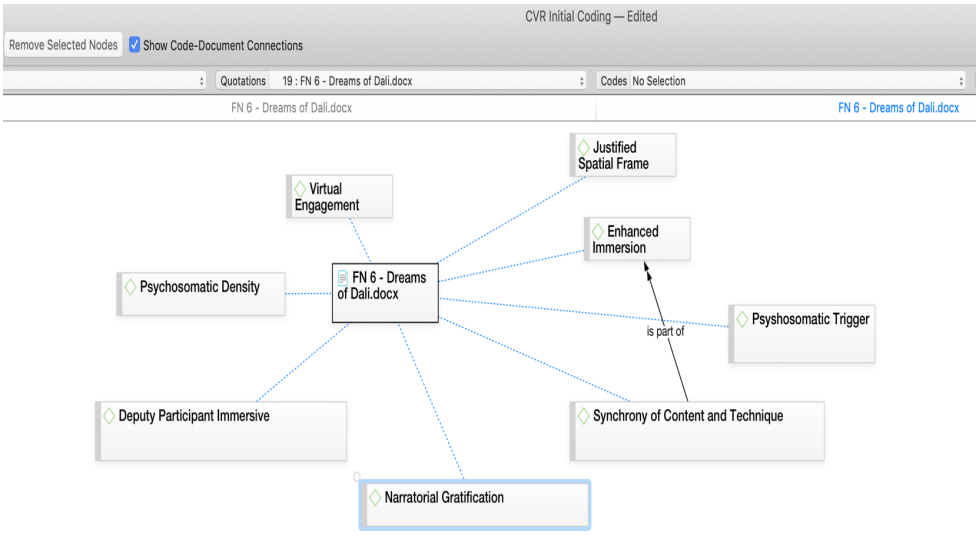
25:3 The only shot that is successful is the low angle next to mattress of a mental patient.
27:4 I want almost touch the penguin, he is co cute, the timing of shots is perfect.
32:2 then the first shot is actually natural, anytime you have objects further away in the open field, it…
46:1 when the leopard comes up oh fuck it feels so real, especially jaguar.
46:5 When you stand up in woods (this is what you would normally would expect to do) it feels even more
46:8 The viewing position should match the natural narrative situation of an event you see.
52:2 Her story becomes interesting only when it is void of people, when she is with her children.
52:7 The last shot in river works where you are so close to them physically
53:6 3D effect in a soccer yards works great you feel presence
54:10 The spatial shots outside the prison are great you are you and the filmmakers do not force you to be…
55:7 Excellent monoscopic video.
56:5 You want to touch the objects they seem so real (feels very immersive)
56:7 the tension between classical narrative canons and experientiality is reduced to almost zero, ….
57:3 There is a good 3D affect (appropriate distance from lenses and good lenses),
59:4 but the distance from the camera to the surrounding objects is right

#	Name	Text Content	Document	Codes	Number of Codes	Comment	Start
1:9	Proximity to main character is importan...	Proximity to mai...	FN 11 - This is Climate Change - Famine.docx	Proximal Fidelity	1		1403
1:19	Suspension of disbelief is stringent upo...	Suspension of d...	FN 11 - This is Climate Change - Famine.docx	Geospatial Prox...	2		1327
2:4	I felt very present when all the action w...	I felt very prese...	FN 13 - The Okavango Experience Episode 1.docx	Proximal Fidelity	1		1621
2:5	then suddenly you are in a human heig...	then suddenly y...	FN 13 - The Okavango Experience Episode 1.docx	Natural, Proxima...	2		3133
2:7	but then at the end you see a speaker...	but then at the e...	FN 13 - The Okavango Experience Episode 1.docx	Proximal Fidelity	1		4016
4:6	the greatest shots are those in mine an...	the greatest sho...	FN 15 - Journey of Gold.docx	Geospatial Prox...	2		3805
5:12	and when he says “this where it got rea...	and when he sa...	FN 15 - THE LONG ROAD HOME- MEMORIES OF WAR - Ep 3....	Optical Fusion,...	2		1142
7:16	While the selection of space is a good...	While the select...	FN 5_Solitary Confinement.docx	Proximal Fidelity...	2		3337
9:9	It does feels natural due to proper natu...	It does feels nat...	FN 38 - Fifty Shades Darker The Masquerade Ball.docx	Proximal Fidelity	1		1493
9:10	again you static, while others are movin...	again you static,...	FN 38 - Fifty Shades Darker The Masquerade Ball.docx	Aberrant Auricul...	2		1639
9:18	one feels inferior (looking up at the stai...	one feels inferio...	FN 38 - Fifty Shades Darker The Masquerade Ball.docx	Natural, Proxima...	2		2432
11:5	the place is great you sort of wanna ex...	the place is grea...	FN 9 - Discovery TRVLR Fly an Airplane in Skis.docx	Immersive Fideli...	2		2326
11:18	The shot of an airplane is grea	The shot of an a...	FN 9 - Discovery TRVLR Fly an Airplane in Skis.docx	Geospatial Prox...	2		2002
11:19	The shot of an airplane is great becaus...	The shot of an a...	FN 9 - Discovery TRVLR Fly an Airplane in Skis.docx	Proximal Fidelity	1		2002
13:2	I like the fact that this is a music video...	I like the fact th...	FN 41 - Kids.docx	Geospatial Prox...	2		1328
13:8	e presence is accentuated by right posi...	e presence is ac...	FN 41 - Kids.docx	Proximal Fidelity	1		1727
13:12	Standing, because the kids were standi...	Standing, becau...	FN 41 - Kids.docx	Immersive Fideli...	2		1891
13:16	proxemics are important.	proxemics are i...	FN 41 - Kids.docx	Proximal Fidelity	1		2384
13:17	the good arrangement of the objects	the good arrang...	FN 41 - Kids.docx	Proximal Fidelity	1		2347
18:3	there are a few moments before a grou...	there are a few...	FN 7 - Marie Antoinette VR.docx	Proximal Fidelity	1		1650
18:4	Theirs is the the second shot you see h...	Theirs is the the...	FN 7 - Marie Antoinette VR.docx	Enhanced Imme...	2		1931
18:5	Spatial configuration is affected by mo...	Spatial configur...	FN 7 - Marie Antoinette VR.docx	Proximal Fidelity	1		2571
18:6	Suspension of disbelief is stringent upo...	Suspension of d...	FN 7 - Marie Antoinette VR.docx	Enhanced Imme...	4		2704
22:7	he's actually playing the chest but the...	he's actually pla...	FN 10 - This is why you should never abandon your parents.d...	Deputy Particip...	3		2008
22:15	actually one of the best VR films scene...	actually one of t...	FN 10 - This is why you should never abandon your parents.d...	Proximal Fidelity...	2		4417
25:3	The only shot that is successful is the l...	The only shot th...	FN 45 - NYT the Daily 360 Agony in a Venezuelan Mental Hos...	Proximal Fidelity	2		984
27:4	, I wanna almost touch the penguin, he...	, I wanna almost...	FN 57 - Shifting Continent.docx	Proximal Fidelity	1		1077
32:2	then the first shot is actually natural, a...	then the first sh...	FN 54 - Sleeping on Denver's Cold Streets .docx	Proximal Fidelity	1		953
46:1	when the leopard comes up oh fuck it f...	when the leopar...	FN 65 - in the Presence of Animals.docx	Haptic Urgency,...	3		667
46:5	When you stand up in woods (this is w...	When you stand...	FN 65 - in the Presence of Animals.docx	Geospatial Prox...	2		1030
46:8	The viewing position should match the...	The viewing pos...	FN 65 - in the Presence of Animals.docx	Proximal Fidelity	1		1333
52:2	Her story becomes interesting only wh...	Her story beco...	FN 83 - I Am Rohingya .docx	Proximal Fidelity...	2		352
52:7	The last shot in river works where you...	The last shot in...	FN 83 - I Am Rohingya .docx	Experiential Fide...	2		751
53:6	3D effect in a soccer yards works great...	3D effect in a so...	FN 84 - Oil in the Creeks.docx	Increased Imme...	2		543
54:10	The spatial shots outside the prison ar...	The spatial shot...	FN 62 - Step to the Line.docx	Proximal Fidelity	1		3147
55:7	Excellent monoscopic video.	Excellent monos...	FN 85 - Pick a Piper.docx	Proximal Fidelity	1		1539
56:5	You wanna touch the objects they see...	You wanna touc...	The Starry Night.docx	Geospatial Prox...	3		1495
56:7	the tension between classical narrative...	the tension bet...	The Starry Night.docx	Proximal Fidelity	1		965
57:3	There is a good 3D affect (appropriate...	There is a good...	FN 42 -Kidnapped.docx	Proximal Fidelity	2		1101
59:4	but the distance from the camera to th...	but the distance...	FN 87 - Odcinek 6 - Odlewnik .docx	Proximal Fidelity	1		1022

APPENDIX F: *Code list where initial typology emerges*



APPENDIX G: *Code Tree for Dream of Dali (2016)*



APPENDIX H:

IMMERSIVE FACTOR QUESTIONNAIRE

(Jennett et al., 2008) (Witmer, Jerome, & Singer, 2005)

Revised by the MPLab Lab (2018)

Individual factors

1. Age ____
2. Gender __ Female __ Male
3. Which region are you originally from? _____
4. Your education level
   High school degree __ Associate degree __ Bachelor's degree __ Master's degree __ Other
5. How many years of experience do you have working with virtual reality?
   0 – 1; __ 2 – 3; __ 4 – 5; __ 6 or more
6. How many years of experience do you have in audiovisual field?
   ___ 0 – 1; __ 2 – 3; __ 4 – 5; __ 6 or more
7. Your chosen major:
   ___directing ___ cinematography ___producing ___ screenwriting ___other

Immersive Factor in Space/ Sequentiality: *Church At Sea Ate*

Please evaluate the satisfaction with team performance (1.Strongly disagree; 2. Disagree; 3.Somewhat Disagree; 4.Neither agree nor disagree; 5.Somewhat agree; 6. Agree. 7.Strongly agree)

1. My experiences in the VR film seem consistent with my real world experiences
2. Motion sickness was present
3. Motion sickness bothered me
4. I was able to closely examine objects
5. My presence in space seemed natural to me
6. I wanted to touch (haptic) the objects or people around me
7. I wanted to move through the space
8. I was very involved in my environment
9. Visual quality did not distract me from the experience
10. The auditory aspect helped me to "be inside" the space
11. Narration did not contradict my sense of presence
12. I could easily localise the sounds
13. VR film held my attention
14. I was focused on the narrative
15. I lost track of time
16. I felt consciously aware of being in the real world whilst watching
17. I was not aware of my surroundings
18. I did not notice events taking place around me
19. My sense of being in the VR film was stronger than my sense of being in the real world
20. There was a time during the VR in which I wanted to give up watching
21. I was very emotionally attached to the VR
22. I was very interested in seeing how the events would progress
23. I really enjoyed the film
24. I wanted to speak to the characters at some point
25. The IMMERSION was due to (circle):

Story 360 VR Space Itself Characters Embodiment

26. The IMMERSION was best described as (circle):

Engagement /Engrossment (emotions affected) /Visual Immersion / Neuro-visceral Immersion

27. I was scared because of SPACE

28. SPACE was best described as (circle all that applicable): spatial frames place story space storyworld

29. Order was excellent

Which narratological components have been the most effective in VR

Importance in terms of episodic neuro-visceral immersion in the narrative

1. Arrange in order by importance (from "1." as the most important, to "6." as the least important) which deliverables about case study in your opinion were most important?

___ Focalization
___ Voice
___ Narrative Duration
___ Sequentiality
___ Homodegietic Narrator
___ Heterodiegetic Narrator

Jennett, C., Cox, A. L., Cairns, P., Dhoparee, S., Epps, A., Tijs, T., & Walton, A. (2008). Measuring and defining the experience of immersion in games. *International Journal of Human-Computer Studies*, *66*(9), 641–661. http://doi.org/10.1016/j.ijhcs.2008.04.004

Witmer, B. G., Jerome, C. J., & Singer, M. J. (2005). The Factor Structure of the Presence Questionnaire. *Dx.Doi.org*, *14*(3), 298–312. http://doi.org/10.1162/105474605323384654

APPENDIX I: *"Immersion/ Narratological Factors Questionnaire" Data*

The criteria of Kolmogorov-Smirnov show that the distribution on almost all scales is normal. As the three unrelated groups of respondents participated in the questionnaire, each questionnaire was analyzed separately. Questionnaires were compared with each other on the basis of central trend indicators using a graphical diagram.

The final data analysis shows that the 'Participatory Story-Space' parameter is characterized by an average of M=5, standard deviation Std= 1,194, which indicates a slight scattering of results around the average. Average rating Sum=59.95. The results vary from the avg. Min= 2.7 to avg. Max=6.5. The average rank is 3.8.

Table 9: Descriptive statistics for 'Participatory Story-Space'.

Descriptive Statistics (Participatory)								
	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
VR film held my attention	12	3	4	7	74	6,17	,297	1,030
I could easily localize the sounds	12	4	3	7	73	6,08	,313	1,084
My presence in space seemed to be natural to me	12	5	1	6	61	5,08	,417	1,443
I really enjoyed the film	12	5	2	7	65	5,42	,434	1,505
My sense of being in the VR film was stronger than my sense of being in the real world	12	2	4	6	64	5,33	,225	,778
I was very emotionally attached to VR	12	6	1	7	62	5,17	,441	1,528
I was not aware of my surrounding (around me in real life)	12	4	3	7	64	5,33	,333	1,155
There was a time during the VR in which I wanted to give up watching	12	4	1	5	32	2,67	,432	1,497
Geometry/ distances from the object were natural to me	12	3	4	7	66	5,50	,261	,905
I wanted to move through the space	12	4	3	7	64	5,33	,333	1,155
I could easily orient myself in each given moment	12	2	4	6	66	5,50	,195	,674
Motion sickness bothered me	12	4	1	5	29	2,42	,379	1,311
I lost track of time	12	5	1	6	53	4,42	,529	1,832

The auditory aspect helped me to be to "be inside" the space	12	3	3	6	62	5,17	,271	,937
The narration was necessary and helped me "inside" the space	12	3	4	7	62	5,17	,297	1,030
Narration did not contradict my sense of presence	12	3	3	6	56	4,67	,376	1,303
I was able to closely examine the objects	12	3	4	7	64	5,33	,256	,888
I wanted to touch (haptic) the objects or people around me	12	5	2	7	56	4,67	,449	1,557
I wanted to touch (haptic) the objects or people around me	12	4	3	7	63	5,25	,329	1,138
I was very involved in my environment	12	4	3	7	63	5,25	,329	1,138
Valid N (listwise)	12							
Average		3,800	2,700	6,500	59,950	4,997	0,345	1,194

In order to determine the characteristics of the parameter, an arrangement of the claims was carried out. It is observed that the parameter 'Participatory Story-Space' is mostly perceived through the following statements:

Table 10: The assertions of the 'Participatory Story-Space' Parameters.

Statement	Range
My sense of being in the VR film was stronger than my sense of being in the real world	2
I could easily orient myself in each given moment	2
VR film held my attention	3
Geometry/ distances from the object were natural to me	3
The auditory aspect helped me to be to "be inside" the space	3
The narration was necessary and helped me "inside" the space	3
Narration did not contradict my sense of presence	3
I was able to closely examine the objects	3

Table 11: Perception of 'Participatory Story-Space' dimensions.

I would define this as (more options)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**Dramatic space/ place**	**3**	**25,0**	25,0	25,0
	Dantean space / place	**4**	**33,3**	33,3	58,3
	Empathetic space / place	**3**	**25,0**	25,0	83,3
	Showcase space / place	2	16,7	16,7	100,0
	Total	12	100,0	100,0	

Analyzing the dimensions, it can be argued that respondents perceive the 'Participatory Story-Space' parameter as both place and space.

Table 12: Contextual breakdown of 'Participatory Story-Space'.

I would define this as (more options)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**Dramatic space/ place**	**3**	**25,0**	25,0	25,0
	Dantean space / place	**4**	**33,3**	33,3	58,3
	Empathetic space / place	**3**	**25,0**	25,0	83,3
	Showcase space / place	2	16,7	16,7	100,0
	Total	12	100,0	100,0	

Describing the context, it can be seen that 33% of respondents perceive the 'Participatory Story-Space' as Dantean place/space, 25% as Dramatic and 25% as Empathetic.

Table 13: Descriptive statistics displayed for 'Spatial Frames'.

Descriptive Statistics (Spatial)								
	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
VR film held my attention	15	5	2	7	86	5,73	,358	1,387
I could easily localize the sounds	15	6	1	7	85	5,67	,398	1,543
My presence in space seemed to be natural to me	15	6	1	7	72	4,80	,405	1,568
I really enjoyed the film	15	5	2	7	77	5,13	,413	1,598
My sense of being in the VR film was stronger than my sense of being in the real world	15	6	1	7	67	4,47	,506	1,959
I was very emotionally attached to VR	15	5	2	7	72	4,80	,509	1,971
I was not aware of my surrounding (around me in real life)	15	4	3	7	74	4,93	,284	1,100
There was a time during the VR in which i wanted to give up watching	15	6	1	7	48	3,20	,518	2,007
Geometry/ distances from the object were natural to me	15	6	1	7	69	4,60	,496	1,920
I wanted to move through the space	15	5	2	7	80	5,33	,374	1,447

I could easily orient myself in each given moment	15	4	2	6	72	4,80	,341	1,320
Motion sickness bothered me	15	5	1	6	50	3,33	,465	1,799
I lost track of time	15	5	2	7	63	4,20	,380	1,474
The auditory aspect helped me to be to "be inside" the space	15	4	3	7	78	5,20	,312	1,207
The narration was necessary and helped me "inside" the space	15	6	1	7	73	4,87	,467	1,807
Narration did not contradict my sense of presence	15	6	1	7	67	4,47	,424	1,642
I was able to closely examine the objects	15	5	2	7	68	4,53	,363	1,407
I wanted to touch (haptic) the objects or people around me	15	6	1	7	62	4,13	,533	2,066
I wanted to touch (haptic) the objects or people around me	15	6	1	7	70	4,67	,444	1,718
I was very involved in my environment	15	4	3	7	77	5,13	,336	1,302
Spatial frame made me feel it is a single space	15	3	3	6	74	4,93	,248	,961
Valid N (listwise)	15	5,14	1,71	6,86	70,67	4,71	0,408	1,581

Data analysis shows that spatial fames are characterized by an average of M=4.71, standard deviation Std=1,585, indicating a slight disseveration of results around the mean. Average rating Sum=70.67. The results vary from the avg. Min=1.71 to avg. Max=6.86. The average rank is 5.14. When ranking claims, it can be observed that in the reflection of respondents the parameter *Spatial Frames* includes the following statements:

Table 14: 'Spatial frames" positioning of claims.

Statement	Range
Spatial frame made me feel it is a single space	3
I was not aware of my surroundings(around me in real life)	4
I could easily orient myself in each given moment	4
The auditory aspect helped me to be to "be inside" the space	4
I was very involved in my environment	4

Table 15: Perception of dimensions for 'Spatial frames'.

I would define this as					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**place**	**13**	**86,7**	86,7	86,7
	space	2	13,3	13,3	100,0
	Total	15	100,0	100,0	

87% of respondents believe spatial frames have a 'Place' dimension.

Table 16: 'Spatial frames' Contextual Perception.

I would define this as (more options)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dramatic space/ place	1	6,7	6,7	6,7
	Dantean space / place	1	6,7	6,7	13,3
	Empathetic space / place	**6**	**40,0**	40,0	53,3
	Showcase space / place	2	13,3	13,3	66,7
	Shaded place / space	**5**	**33,3**	33,3	100,0
	Total	15	100,0	100,0	

The context for *spatial frames* is described as 40% as Empathetic and 33.3% as Shaded place/space.

Table 17: Descriptive statistics for the parameter 'Surveillant Story-Space'.

Descriptive Statistics								
	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
VR film held my attention	17	4	3	7	93	5,47	,311	1,281
I could easily localize the sounds	17	6	1	7	90	5,29	,409	1,687
My presence in space seemed to be natural to me	17	5	1	6	67	3,94	,406	1,676
I really enjoyed the film	17	6	1	7	77	4,53	,478	1,972
My sense of being in the VR film was stronger than my sense of being in the real world	17	5	1	6	73	4,29	,351	1,448
I was very emotionally attached to VR	17	3	3	6	76	4,47	,286	1,179
I was not aware of my surroundings(around me in real life)	17	5	2	7	86	5,06	,277	1,144
There was a time during the VR in which i wanted to give up watching	17	6	1	7	60	3,53	,421	1,736
Geometry/ distances from the object were natural to me	17	5	1	6	67	3,94	,348	1,435
I wanted to move through the space	17	6	1	7	70	4,12	,477	1,965
I could easily orient myself in each given moment	17	5	1	6	70	4,12	,410	1,691
Motion sickness bothered me	17	4	2	6	57	3,35	,353	1,455

I lost track of time	17	6	1	7	68	4,00	,420	1,732
The auditory aspect helped me to be to "be inside" the space	17	4	2	6	77	4,53	,273	1,125
The narration was necessary and helped me "inside" the space	17	6	1	7	83	4,88	,342	1,409
Narration did not contradict my sense of presence	17	5	1	6	77	4,53	,344	1,419
I was able to closely examine the objects	17	4	3	7	91	5,35	,296	1,222
I wanted to touch (haptic) the objects or people around me	17	6	1	7	65	3,82	,479	1,976
I wanted to touch (haptic) the objects or people around me	17	5	1	6	78	4,59	,384	1,583
I was very involved in my environment	17	4	2	6	82	4,82	,346	1,425
Valid N (listwise)	17	5,000	1,500	6,500	75,350	4,432	0,37 1	1,528

Data analysis leads to the conclusion that the surveillant Story-Space parameter is characterized by an average of M=4,432, standard deviation Std=1,528, indicating a slight scattering of results around the mean. Average rating Sum=75.35. The results vary from the avg. Min=1.5 to avg. Max=6.5. The average rank is 5.

When ranking statements, respondents perceive the surveillant Story-Space parameter through the following statements:

Table 18: Parameter 'Surveillant Story-Space' arrangement of claims.

Statement	Range
I was very emotionally attached to VR	3
VR film held my attention	4
Motion sickness bothered me	4
The auditory aspect helped me to be to "be inside" the space	4
I was able to closely examine the objects	4
I was very involved in my environment	4

Analysis of an additional question – 'Extension of Dimension'.

Table 19: Surveillant 'Story-Space' dimension perception.

I would define this as					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**place**	**11**	**64,7**	64,7	64,7
	space	6	35,3	35,3	100,0
	Total	17	100,0	100,0	

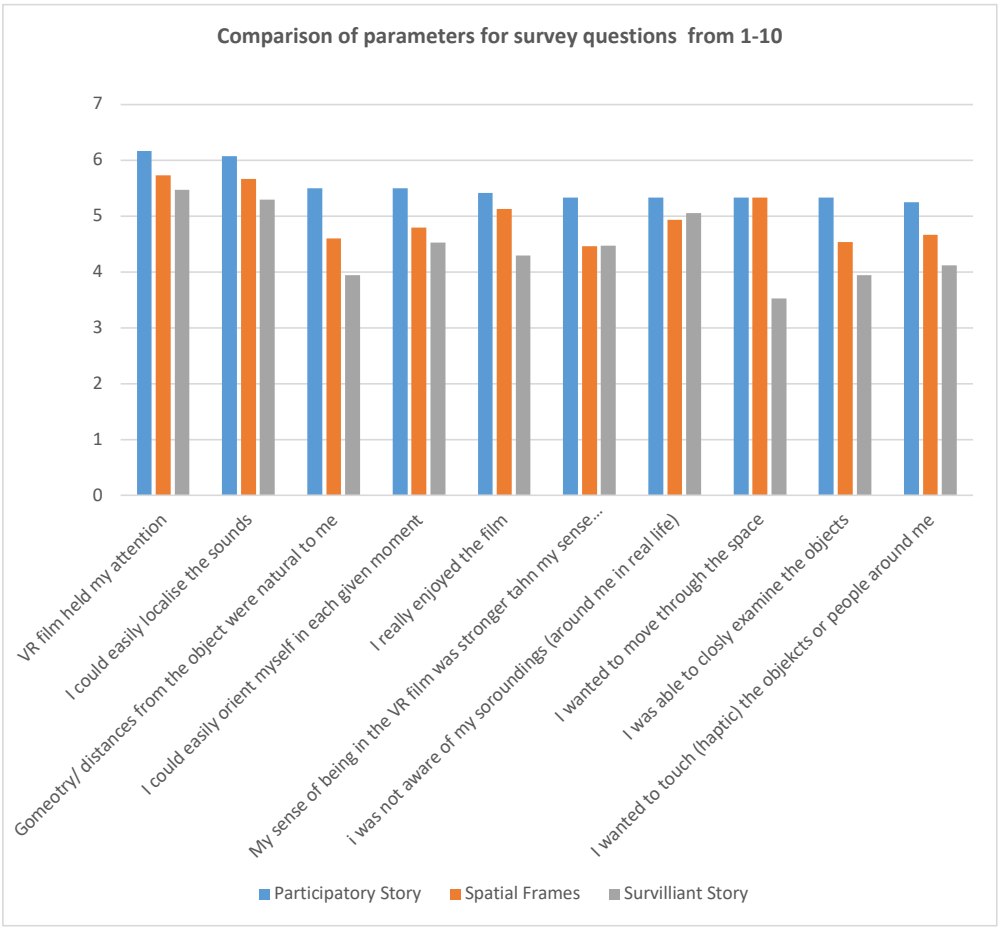
65% of respondents believe that the Surveillant Story-Space parameter is felt through the 'Place' dimension.

Table 20: Context perception of the 'Surveillant Story-Space' parameter.

I would define this as (more options)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dramatic space/ place	1	5,9	5,9	5,9
	Dantean space/place	**4**	**23,5**	23,5	29,4
	Empathetic space / place	**6**	**35,3**	35,3	64,7
	Showcase space / place	3	17,6	17,6	82,4
	Non-place / space	3	17,6	17,6	100,0
	Total	17	100,0	100,0	

35% of respondents believe that the 'Surveillant Story-Space' parameter is characterized by Empathetic space/place, 23% believe that Dantean place/space.

Comparison of surveys for "Participatory Story-Space", "Spatial frames" and "Surveillant Story-Space"


Comparison of parameters for survey questions from 1-10
7
6
5
4
3
2
1
0
VR film held my attention
I could easily localise the sounds
Gomeotry/ distances from the object were natural to me
I could easily orient myself in each given moment
I really enjoyed the film
My sense of being in the VR film was stronger tahn my sense...
i was not aware of my soroundings (around me in real life)
I wanted to move through the space
I was able to closly examine the objects
I wanted to touch (haptic) the objekcts or people around me
Participatory Story
Spatial Frames
Survilliant Story

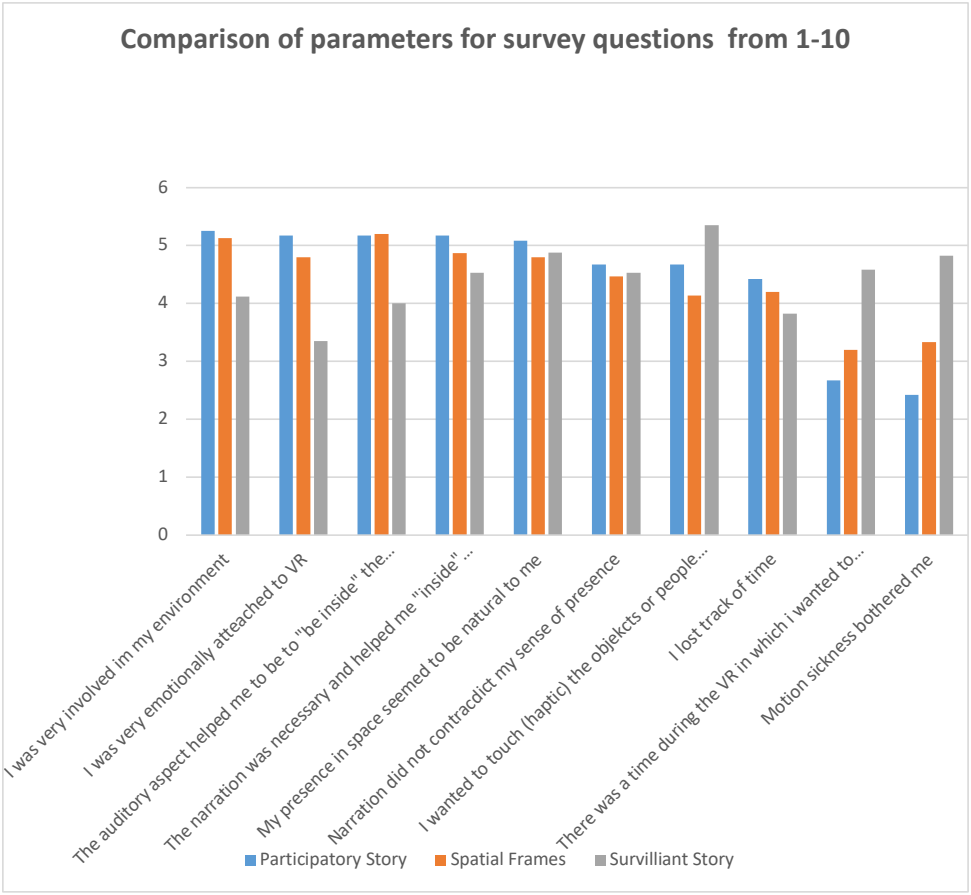


Table 21: Kronbach Alfa coefficients for the parameter "Participatory Story-Space " if questions are included.

Item-Total Statistics (Pariticipatory)					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VR film held my attention	93,75	101,295	,382	.	,752
I could easily localize the sounds	93,83	105,788	,148	.	,766
My presence in space seemed to be natural to me	94,83	115,606	-,239	.	,799
I really enjoyed the film	94,50	89,182	,662	.	,725
My sense of being in the VR film was stronger than my sense of being in the real world	94,58	100,083	,615	.	,743
I was very emotionally attached to VR	94,75	88,932	,659	.	,725

I was not aware of my surroundings(around me in real life)	94,58	92,811	,725	.	,727
There was a time during the VR in which i wanted to give up watching	97,25	105,477	,083	.	,776
Geometry/ distances from the object were natural to me	94,42	107,356	,112	.	,766
I wanted to move through the space	94,58	97,174	,516	.	,742
I could easily orient myself in each given moment	94,42	110,811	-,070	.	,772
Motion sickness bothered me	97,50	98,273	,395	.	,749
I lost track of time	95,50	85,727	,624	.	,725
The auditory aspect helped me to be to "be inside" the space	94,75	108,932	,023	.	,771
The narration was necessary and helped me "inside" the space	94,75	102,932	,300	.	,757
Narration did not contradict my sense of presence	95,25	103,841	,178	.	,766
I was able to closely examine the objects	94,58	112,083	-,139	.	,778
I wanted to touch (haptic) the objects or people around me	95,25	97,477	,337	.	,755
I wanted to touch (haptic) the objects or people around me	94,67	97,515	,510	.	,742
I was very involved in my environment	94,67	93,697	,693	.	,730

Kronbach Alpha shows are satisfactory on all scales.

Table 22: Kronbach Alfa coefficients for 'Spatial frames' if questions are included.

Item-Total Statistics (Spatial)					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VR film held my attention	93,20	261,314	,541	.	,841
I could easily localize the sounds	93,27	257,781	,552	.	,840
My presence in space seemed to be natural to me	94,13	276,695	,160	.	,855
I really enjoyed the film	93,80	251,314	,664	.	,835
My sense of being in the VR film was stronger than my sense of being in the real world	94,47	234,981	,810	.	,826
I was very emotionally attached to VR	94,13	245,981	,609	.	,836

I was not aware of my surroundings (around me in real life)	94,00	266,857	,541	.	,843
There was a time during the VR in which i wanted to give up watching	95,73	300,924	-,251	.	,876
Geometry/ distances from the object were natural to me	94,33	252,810	,508	.	,841
I wanted to move through the space	93,60	253,114	,701	.	,835
I could easily orient myself in each given moment	94,13	265,552	,469	.	,844
Motion sickness bothered me	95,60	280,686	,059	.	,861
I lost track of time	94,73	260,352	,525	.	,841
The auditory aspect helped me to be to "be inside" the space	93,73	291,924	-,143	.	,862
The narration was necessary and helped me "inside" the space	94,07	241,210	,766	.	,829
Narration did not contradict my sense of presence	94,47	270,695	,261	.	,851
I was able to closely examine the objects	94,40	280,829	,099	.	,856
I wanted to touch (haptic) the objects or people around me	94,80	246,457	,567	.	,838
I wanted to touch (haptic) the objects or people around me	94,27	241,352	,809	.	,828
I was very involved in my environment	93,80	261,171	,585	.	,840
Spatial frame made me feel it is a single space	94,00	274,857	,368	.	,848

Kronbach Alpha shows are satisfactory on all scales.

Table 23: Kronbach Alfa coefficients for the parameter 'Surveillant Story-Space' if questions are included.

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
VR film held my attention	83,18	216,779	,476	.	,829
I could easily localize the sounds	83,35	203,493	,624	.	,821
My presence in space seemed to be natural to me	84,71	203,471	,629	.	,821
I really enjoyed the film	84,12	200,985	,563	.	,823

My sense of being in the VR film was stronger than my sense of being in the real world	84,35	210,868	,557	.	,825
I was very emotionally attached to VR	84,18	219,779	,435	.	,831
I was not aware of my surroundings(around me in real life)	83,59	223,882	,326	.	,835
There was a time during the VR in which i wanted to give up watching	85,12	262,610	-,520	.	,874
Geometry/ distances from the object were natural to me	84,71	222,221	,283	.	,837
I wanted to move through the space	84,53	206,890	,453	.	,830
I could easily orient myself in each given moment	84,53	201,265	,672	.	,818
Motion sickness bothered me	85,29	232,346	,043	.	,847
I lost track of time	84,65	218,868	,283	.	,838
The auditory aspect helped me to be to "be inside" the space	84,12	212,860	,678	.	,823
The narration was necessary and helped me "inside" the space	83,76	208,191	,644	.	,822
Narration did not contradict my sense of presence	84,12	211,735	,548	.	,826
I was able to closely examine the objects	83,29	213,846	,589	.	,826
I wanted to touch (haptic) the objects or people around me	84,82	197,279	,634	.	,819
I wanted to touch (haptic) the objects or people around me	84,06	216,309	,377	.	,833
I was very involved in my environment	83,82	219,029	,363	.	,834

Kronbach Alpha shows are satisfactory on all scales.

Table 24: Kolmogorov-Smirnov's criterion for 'Participatory Story-Space'.

	N	Normal Parameters [a,b]	Most Extreme Differences			Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	
		Mean	Std. Deviation	Absolute	Positive	Negative		
VR film held my attention	12	6,17	1,030	,291	,209	-,291	1,007	,262
I could easily localize the sounds	12	6,08	1,084	,386	,199	-,386	1,337	,056

My presence in space seemed to be natural to me	12	5,08	1,443	,310	,263	-,310	1,075	,198
I really enjoyed the film	12	5,42	1,505	,234	,146	-,234	,811	,526
My sense of being in the VR film was stronger than my sense of being in the real world	12	5,33	,778	,304	,196	-,304	1,053	,217
I was very emotionally attached to VR	12	5,17	1,528	,290	,209	-,290	1,004	,266
I was not aware of my surroundings(around me in real life)	12	5,33	1,155	,301	,199	-,301	1,044	,225
There was a time during the VR in which I wanted to give up watching	12	2,67	1,497	,339	,339	-,190	1,173	,128
Geometry/ distances from the object were natural to me	12	5,50	,905	,293	,207	-,293	1,015	,254
I wanted to move through the space	12	5,33	1,155	,301	,199	-,301	1,044	,225
I could easily orient myself in each given moment	12	5,50	,674	,354	,229	-,354	1,227	,099
Motion sickness bothered me	12	2,42	1,311	,375	,375	-,209	1,298	,069
I lost track of time	12	4,42	1,832	,223	,194	-,223	,772	,590
The auditory aspect helped me to be to "be inside" the space	12	5,17	,937	,263	,187	-,263	,910	,379
The narration was necessary and helped me "inside" the space	12	5,17	1,030	,207	,205	-,207	,719	,680
Narration did not contradict my sense of presence	12	4,67	1,303	,264	,196	-,264	,913	,375
I was able to closely examine the objects	12	5,33	,888	,230	,230	-,190	,796	,551
I wanted to touch (haptic) the objects or people around me	12	4,67	1,557	,221	,166	-,221	,765	,602
I wanted to touch (haptic) the objects or people around me	12	5,25	1,138	,245	,172	-,245	,849	,467
I was very involved in my environment	12	5,25	1,138	,245	,172	-,245	,849	,467

*Distribution not normal if *α<0.05, ** α<0.01*
The distribution of the questionnaire scales corresponds to a normal distribution.

Table 25: Kolmogorov-Smirnov's criterion 'Spatial Frames'.

	N	Normal Parameters [a,b]	Most Extreme Differences			Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
		Mean	Std. Deviation	Absolute	Positive	Negative		
VR film held my attention	12	6,17	1,030	,291	,209	-,291	1,007	,262
I could easily localize the sounds	12	6,08	1,084	,386	,199	-,386	1,337	,056
My presence in space seemed to be natural to me	12	5,08	1,443	,310	,263	-,310	1,075	,198
I really enjoyed the film	12	5,42	1,505	,234	,146	-,234	,811	,526
My sense of being in the VR film was stronger than my sense of being in the real world	12	5,33	,778	,304	,196	-,304	1,053	,217
I was very emotionally attached to VR	12	5,17	1,528	,290	,209	-,290	1,004	,266
I was not aware of my surroundings(around me in real life)	12	5,33	1,155	,301	,199	-,301	1,044	,225
There was a time during the VR in which I wanted to give up watching	12	2,67	1,497	,339	,339	-,190	1,173	,128
Geometry/ distances from the object were natural to me	12	5,50	,905	,293	,207	-,293	1,015	,254
I wanted to move through the space	12	5,33	1,155	,301	,199	-,301	1,044	,225
I could easily orient myself in each given moment	12	5,50	,674	,354	,229	-,354	1,227	,099
Motion sickness bothered me	12	2,42	1,311	,375	,375	-,209	1,298	,069
I lost track of time	12	4,42	1,832	,223	,194	-,223	,772	,590
The auditory aspect helped me to be to "be inside" the space	12	5,17	,937	,263	,187	-,263	,910	,379
The narration was necessary and helped me "inside" the space	12	5,17	1,030	,207	,205	-,207	,719	,680

Narration did not contradict my sense of presence	12	4,67	1,303	,264	,196	-,264	,913	,375
I was able to closely examine the objects	12	5,33	,888	,230	,230	-,190	,796	,551
I wanted to touch (haptic) the objects or people around me	12	4,67	1,557	,221	,166	-,221	,765	,602
I wanted to touch (haptic) the objects or people around me	12	5,25	1,138	,245	,172	-,245	,849	,467
I was very involved in my environment	12	5,25	1,138	,245	,172	-,245	,849	,467

*Distribution not normal if *α<0.05, ** α<0.01*
The distribution of the questionnaire scales corresponds to a normal distribution.

Table 26: Kolmogorov-Smirnov's criterion 'Surveillant Story-Space'.

	N	Normal Parameters [a,b]		Most Extreme Differences			Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
		Mean	Std. Deviation	Absolute	Positive	Negative		
VR film held my attention	17	5,47	1,281	,178	,173	-,178	,734	,655
I could easily localize the sounds	17	5,29	1,687	,254	,156	-,254	1,049	,221
My presence in space seemed to be natural to me	17	3,94	1,676	,266	,171	-,266	1,095	,181
I really enjoyed the film	17	4,53	1,972	,194	,194	-,189	,800	,544
My sense of being in the VR film was stronger than my sense of being in the real world	17	4,29	1,448	,243	,136	-,243	1,002	,268
I was very emotionally attached to VR	17	4,47	1,179	,203	,188	-,203	,836	,487
I was not aware of mysurroundings(around me in real life)	17	5,06	1,144	,244	,168	-,244	1,007	,263
There was a time during the VR in which i wanted to give up watching	17	3,53	1,736	,217	,217	-,145	,894	,402
Geometry/ distances from the object were natural to me	17	3,94	1,435	,181	,113	-,181	,748	,630
I wanted to move through the space	17	4,12	1,965	,212	,212	-,203	,876	,427
I could easily orient myself in each given moment	17	4,12	1,691	,228	,189	-,228	,942	,337
Motion sickness bothered me	17	3,35	1,455	,294	,294	-,176	1,214	,105

I lost track of time	17	4,00	1,732	,189	,170	-,189	,778	,580
The auditory aspect helped me to be to "be inside" the space	17	4,53	1,125	,250	,161	-,250	1,033	,237
The narration was necessary and helped me "inside" the space	17	4,88	1,409	,207	,173	-,207	,852	,462
Narration did not contradict my sense of presence	17	4,53	1,419	,237	,150	-,237	,977	,296
I was able to closely examine the objects	17	5,35	1,222	,290	,181	-,290	1,196	,114
I wanted to touch (haptic) the objects or people around me	17	3,82	1,976	,170	,170	-,159	,702	,708
I wanted to touch (haptic) the objects or people around me	17	4,59	1,583	,250	,186	-,250	1,029	,240
I was very involved in my environment	17	4,82	1,425	,373	,204	-,373	1,537*	,018

*Distribution not normal if *α<0.05, ** α<0.01*
The distribution of the questionnaire scales corresponds to a normal distribution.
** Asking "I was very involved in my environment*" distribution does not correspond to *norm.*

APPENDIX J: *Findings from the Re-focused coding phase*

For the OFT test segment all statistical analyses were performed using SPSS 25.0. The mean immersion factor for each narrative category is shown in Table 1. The higher the average value, the more pronounced is IF in a given parameter. For example, the most pronounced IF is in Reverse Internal Locus (RIL). The least immersive IF is expressed in Acceleration. The significance of the immersive factor is most prominent in the responses assigned to RIL such as "RIL VR film held my attention", "RIL I could easily localize the sounds", "RIL My presence in space seemed natural to me", "RIL I really enjoyed the film", "RIL My sense of being in the VR film was stronger than my sense of being in the real world", "RIL I was very emotionally attached to the VR", etc., (Std. Deviation. 0.462; Mean 5.29).

Table 27: Descriptive Statistics of Immersive Factor in Narratological Categories.

Immersive factors variety	N	Minimum	Maximum	Mean	Std. Deviation
Immersive Factor in Reverse Internal Locus	34	103	122	114,94	7,499
Immersive Factor in Stretch	34	90	130	112,12	14,086
Immersive Factor in Internal Locus	34	73	122	103,53	18,636
Immersive Factor in Negative Locus	34	91	106	98,62	6,467
Immersive Factor in Scene	34	87	107	97,00	10,150
Immersive Factor in Reverse External Locus	34	72	106	95,21	11,417
Immersive Factor in Voice (homodiegetic)	34	72	104	88,00	16,241
Immersive Factor in Space / Sequentiality	34	39	132	85,26	23,474
Immersive Factor in Acceleration	34	65	105	85,00	20,301
Valid N (listwise)	34				

For the AFT test segment, in order to determine the validity of the survey, the coefficients of Cronbach's alpha reliability was calculated for all four narrative categories. The results of the plausibility check show that the internal coherence of all four scales (factors) is high enough (IL = 0.612; RIL = 0.667) and high (EL = 0.763; NL = 0.886). IF vs. Parameter Intradiegetic Sonic Space at Internal Locus (**Table *28***) is characterized by an average score of 4.7, indicating that responses range from "Neither Agree or Disagree" to "Somewhat Agree". IF vs. Parameter Intradiegetic Sonic Space at External Locus (Table *29*) is characterized by an average of 4.8, indicating that responses can range from "Neither Agree or Disagree" to "Somewhat Agree". The deviation is 1,746, and the coefficient of variation is 1.704, which indicates a slight dispersion of the results around the medium. IF vs. Intradiegetic Sonic Space at Reverse Internal Locus (RIL) (Table 30) is characterized by an average score of 4.65. The deviation is 1.22, and the coefficient of variation is 1.67, which indicates a slight dispersion of the results around the medium. IF vs. Parameter Extradiegetic Sonic Space at Negative Locus (Table) is characterized by an average of 5,229 (the results are the highest compared

to the four scales being studied, ranging from "Somewhat Agree" to "Agree"). Variation is 1,278, but the coefficient of variation is 1,668, which indicates a slight diffusion of results around the medium. The answers range from min = 3 to max = 6.46.

Table 28: IF vs. Parameter Intradiegetic Sonic Space at Internal Locus.

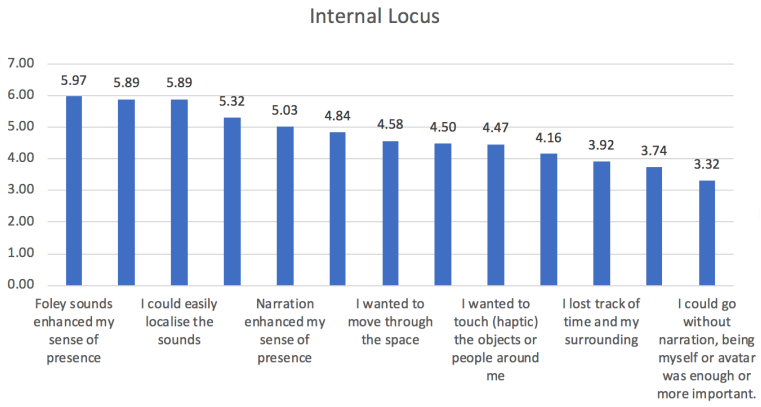


Table 29: IF vs. Parameter Intradiegetic Sonic Space at External Locus.

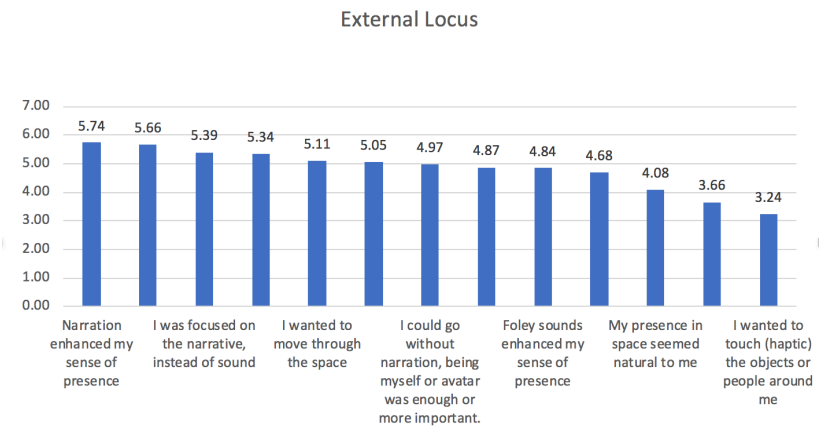


Table 30: IF vs. Parameter Intradiegetic Sonic Space at Reverse Internal Locus

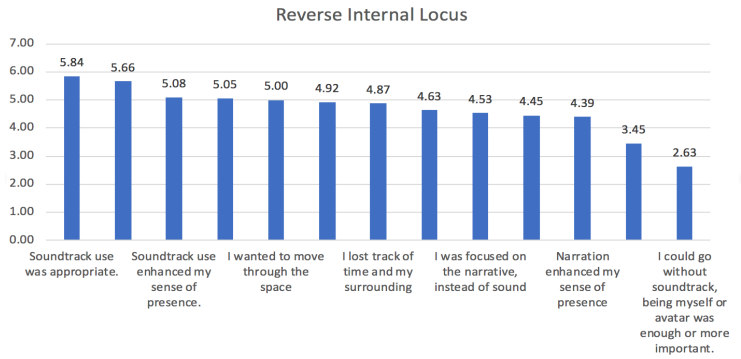
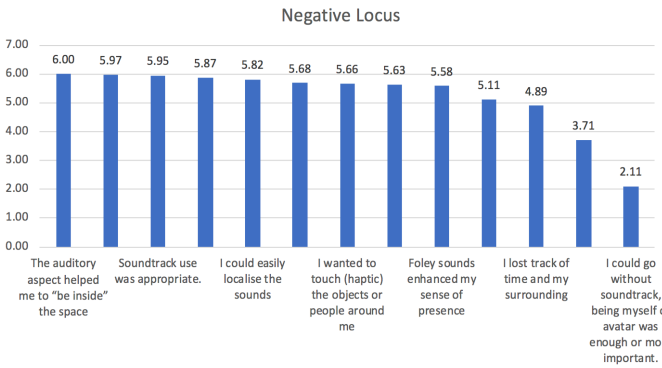


Table 30: IF vs. Parameter Extradiegetic Sonic Space at Negative Locus



In summation, the findings at the re-focused phase show that the immersive properties of *reverse internal locus*, as a narrative technique, promotes the perception that the Cinematic VR experience is fully real, helping to break down the barriers between virtual reality and the viewer, especially considering the dynamic role played by the second-person perspective. The immersive experience in 3DSC, in which viewers feel they are a part of the action, is not bestowed by any technological device but is reconstructed via a mere acceptance that the second-person narration is a natural habitat of 360º stereoscopic spherical cinema (Ceplitis, 2018).

The "Auricularization Field Test", in turn, to test the immersive power of audionarratological elements in 3DSC is one of the first of its kind to challenge the traditional directorial sound cues of a time-based cinema in addition to ambisonic soundscape that makes the use of focalization factors in the medium, whose primary attribute is space and navigation. What is clearly visible in this study is that sound behaves differently in 3DSC: the expectation of narrativity is questioned in relation to its textual, semiotic or acoustic contributions into to the purpose of narrative; "voice", central to the act of narrating, may distract the audience from immersive experiences and compete with the narrator's, while the first-person perspective is problematic. Finally, soundtrack is more immersive than an off-screen narration, which, in traditional cinema is a part of diegesis, but in 3DSC, neutralizes the sense

of presence, since an extra-diegetic narrator, while widely used, is not a natural habitant of 360º stereoscopic spherical cinema (Ceplitis, 2019).

APPENDIX K:


STAFF


STAFF


STAFF

APPENDIX L:

"Immersion/ Narratological Factors Questionnaire" (INFQ) Data

IMMERSION/ NARRATOLOGICAL FACTORS QUESTIONNAIRE

(Jennett et al., 2008) (Witmer, Jerome, & Singer, 2005)
Revised by the MPLab Liepaja (2021)

Individual factors

8. Age ____
   Female __ Male
9. Your education level
   High school degree __ Associate degree __ Bachelor's degree __ Master's degree __ Other
10. How many years of experience do you have working with virtual reality?
    0 – 1; __ 2 – 3; __ 4 – 5; __ 6 or more
11. How many years of experience do you have in audiovisual field?
    ___ 0 – 1; __ 2 – 3; __ 4 – 5; __ 6 or more

Apex Narration *(Once Upon a Time in Bolderaja)*

Please evaluate and expound on the propositions given

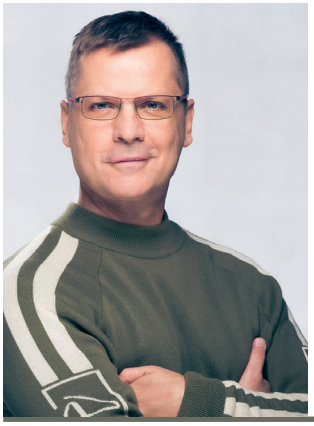
1. My presence in space seemed natural to me
2. I wanted to touch (haptic) the objects or people around me
3. I wanted to move through the space
4. I was very interested in seeing how the events would progress
5. Perspective was clear to me
6. Ocularization choice enhanced my sense of immersion
7. Moving from one spatial frame to another, if present, was necessary.
8. The spatial extensions had ideological, perceptual, psychological facets:
9. The narration had ideological, perceptual, psychological facets:
10. The narrative had a natural aspect of it (tied to experientiality)
11. Spatial Frames had:

a) Egocentric (cityscapes movement) b) exocentric (landscape view)

12. Locus felt Sequestered (reclusive), Extruding (spear)
13. The Narator was talking to me in general REL (identify target perspective)
14. Auriocularization and situatedness were a) mine. b) the character's
15. Apex narration was clear to me
16. Narrative Levels were effective

Rhizome:

1. Group experience was more immersive that it would have been individual
2. The overall narrative structure and the main themes cristalyzed clearly
3. If the order in which films were accessed, the narrative coherence and impact would still be the same
4. The length of each film and total experience was spot on
5. The motion sickness or length of films did not create negative effects
6. Rhyzomatic public viewing could be the thing of the future.
7. Which of the narrotological categories seemed most important.



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He holds an M.F.A. in Film from the California Institute of the Arts and a B.A. in Art History from Lawrence University. He has also studied theatre directing at The Theatre School at DePaul University (formerly known as the Goodman School of Drama). Through his background, he continues to incorporate the Anglo-Saxon theatrical tradition into the core training of RISEBA's film and multimedia directing major.