

MESTRADO  
MULTIMÉDIA - ESPECIALIZAÇÃO EM CULTURA E ARTES

# STORYTELLING FOR CINEMATIC VIRTUAL REALITY: A STUDY ON AUDIENCES' NEEDS AND EXPECTATIONS

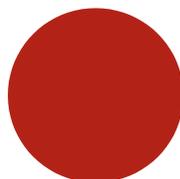
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**M**

2018

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# **Storytelling for Cinematic Virtual Reality: A Study on Audiences' Needs and Expectations**

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July 2018



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# Resumo

A realidade virtual, já altamente valorizada pela indústria dos videogames, está rapidamente a tornar-se numa força importante a considerar na área do entretenimento. O cinema pode ser o próximo a dar o salto para o mundo virtual, mas, primeiro, deve superar o desafio de adaptar as suas narrativas à realidade virtual. Este estudo procura refletir sobre o valor narrativo e de entretenimento do cinema na nova era da realidade virtual, considerando as experiências, necessidades e expectativas duma audiência potencial de *early adopters*.

Ao longo de três estudos, conduzidos por métodos mistos e inspirados em *grounded theory*, um conjunto de participantes refletiu sobre a sua relação com o cinema, os seus hábitos de vídeo 360° e suas expectativas para a realidade virtual. O primeiro passo foi um questionário sobre conteúdo 360° e realidade virtual cinematográfica, ao qual responderam 70 participantes. 12 desses 70 participantes foram entrevistados acerca da sua experiência ideal em filmes de realidade virtual. Outros 10 participaram em *focus groups* para discutir esses cenários ideais numa perspetiva de experiência coletiva. No final deste processo, foram desenvolvidas diretrizes de narrativa para a realidade virtual cinematográfica destinadas aos cineastas e criadores que procuram explorar este novo formato.

Esta pesquisa visa contribuir para ultrapassar o desafio de produzir narrativas cinematográficas imersivas para realidade virtual, propondo uma *framework* para orientar o planeamento e a execução dos esforços de *storytelling* e guionização para a realidade virtual cinematográfica. Este estudo foi desenvolvido na esperança de inspirar e orientar os criadores na produção de experiências de realidade virtual cinematográfica que atendam às necessidades, expectativas e desejos da sua potencial audiência.



# Abstract

Virtual reality, already highly valued by the video game industry, is quickly becoming a force to be reckoned with in other segments of the entertainment landscape. Cinema might be the next to take the leap into the virtual world, but first, it must overcome the challenge to translate its narratives into virtual reality material. This study seeks to reflect on the storytelling and entertainment value of film in the new age of virtual reality considering the experiences, needs, and expectations of a potential audience of early adopters.

Throughout three studies, conducted by mixed methods and inspired by grounded theory, participants reflected on their relationship to cinema, their 360° video habits, and their virtual reality expectations. The first step was a questionnaire about 360° content and cinematic virtual reality that was filled out by 70 participants. 12 of those 70 participants went on to be interviewed on their ideal virtual reality movie experience. Another 10 took part in focus groups to discuss those ideal scenarios in the perspective of a collective experience. At the end of this process, storytelling guidelines for cinematic virtual reality aimed at filmmakers and creators looking to explore this new format were developed.

This research aims to contribute to overcome the challenge of producing immersive film narratives for virtual reality by proposing a framework to guide the planning and execution of storytelling and script writing efforts in this new format. This study was developed in the hopes of inspiring and guiding creators in producing the cinematic virtual reality experiences that fulfill their potential audience's wants, needs and expectations.



# Aknowledgments

*The art of teaching is the art of assisting discovery.*

Yes, that is a random quote from an American 20<sup>th</sup>-century poet I found online. But, as it turns out, it is perfectly accurate to define Rui Rodrigues and Luciano Moreira, the supervisor dream team that helped turn this idea into a dissertation. I would like to thank them for guiding this thesis though probably one too many meetings and certainly more random questions than they signed up for.

*A man who does not spend time with his family can never be a real man.*

I am lucky to have an awesome family to turn to when the going gets tough and you need people to answer your questionnaires or just listen to you talk about VR when everyone else is tired of hearing about your thesis.

I would like to thank my parents. The sweet bundles of joy and overprotection who pay for my tuition and keep me grounded everytime they remind me that writing a dissertation is not a real job. My mom for always sticking out for me and for being the worrier in the family, who worries about everyone else except her own self. I reckon that is a thing moms do. There is nothing she cannot fix and no terrible situation she can not make better. If I can stomach half the determination on the lady sometime in my life, I can die happy. My dad is the storyteller in the family. He always comes up with the best “back in my day” sequences. He tells each idiotic adventure he took when he was younger with such gusto he even works out the sound effects and laughs at his own jokes. And we adore it so much we hear each story as it was the first time he is telling it, even though he probably talked about it seven hundred times already. I am certain his life would turn into a great blockbuster. I like to think I inherited my love of film from him and I could not be more thankful for that.

My sister took me to the movies for the first time in my life and she has been pushing me to do great things ever since. To my grandma and my nephews, thank you for fueling my procrastination by telling me I work too hard on a daily basis, even though I most likely do not.

Ana Rita Jesus Costa



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# Abbreviations

|        |   |
|--------|---|
| VR     | Virtual Reality                                 |
| AR     | Augmented Reality                               |
| MR     | Mixed Reality                                   |
| POV    | Point of View                                   |
| HMD    | Head-Mounted Display                            |
| IDS    | Interactive Digital Storytelling                |
| GT     | Grounded Theory                                 |
| MMORPG | Massively-Multiplayer Online Role-Playing Games |

# 1. Introduction

Filmmaking is a product of art and science. With each technological revolution, the ways in which filmmakers write and execute their artistic visions change and so do the ways in which their audiences see those creations. A new era for the entertainment industry seems to lurk, following the fresh possibilities in interactivity and participation set by 360° video and cinematic virtual reality. With these technological possibilities come new production needs and new storytelling responsibilities, which might challenge the role audiences play in movies, as well as their needs and expectations when watching them.

This study seeks to shed light on how the structure of the storytelling process and the requirements of the screenplay must evolve to fit these new formats and can change to accommodate new entertainment possibilities.

## 1.1. Context and Motivation

Entertainment is important. It offers an escape, a reward, fuel for celebration, relaxation and fun. It has the power to shape views, tastes and consequently minds. Entertainment is not brought up on a void, it derives from society's standpoints and it quietly and impactfully seeps into its daily lives defining the collective imaginary. Movies are an important form of entertainment, besides carrying entertainment value on their own, they allow self-escape and encourage self-development (Tesser & Millar, 1988).

We are on a brink of a long announced new entertainment era, the ways and formats in which we consume entertainment are changing and film is no exception. Yet, for virtual reality to achieve its promise as a rich and popular artistic form, it will be necessary to explore well beyond the interface, to those issues of content and style that have helped traditional forms of media thrive (Bates, 1992). Established media rarely depends solely on technology to provide a gratifying experience (Moreno, 2001) and for cinema to survive in these new formats it is important to develop new ways of telling exciting new stories, building more complex worlds and reaching bigger and bolder audiences.

360° has been considered the gateway drug to cinematic VR (Dolan & Parets, 2016), since it is widely more available to view and it requires less equipment and skill to produce. The parallel between the two experiences makes for a plausible projection of how the audience could intake some elements of the structure possibly set by VR through 360° experiences.

360° videos are already part of the entertainment landscape. They are produced by professionals and amateurs, sold in experiences and shared for free in platforms like YouTube. The increasing affordability of VR, leading to its democratization through technological sets like Oculus Go and in platforms like Oculus Video, points to new possibilities in the production of content and bigger expectations in its consumption.

Screenwriting is the core of the filmmaking process, it is present through it all, from the selection of material through to the editing, rewriting and reshooting in post-production (Stempel, 1988). To sustain the film industry well into a future of virtual worlds, screenplays must move with the times. Amongst the challenges presented by these new formats, interactivity seems like an insurmountable obstacle to conquer for the fundamentally passive medium that is film.

It is fundamental to take the best advantages these new formats offer to enrich filmmaking, for storytelling is very much a human ability and the state of entertainment can serve as a reflection of our society and as a standpoint for generations to come. Theoretical research and artistic creation are working to improve understanding of how to tell an effectively immersive story, borrowing some concepts from cinema, television, video and literature in order to design a story in a medium that defines itself day after day, thanks to user's feedback (Reyes, 2017). This study aims to serve as guideline and inspiration for content makers seeking to explore the new opportunities offered by 360° video and virtual reality. It aims to build upon the technology already existing and the entertainment forms already established with the content audiences want.

## **1.2. Problem and Research Goals**

This study explores the experience, habits and expectations of 360° videos' audiences and potential cinematic VR spectators. In addition to that, it is expected of this research to generate a better understanding on how to allow interactivity in 360° videos and how to overcome the narrative challenges created by the virtual reality dynamics. Last but not least, it represents an effort in cultivating complex and immersive storytelling through the creation of storytelling guidelines for the cinematic approach to VR. With those goals in mind, this study encapsulates two main problems and their respective research goals.

**What do audiences need and want to watch in cinematic virtual reality?** It matters to figure out what are the more attractive stories to potential spectators in cinematic VR, the tales

more likely to ensure an audience from the get-go, making them safer and more reliable productions. It is important to keep in mind that established media rarely depend solely on technology to provide a gratifying experience. The development of an experience for an established medium is more often a synergy of technical mechanics and storytelling. Narrative conventions are accepted and understood by the audience culture, while production tools and methods are in place to support the creation of experiences. A new medium faces the challenges of technical innovation as well as the development of narrative conventions (Moreno, 2001). Upon those narrative conventions, other conventions must be challenged, the ones defining the role of the storyteller and the role of the audience. It is also relevant to explore how immersion and interactivity in 360° and VR video influence the definition of the storyteller and of the audience.

**How can we tell stories in cinematic virtual reality?** This study sets foundations to the discussion about the guidelines needed to produce and execute scripts in this new format. It aims to identify which components of the traditional film script need to evolve for the virtual scenario and which new components need to be explored in the VR context. One of the main issues in interactive digital storytelling from the creator's point of view is to find a good balance between a fluent story structure and the possibility for the user to have some level of agency within the story, how to tell an engaging interactive story without compromising its dramatic progression (Reyes, 2017).

This research aims to propose a design method, inspired by grounded theory, that can be useful to content creators wanting to explore interactive narratives in cinema through virtual reality. It carries no intention of being an absolute solution, only more systematic way to organize, visualize and check important storytelling points for this format according to its potential audience.

### **1.3. Methodology and Structure of the Dissertation**

By seeking to shed light on the storytelling process for cinematic virtual reality from the perspective of the audience, this dissertation encapsulates an audience study divided into three main sections. It starts off with a quantitative approach, through the means of an inquiry by questionnaire on the audiences' relationship to traditional filmmaking, its habits with 360° video and its expectations for cinematic virtual reality. This is followed by a qualitative approach, which firstly consists of a series of interviews concerning the process of watching a movie and the changes these new formats would demand from it. The last step is comprised of two focus

groups discussing the main categories derived from the previous stages of the applied methodology. Conceptual and thematical analysis as well as social construction analysis are used to navigate through the qualitative data. Each section of the analysis derives from the one before, deepening its complexity towards a general mapping of how the audiences' wants and needs can help clarify the storytelling process in cinematic virtual reality.

This document is divided into nine chapters. After this introduction, the second one consists of a rundown of the state of the art concerning video and film in 360° and virtual reality, storytelling principles for immersive mediums like gaming and immersive theatre and the contributions provided by social sciences and speculative design which could benefit this research.

The following chapter concerns the problems encapsulated in this study. In addition to that, it presents a clearer, more thorough schematic look at the instruments, participants and procedures involved in the methodology as well as the links between them and consequential relationships.

Chapters four, five and six present the results and respective analysis of each stage, as well as discussion of results, conclusions and closing remarks relevant to the continuity of the research process. Chapter four translates a first look at the habits and expectations of the audiences through a questionnaire. Chapter five explores further the process of watching movies in the traditional format and in cinematic virtual reality. Chapter six encapsulates the focus groups' discussions on the final coded topics.

A general discussion is prompted for a seventh chapter, in which the findings are confronted with previous work developed by other authors and new unexplored facets of the research are stated, alongside the development of the proposed framework for cinematic virtual reality creation. The final section is, naturally, devoted to the conclusions.

## 2. Storytelling for VR and Film

360° video and virtual reality creators are faced with the challenge of questioning and possibly redefining an established storytelling language. Virtual reality is a new medium, as film, radio, and television once were. As motion pictures matured, directors and audiences developed a lexicon. Over time a common language will also likely arise in the context of virtual reality. (Pausch & Snoddy, 1996). Working towards achieving that lexicon, not just in technical terms, but also in storytelling processes and principles can inspire and guide the work of the creators and aid with engaging spectators.

Often a new medium develops from the work of technical innovators. Initial research focuses on the mechanics of the technology, while issues of effective use of the technology as a medium are often secondary (Moreno, 2001). The new medium may enjoy some initial success as an entertainment form based completely on the novelty of the technology, but established media also depends on the development of narrative conventions. We meet at a turning point in entertainment, in which early developers are working to surpass the novelty of the virtual world and turn the experience into a habit for moviegoers to truly adopt in their daily lives. After that threshold is conquered, consumers might actively seek 360° video and virtual reality for better and more complex content and experiences, paving the way for more creators to produce more narratives and to perfect the definition of a cinematic story in virtual reality and the tools necessary to achieve that story in a cheaper, quicker and more efficient way.

Cinema is most times considered a fundamentally passive medium in which the storyteller maintains autocratic power. The spectators are a vessel in the progression of the storyteller's vision, they do not inherit a rigid identity within the story and do not participate in the creation of narrative or symbolic meaning (Thompson, 1986). Presence is only granted through the gift of observing the story and the viewer remains non-existent outside of the movie and has no identity inside of it. This form of cinema involves plunging a passive viewer into the darkness of the traditional format (Gaudreault & Marion, 2015). Although this is currently the most used form of entertainment in film, it is possible that it might be challenged by the popularization of 360° video and by the growing demand for atmospheric, immersive and participatory cinematic experiences (Atkinson & Kennedy, 2016). Through this format, the extension of the audience's

observation changes and so it changes its relationship with the content. With modern formats, new possibilities for models of storytelling focused on the audience's perspective arise.

The participant model shows up to offer an identity to the spectator within the universe of the story. This identity does not turn the viewer into another character, nonetheless its existence is inextricable from the story itself. The virtual universe of the story responds to, and can be motivated by, the viewer's digital existence, sense the participant's position and actions and replace or augment feedback to one or more senses, giving the feeling of being mentally immersed (Sherman & Craig, 2002).

Alas the active model is reached, and the audience is given a share of the storyteller's power to affect the outcome of the story's events. In this democratic mode of storytelling, the storyteller presents carefully measured and calculated choices to the viewer. Once made, these choices influence the story's progression (Dolan & Parets, 2016).

In 360° video, multi-camera rigs record live action in a 360-degree realm, which gives the consumer a wider yet contained perspective of a location and its subjects. Virtual reality renders a world in which the consumer essentially operates as an extension of the creator's environment, going beyond 360° videos, by enabling the viewer to explore and manipulate a mutable space.

In 360° video, the consumer functions as a passenger in the storyteller's world. On the other hand, in virtual reality, the viewer takes the wheel. The storyteller directs its gaze through situational content by using visual and audio cues, such as light, sound and stage movement.

The traditional notion of the fourth wall ceases to exist in 360° video and virtual reality. The key to constructing a narrative fit for film and for the virtual world can be found in the combination of the different models: passive, observant, participant and active and in the manipulation of the audience's role in the story (Dolan & Parets, 2016).

To redefine the format in which we tell the story is to seek ways of profiting to the fullest of VR technology. The development of an experience for an established medium is more often a synergy of technical mechanics and storytelling, narrative conventions are accepted and understood by the audience culture, while production tools and methods are in place to support the creation of experiences (Moreno, 2001). Looking at the adoption of mediums such as radio, television, console games, the prospects look fine for virtual reality. Hardware development is key, and it is going to be driven by content (Chung, 2017). Virtual reality's inherent grandeur is invention in story, its digression from theatre and its closer and more diverse relationship to the spectator. Yet, that invention in story also brings new challenges. One of the main issues in interactive digital storytelling from the creator's point of view is to find a good balance between a fluent story structure and the possibility for the user to have some level of agency within the story (Reyes, 2017). The conundrum arises in the difficulties in telling an engaging interactive story without compromising its dramatic progression.

This chapter's intention is to reflect current considerations about the relationship between cinema and virtual reality. Firstly, it goes over storytelling principles, from the traditional

screenplay to the gaming narrative better established in virtual reality, cross referencing common key points found in immersive theatre. After the story, a look into the media delivering the message, through the landscape set by 360° video and the first steps of cinematic virtual reality. Last but not least, some considerations on the methodological approaches contributing to this research, the importance of the social analysis of audiences and the potential of speculative design.

## **2.1. The Story**

The virtual cinematic experience is the new theatrical experience, where distractions are erased, and the viewer does not need to concern itself with the limits of its fourth wall. Virtual reality offers an outlet to capture the audience's undivided attention and it represents a fresh and more profound mean of escapism. Faced with this newfound power, storytellers have the opportunity to create a new form of narrative that immerses the audience completely and is able to entertain said audience for the entire duration of the piece, since distractions are not allowed to the same extent anymore. Virtual reality does not just offer boundless new possibilities, it comes with a very clear duty to boundlessly entertain for the lack of an alternative. To be of interest to an audience, a narrative displayed in real time must be either multiple, interactive or exceptionally rich in dramatic features (Aylett & Louchart, 2003). Storytellers are riddled with the challenge of creating truly compelling narrative and content in virtual reality's advent.

The rift created between virtual reality and other storytelling mediums is mostly due to interactivity. Since the VR set could potentially allow the audience to make all sorts of detrimental decisions to the narrative, being as simple as moving their heads in a certain direction or focusing on a particular object in the background instead of a character, virtual reality, in whatever form it might come, always supposes that the user's experience is interactive. Hyper narrative interactive cinema refers to the possibility for users to shift at different points in an evolving film narrative to other film narrative trajectories (Nitzan & Shaul, 2008). A preliminary requirement for that to happen concerns the need to expand the faculties of film narrative, rather than break away from them, and multi-tasking and split-attention problems can enhance engagement rather than reduce it (Shaul, 2008). This enlarged focus, from the limitations of the head-mounted display (HMD), and boundless distractions, prompted by interactivity, results in quite a contradictory conundrum that turns the development of a complex narrative for virtual reality films an equally complex ordeal.

Theatre seems to be the only narrative medium that actually allows the spectator to be physically present at the representation or display of a narrative (Louchart & Aylett, 2003). In an immersive theatre experience, participants take a rather active role in the performance, from choosing which characters to stick with to deciding their path through the piece. Such dynamics create an escapist world alternative that is very similar to the virtual reality experience.

Interactivity refers to the user's ability to influence the form and content of an environment (Steuer, 1992) and interactive actions reinforce the audience's sense of being part of a different environment where those actions are possible. Interactivity is a major tool when it comes to establishing immersion, one tool that has been perfected in video game dynamics for decades as one of the key conceptual apparatuses through which video games have been theorized thus far (Matt, 2003). Immersion is obviously fundamental in the process of transmitting a story in virtual reality and it is mostly determined by the environment's capability of isolating people from other surrounding worlds and achieving presence in this alternative world (Tamborini, 2006). With the rapid development of presence-inducing technology and its role on video game use, presence might pose as an interesting parameter to explore in cinematic VR passive narratives. The illusion of presence is fundamental in the process of suspending the audience's disbelief. "Hotshot digital cinematography does not make a digital story immersive" (Herz, 1997). What makes it immersive is a world where no territory is off-limits, anything you see is fair game, and all your actions have consequences (Herz, 1997). Yet, presence is a fragile thing and inconsistencies in the VR experience, no matter how small they might seem, from technical glitches to the lack of response from a character, are enough to shatter the illusion. The term "presence" can be broken down into several technical specifications in virtual reality. Field of view greater than 110 degrees, resolution higher than 1080p, frame rate higher than 75 fps, motion-to-photon latency below 20 milliseconds, pixel persistence below 2 milliseconds, among many others. But it can also be captured in a simple phrase, the unmistakable feeling of being someplace else. A high-quality virtual reality experience, of which there aren't many that exist today, has the potential to deliver presence. However, this poses a challenge for VR storytellers, presence and storytelling are in conflict with each other (Chung, 2016).

Guiding the spectator through the experience is one of the main obstacles of the development of complex stories in cinematic virtual reality, an issue already explored in fundamental game writing principles like keeping a player on track. By balancing out the gamer's freedom in taking a path and the clarity of the game goals (Bateman, 2006), game developers are able to push the player through a predefined narrative whilst suspending the sense of obligation. These sorts of gimmicks can have a very interesting role in the design of a narrative path or path alternatives for cinematic VR.

As every producer knows, it is impossible to make a good film without a good story thus the script, despite its fragile appearance, is the beginning of all cinematic adventure (Escalonilla, 2013). Beyond the changes made in the execution of the material, the nature of the screenplay seems to carry on being the same as it always has been. A screenplay is a story told with pictures, in dialogue and description, and placed within the context of a dramatic structure (Field, 2005). The principles established in immersive theatre and video game narratives can represent interesting tools to explore when looking for a way to build a standard for screenwriting in virtual reality movies and understand how the nature of the screenplay can be

adapted into this new medium. The path for the format might come as the intersection of immersive theatre, narrative games and cinema (Saatchi, 2018).

### **2.2.1. Immersive Theatre**

Immersive theatre is a theatrical form or work that breaks the fourth wall that traditionally separates the performer from the audience both physically and verbally. It accounts for a heightened experience of the everyday in which viewers are formally fused with the space-time of the performance and thereby lose their identity as audience (Bishop, 2006). This proximity between the spectators and the performers, accentuates the sensual involvement and psychological engrossment within the play (Machon, 2013).

The theatrical event is a set of related transactions. This form of theatre reveals what happens when you remove the typical social contract of the theatre seat. It invites the audience to walk in the performer's world and even change it. It is common for the audience to even touch and speak to the actors during the performances, leading to questioning their role in the story. In immersive theatre, all the space is used for performance, all the space is used for the audience. A principle closely related to the VR cinematic experience. Focus is flexible and variable, the audience can follow the storyline and characters they prefer and focus on what they like.

Theatre accounts for an intense and intimate experience for the audience. The immersion arises from where medium and message are fused, resulting in the totalization of the artwork. This ludically subverts the aesthetic and critical distance, placing the perceiver of the art within the art. Moving beyond the visual effects of illusion to become wholly effective, possibly overwhelming or intoxicating (Grau, 2003).

Although very close to the experience of an immersive film, there is one breaking point in immersive theatre from the structure cinema demands. Text needs to be neither the starting point nor the goal of the production, there might be no text at all (Schechner, 1967). Participation in the performance often triggers spontaneity, improvisation and risk in both parties. It requires trust, willingness and commitment (Zerihan, 2009). Improvising is common practice in an immersive theatre play, yet *impromptu* is not applicable to film. Nonetheless the level of commitment is similar, and the contract established with the spectators is the same, to let them roam free through a world built just for them and to allow them to take part in the story.

### **2.2.2. Gaming**

Videogames take narrative inspiration from literature and film. When they follow a linear narrative form, it is common for the player to experience a three-act restorative structure. Which means a beginning (the first act) in which a conflict is established, followed by the playing out of the implications of the conflict (the second act), and is completed by the final resolution of

the conflict (the third act). This model, derived from Joseph Campbell's analysis of the structure of myths, is a dominant formula for structuring narrative in commercial cinema. The three-act restorative model is also widely used for designing a high-level framing narrative for computer games (Lindley, 2005). Games have become one of the most popular forms of entertainment in our society, even surpassing Hollywood in annual sales (Barab & Gresalfi, 2010), and they borrowed from film in their primordium and now it seems that the tables might have turned.

Videogames have a well-established design for interactive narratives, which are defined as a time-based representation of character and action in which a reader can affect, choose, or change the plot (Meadows, 2003). This kind of branching structure between media chunks has since been applied to multimedia and video based interactive narrative systems. The resulting experience for the viewer is most of the times a linear narrative that presents branching narrative based on branching decisions consequential to the gameplay which may or may not be reversible (Rollings, 2003), meaning, a linear narrative structure defined by multiple paths or nodes which the audience can choose from.

Nonetheless, beyond nodal narratives, there are numerous possible structures for an interactive narrative in games. The so-called exploratorium is one of them, representing a linear structure in which the player can pause and explore its surroundings (Ryan, 2001). In parallel plot structure, different versions of the story are told at the same time and the gamer can switch between them (Murray, 1997). A modulated narrative, characteristically associated to game levels, only allows access to a new set of possible interactions after the player has experienced different parts of the story. An open structure is common in adventure games in which the player can access new places and storylines through other physical places and wander around. If that open structure fails to have a story it is usually associated to the game logic of strategy games and open world-based games, like massively-multiplayer online role-playing games (Meadows, 2003). Object-oriented story construction is a common approach to more complex games that have dense world building involved. The game's objects and characters encapsulate their own potential for the construction of the story. What represents interesting story material depends upon the play experience preferences of the player (Eladhari, 2002).

Video game developers' concern with the gameworld is a useful principle going into cinematic VR. To entice a player into playing their game, designers must build a world visually appealing throughout the game. The same applies in film. To capture the viewer's attention and keep him or her focused on the story the world building is key, for the character of the story is defined through it and the suspension of disbelief of the spectator depends on it.

Restraint and plausibility are two videogame principles essential to setting meaning in a narrative. Gameplay can become more compelling if certain rules, such as those of gravity and the solidity of objects, are obeyed up to a point even when characters are performing actions that seem unbelievable by real-world standards. A certain degree of plausibility at one level helps to emphasise the pleasure of engaging in vicarious activities that go beyond the bounds of normal physical capability (Ward, 2002). It is fundamental to fully understand the purpose of

the elements showed in the game, whatever is on the eyes of the audience must carry a certain goal. When introducing the audience into an experience, the developer is bringing them from their world onto his or hers. The audience is prepared to assimilate the rules of that world. In those first moments, the game developer sets an unbreakable contract. Altering the state of the audience in a way that is not cohesive to the actions allowed from the beginning is a sure step into breaking their immersion. That does not mean that the rules must be tied to realistic principles, just that they must be logical within the narrative.

Isolation and interaction play around with the sense of presence of the player and are very important in establishing immersion. The VR set allows something that cannot be matched by any screen, the full attention of the spectator. Once the digital environment becomes real, the user must then be able to interact with it in a natural, intuitive manner. Perspective is everything in VR gameplay and the definition of the elements the player needs to see to intake the story is essential to the construction of the narrative from the very start.

## **2.2. The Medium**

Finding themselves on the cusp of the virtual reality era, consumers witness a descent of VR headsets' price tags and a fast-paced improvement in 360° cameras and other VR tools. With the fleeting enhancements in virtual reality it now seems very feasible to provide the user with experiences that were earlier thought to be merely a dream or a nightmare (Desai & Desai, 2014) and producing high quality, immersive and explorable content is becoming easier.

Virtual reality is a long-promised yet undelivered tease for cinephiles. Set back by technical limitations, it is finally becoming an integral part of the collective media imaginary. As entertainment sets out on a mission to explore these virtual worlds, creators and audiences have yet to define the kind of stories that will emerge from this destruction of the fourth wall. Without storytellers, the medium of film might have fizzled as its naysayers predicted, a wild ride that audiences would take only once. If VR is to move beyond shrieks and sweaty palms, storytellers must play an integral role in its development (Ross, 2016).

### **2.2.1. 360 Video**

360° video is slowly being embraced by individual consumers and to a further extent by brands and news organizations on social media platforms and marketing campaigns. 360° video offers diverse benefits besides its low cost, it is fairly easy to use and it allows the recording of a real place or situation, offering an audiovisual reproduction of the real world (Reyes, 2017). As the novelty of this viewing experience not only makes people want to watch 360° videos, it also makes them want to share them. As the technology continues to develop and more brands experiment with the format, its value will likely become stronger, for viewers and brands alike

(Habig, 2016). Audiences consume this content mostly on their smartphones, one tilt away from changing the viewpoint, a couple taps and drags to move around (Marques, 2016). The appearance of 360° content on YouTube and Facebook is helping to bring the medium to a vast new audience. Companies promote the proliferation of that content whilst trying to up their sales and improve their brand awareness. 360° video has become not just a quirky artistic tool, but also a powerful marketing gimmick set to capture the consumer's attention. 360 video and its close cousin VR are set to explode once the tools needed to fully access the content become widely more available.

Immersive journalism is one of the pioneers in this 360° revolution and it has been allowing for these new means of production to conduct the spectator into an experience closer to the realities portrayed in the reported facts (Risotto, 2017). Publications like The New York Times, with pieces like The Daily 360, a short 360 video news report, lead the way into a more well rounded and unique form of consuming news. Live streaming in 360° is becoming increasingly more popular, especially in social media platforms, allowing for a fuller sharing experience of its users' daily lives. 360° social is a segment of the 360° content landscape that cannot be ignored along with the community of creators and followers growing around it.

For a long time, the production and playback of 360° videos was too expensive and complicated to be used for masses but the technology has become increasingly accessible over the last years (Greiner & Mau, 2017). For now, the trend is set on watching 360° content through web browsers on desktop computers and via Facebook or YouTube on smartphones. Headsets like Google's Daydream, Samsung's Gear VR, Oculus Rift, HTC Vive or even PlayStation VR are getting their moment in the sun, projecting a market that grows each year.

The most popular 360° experiences are not fictional films, but amateur livestream content devised for social media and short commercial like experience. They are short and rarely concerned with a narrative. Yet, it is the power of experimentation displayed by the masses that can push professionals into realizing the potential of the format. In a computer generated virtual environment, there are many possibilities for interaction with synthetic characters and objects. "On the other hand, in a 360° video, where every scene needs to be created beforehand, the possibilities for interaction are mainly two, the definition of a bifurcated plot where every scene is a video clip, and the overlapping of multimedia elements over each clip. These options can offer the viewer a certain level of agency inside the storyworld" (Reyes, 2017).

"360° video is considered by some to be virtual reality's gateway drug and is becoming ubiquitous with the Google Cardboard and Facebook's promotion of the format" (Dolan & Parets, 2016). 360° video is set to ramp up consumer adoption in the market, lowering the barrier to entry and it might just be the necessary push to carry audiences into new virtual worlds.

### 2.2.2. Cinematic Virtual Reality

Cinematic virtual reality can be found in the commercial sector, where VR experiences complement already existing film productions, and in the artistic route, with experimental media works mostly thought out for individual audiences.

Sundance Institute curated a collection of cutting-edge independent works by creators who have leveraged virtual reality, augmented reality and mixed reality. In 2018, for Sundance Festival more than 13,000 submissions arrived at Utah. Only 24 were selected as documentary and narrative virtual reality works for display and competition. Most of them are experiences which demand participation from the audience. *Wolves in the Walls* (Billington, 2018) developed by Fable Studios is one of the most prominent examples. It uses Oculus controllers to make the viewer collect pictures on a virtual camera.

The verdict to these experiences for the regular viewer is unanimous, they are too close to games. Despite offering a clear storyline, most of them include interactive tasks that effectively remove the audience from a passive experience. The quality of the artwork is rarely up for questioning, since VR movies that travel the main film festivals are well produced and beautiful displays of animation and grueling documental captions. But most of them fail on one thing, they cannot seem to be able to decide if they are movies or if they are games (Chin, 2018), eventually alienating potential yet confused fans. Furthermore, this kind of cinema has been experimented with in the past. Czech film *Kinoautomat* (Činčera, 1967) had a moderator who would prompt the audience to make a choice between two narrative options at several points during the film. Virtual reality, however, has a duty to include these sorts of arrangements in the viewing experience, namely by playing with the focus points to where the viewers direct their attention. Many early virtual projects were focused on drawing spectators' attention to one particular object or portion of the 360° world. More contemporary projects have embraced virtual reality's unique ease for immersion and interactivity through the potential to intake the virtual world in its full extent. Australian artist Lynette Wallworth used this capacity in *Collisions* (Wallworth, 2016), leading the viewer to comprehend the implications of nuclear testing in the West Australian desert for the Martu tribe and its surrounding environment. Experimentation in cinematic VR is moving at a dramatic pace, with Disney and Lucasfilm developing VR Star Wars projects and animation studios like Dreamworks embracing complementary virtual experiences. New venues like Collingwood's Virtual Reality cinema, which uses a custom Group VR system so the audience can see each other as well as the film, are giving smaller filmmakers opportunities to develop and show VR work.

The commercial release of the Oculus Go and the expansion of the Oculus Rift and HTC Vive headsets combined with the popularization of the PlayStation VR headset, will all undoubtedly encourage further development in film for virtual worlds. As the audience grows accustomed to these formats in other entertainment fields like videogames, video and film are set to follow closely. It is unclear if virtual reality is set to replace conventional cinema. But it is

certain that it will create a whole new narrative trend more focused on world building and in approaching the moviegoer experience in a whole new way. Virtual reality will probably not replace conventional cinema, but it will create a whole new area of film that is less concerned about constructing a story in images. Instead, perhaps, it will be a realm where artists can immerse us inside imagined worlds in a whole new way (Daniel, 2016).

## **2.3. Conclusions**

It is still unclear if virtual reality is here to stay and shape filmmaking, but the possibilities brought by the medium and the changes to the process of storytelling allowed by it are undeniable. “Where we are today looks a little bit more like the early development of the film industry, where the novelty of watching a train heading straight towards the audience was enough to make an audience say ‘Oh wow!’ and jump out of their seats and for the near future novelty is enough” (Schoen, 2016). The real question is what to do after that novelty wears off. The truth is the rules are still being written, there is a lot more to discover and establish and a clear need for storytellers willing to do just that. This study seeks to provide some form of guidance and inspiration to those exact storytellers, ready to engage with virtual tales and unsure about the rules and the expectations of their audiences.

Going forward into redefining the screenplay structure to fit VR need it is important to understand that changing everything is unnecessary and risky. The audience has mastered a language through decades of films, therefore is simpler and it would probably be taken with more ease for the changes to occur on a format that is already there. Then, evolve from that into unseen, undiscovered, unimagined script territory. A screenplay is a system comprised of specific parts that are related and unified by action, character and dramatic premise. It is built around three basic units: act I, act II and act III and two plot points that move the story along. “Though the form of the script may be evolving, it is relevant to keep in mind that the simple tools of storytelling remain the same. What you write is just as important as how you write it” (Field, 2005). This is the challenge. How can we adapt the traditional screenplay into a 360 and VR piece of storytelling and what changes do these interactive formats demand from the passive structure of our everyday script?

### 3. Problem and Methods

Producing for 360° and virtual reality is still a new, complex and expensive ordeal. Which becomes even more complicated when producers have little to no concrete information on what their potential audiences want to see, so they have the opportunity of creating something they know to have a good chance of actually having an audience. Therefore, the main question this conundrum poses is what do audiences need and want to watch in cinematic virtual reality? The main portion of this dissertation is devoted to an audience study around these topics. The goal is to not pose any sort of preconceived notions on what movies should or should not be in VR and not even if they should have a place in it at all. All the categories considered derive from the participants input to the study, they were not pre-defined. The point of this is to explore the habits and expectations of the audiences without tampering their most intuitive needs with the researcher's opinions or even trends and technological obstacles virtual reality is currently going through.

After understanding some of the things audiences seek in cinematic VR, it is important to systematize those finding into a series of guidelines easily manageable. In that sense the problem that arises is how can we tell these stories? It is important to understand how the aims of the potential audiences translate to requirements in terms of storytelling. And it is important to consider this from the point of the script itself, what sort of stories audiences want to watch, but also from the perspective of the experience as a whole. Virtual reality calls for an interactive and immersive experience, the spectator is in on the action, he or she is not just passively taking in the contents of a screen. Therefore, it is possible there might be considerations exterior to the narrative on the film itself to take into account when crafting the story. As a part of the conclusions of the study, a map on the aspects to consider when telling a story in cinematic VR translates these guidelines.

In term of methodology, towards the goal of understanding the audience, there are three main sections. Firstly, a questionnaire, followed by interviews and focus groups. Each step is analyzed individually and conclusions are drawn at each increment as to fuel the next series of questions.

The questionnaire looks at the participants' relationship to film, their habits when it comes to 360° video and their expectations for cinematic virtual reality. Its goal is also to introduce relevant categories to the study in the form of open coding. The participants for the interviews and focus groups were drawn from the questionnaire. But they do not overlap in those instances, meaning each participant either takes part in an interview or joins a focus group, not both.

The interviews include 12 interviewees. Half of them watch 360° videos using Oculus Rift before engaging in a series of questions, half of them just answer the questions. This second part of the methodology accounts for the axial coding of the study, since its main goal is to interconnect the categories which arised from the questionnaire into what would be the ideal experience of watching a movie in virtual reality for the participants. Two focus groups of 5 elements each were conducted, the scripts for these were produced by selective coding the instances before.

The participants selected for the interviews and focus groups were drafted from the questionnaire considering the categories of adopters proposed in the diffusion of innovations theory (Rogers, 1962). These categories are innovators, early adopters, early majority, late majority, and laggards. The participants drafted fit in the early adopters group according to their pre-existent relationship to film (they watch at least three movies per month), their experience with 360° video (they have watched at least one 360° video in the last month) and their interest in watching movies in virtual reality (they either agree or strongly agree with the statement "I am interested in watching movies in VR"). Nonetheless, a respondent can not take part in an interview and a focus group, he or she can only participate in one of the two, as to not contaminate the focus groups' discussions with previously acquired knowledge of the matters at hand.

The disposition of this research is inspired by grounded theory (Glaser & Strauss, 1967) principles, hence the connection of the three different stages to open coding, axial coding and selective coding respectively. Since there are no pre-existent frameworks on regards to the research questions, the methodology applied is mostly exploratory with the goal of collecting as much relevant data as possible on the path to identifying important concepts and categories which can be added and further researched in future works.

The results produced are supported by speculative design constructs. This study revolves around content questions. The goal of this project is also to allow content producers to focus directly on authoring in the new medium of VR, going past the current limitations of technology. Therefore, a considerable amount of the concepts discussed and scenarios built with the participants have a speculative nature. This research also encapsulates the idea of possible futures and using them as tools to better understand the present and to discuss the kind of future people want and the kind of future they do not want. These possible futures usually take the form of scenarios, often considering what-if questions and intended to open up spaces of debate

and discussion; therefore, they are by necessity provocative, intentionally simplified, and fictional (Dunne, 2013).

Three forms of analysis of results are combined throughout the treatment of the data in this study. Thematic analysis is used to explore patterns and pinpoint reoccurring themes in qualitative data (Braun & Clarke, 2006). Conceptual analysis is used to approach problems by breaking down the key concepts pertaining to those problems and seeing how they interact, it is one of the most prominent forms of philosophical analysis. Social constructionism looks at knowledge as constructed as opposed to created (Andrews, 2012), as a reality developed by cognitive processes and anchored in existing concepts. The following table allows for a quick overview of the research process.

**Table 1. Research methodology**

| <b>Stages of the Study</b> | <b>Habits and Expectations</b>                           | <b>Speculative Build Up</b>   | <b>Group Discussion</b>  |
|----------------------------|--|---|--|
| <b>Participants</b>        | 70 random participants                                   | 2 groups of 6 early adopters  | 2 groups of 5 early adopters                                     |
| <b>Procedures</b>          | Questionnaire  | Semi-structured interviews  | Focus groups   |
| <b>Analysis</b>            | Quantitative analysis<br>Qualitative conceptual analysis | Qualitative conceptual analysis<br>Qualitative thematic analysis<br>Social constructionist analysis | Qualitative thematic analysis<br>Social constructionist analysis |
| <b>Grounded Theory</b>     | Axial coding   | Open coding   | Selective coding   |



# 4. Habits and Expectations

The first study in this research takes a dive into the habits and expectations potential audiences have in cinema, 360° video and cinematic virtual reality. Allowing for the participants to set ground on the familiar film experience and work their way up to 360° video and then virtual reality, this first study seeks to establish general key themes and concepts that are important for the participants to be discussing in greater detail on the following studies.

## 4.1 Methods

The 70 participants answered a series of questions divided into three sections: personal information and relationship to film, 360° video and cinematic virtual reality.

### 4.1.1. Participants

The series of questions in this first step of the study was answered by 70 people. In terms of demographics, we can observe a balance between between male (50%) and female respondents, with 2 people stating themselves as non-binary. Participants were born between the 1977 and 1999, with a clear majority (31.7%) set on the birth year of 1995. Only 3 people of the total sample of 70 situate themselves above 30 years of age, which is a clear indicator of a young sample of participants, most likely due to the ease of distribution of the questionnaire through the academic community and by no means significant in establishing age related trends to the field of virtual reality.

### 4.1.2. Instruments

The questionnaire<sup>1</sup> was developed and distributed using Google Forms, it was available online for around three weeks and it registered a total of 70 participants. It includes selection

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<sup>1</sup> Appendix A | Questionnaire

boxes, multiple choice questions and open-ended questions. It is divided into three main sections and answering is mandatory for all inquiries, except for two open-ended follow up questions.

### **4.1.3. Procedures**

The series of questions considered is divided into three main sections. The first one registers the participants' general personal information and reports for some of their film habits, including how many movies they watch, where they watch them and which devices and services they use to watch them. The second section is about 360° video and it establishes a parallel with traditional video formats by covering the same questions as section one and building on them by tapping into the storytelling preferences participants have in this format, that includes genres watched, specifications about narratives and best and worst features. The last section goes beyond 360° video and explores participants' expectations about virtual reality and the role film can play in it.

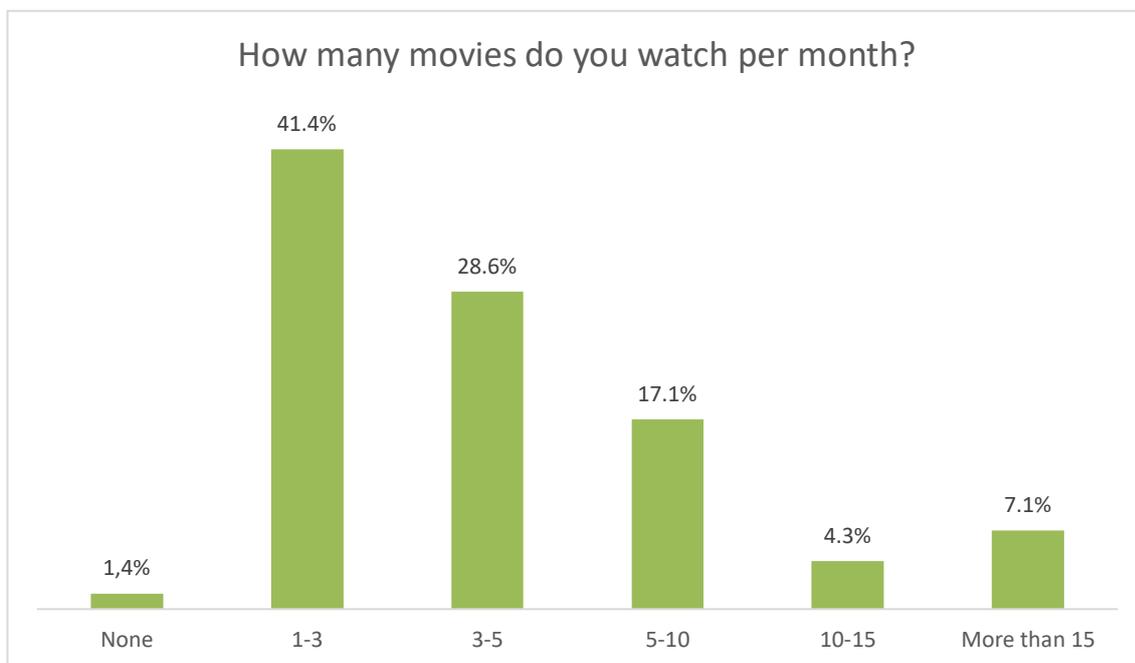
Each section serves as support for the respondent for the section ahead. The sequence starts with the more established traditional film formats, so that the participants can get into the matters of discussion from a well-known place and recall well-known experiences, after it goes into the newer and less popular 360° video format, so that the participants step into a new realm of video possibilities and, lastly, it conducts them through a projection of what they wish for beyond that imaging the new set of possibilities offered by virtual reality.

## **4.2. Results and Discussion**

In the following sections results are presented immediately followed by its discussion for a more comprehensive look at each question. Besides looking at the number retrieved from the sorting answers, thematic analysis and content analysis were applied to code the open-ended questions and to generate categories for discussion.

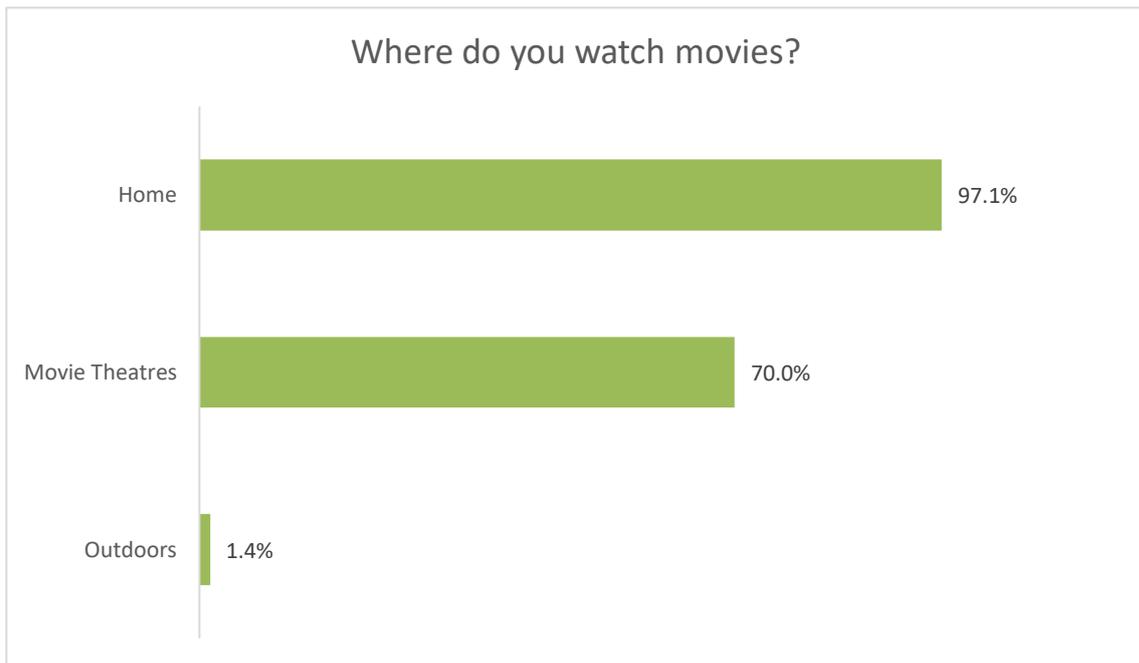
### **4.2.1 Demographics and Relationship to Film**

The majority (41,4%) of the people inquired watch between one and three movies per month (figure 1). 28,6% of the participants watch up to five movies per month, closely followed by the film enthusiasts who round up their monthly total between five and ten movies (17,1%). 3 (4,3%) of the people inquired watch between ten and fifteen movies and 5 (7,1%) of them watch at least one movie every two days of the month admitting to watch more than fifteen movies a month. Only 1 participant (1,4%) claims to not watch a single movie on a monthly basis.



**Figure 1. How many movies do you watch per month?**

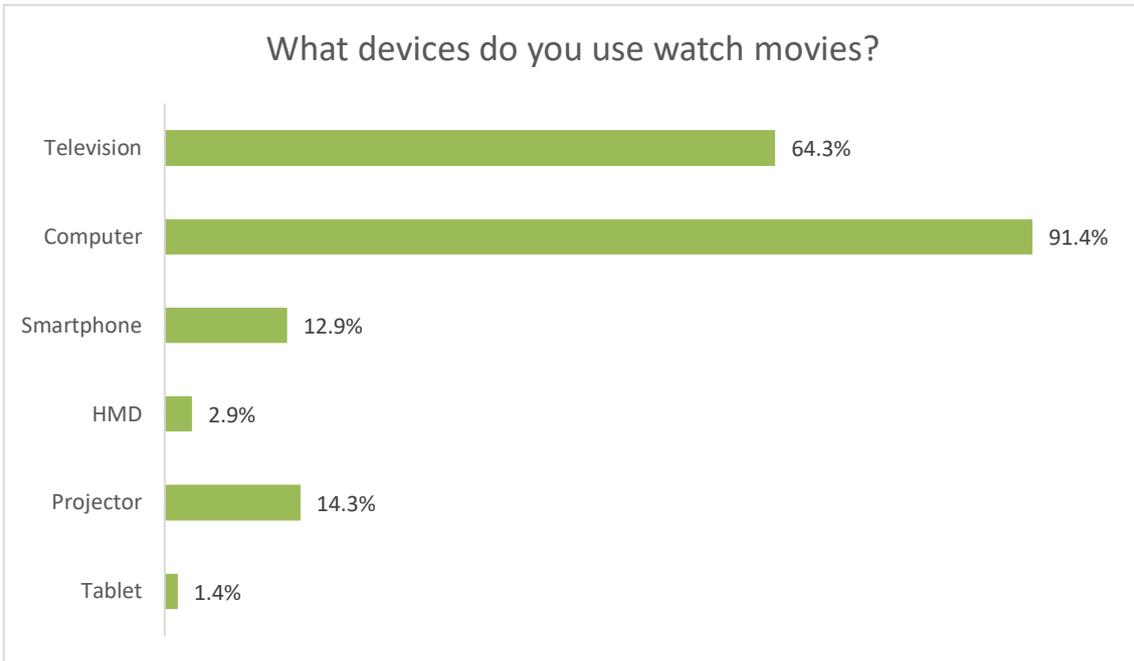
Understanding the participants' movie intake is important to determine their film knowledge from the perspective of the user. People that watch at least one movie on a monthly basis understand what the process of watching a movie entails and therefore can discuss the next stages of the questionnaire sure of their experience. More people included in the questionnaire results watch from three to more than fifteen movies a month (57,1%) than the ones who only watch a maximum of three (42,8%), which points out to a sample of participants familiar with the experience of watching a film, which is fundamental towards their projections of how that medium would suit virtual reality.



**Figure 2. Where do you watch movies?**

For the majority of participants (97,1%) home appears to be the preferred environment to watch a film. According to figure 2, 70,0% of the respondents also still go to out to movie theatres to catch what is on exhibition. Only 1,4% of the participants consider watching movies outdoors.

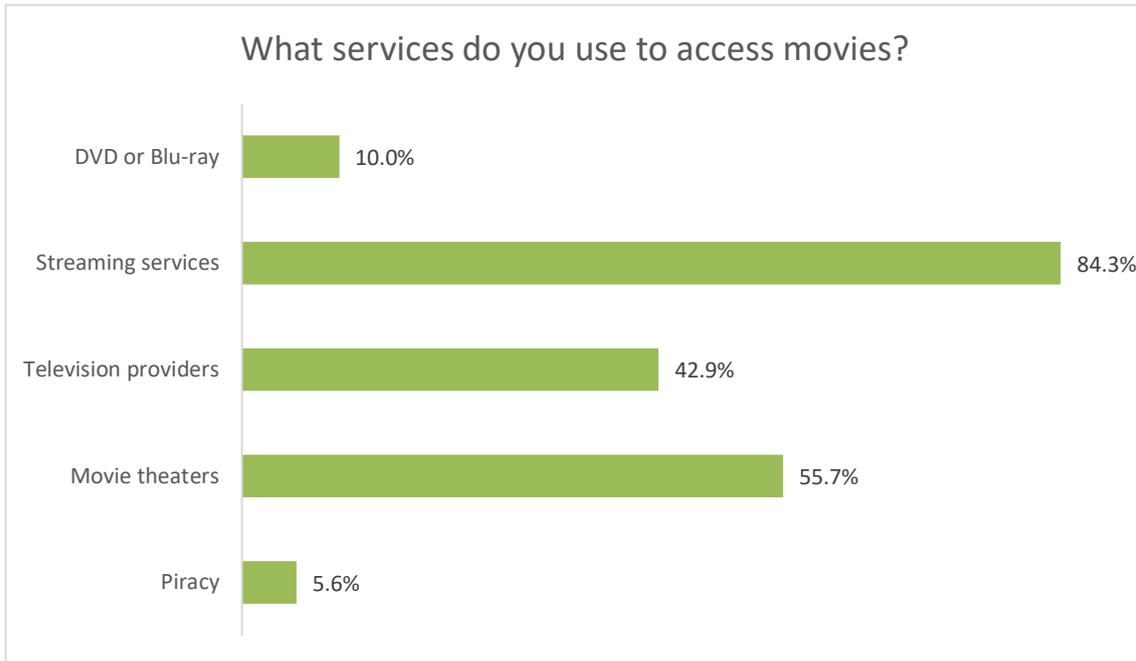
Although participants could select more than option, or even add their own preferred environments, 30,0% of them admit to not attending movie theatres at all, a clear demonstration of the increasingly more significant overtake of more recent trend home cinema, pay TV, video-on-demand, computer games or streaming services (Silver & McDonnell, 2007). That being said, 70,0% of moviegoers effectively still go to the movies, which is a very a significant portion of people leaving their houses to get the full film experience in a planned and perhaps more costly manner. This balance between home and theatre environment, depicts a community that takes advantage of the ease of lounging for a movie in the privacy of their own home while maintaining some amount of reverence for the traditional big screen collective experience of going to the movies. Although tapping into a film at home takes a big slice of the cake, movie theatres are not dead for this universe of participants.



**Figure 3. What devices do you use to watch movies?**

Computers come out as the most used device to play film at 91,4%, as seen on figure 3. Television has a substantial role in the movie habits of the participants, 64,3% of them use their TV's to watch films. 14,3% of participants project their movies, be that at home or accounting for movie theatre viewings. 9 people (12,9%) regularly use their smartphones to catch a film. Head-mounted displays rise from the shadows with 2 people (2,9%) already admitting to frequently putting them to use for watching movies.

With more people picking home as their main environment to play movies, the lead taken by computers and television sets seems logical. The smartphones hint at the act of watching movies on the go, which appears to be substantially popular. The fact that we are already seeing HDM as an option for film viewing, at such an early stage and considering that the equipment is not very popular yet on itself and even less so as a vessel for this media format, is surprising, despite its low percentage of use.



**Figure 4. What services do you use to access movies?**

Streaming services account for 84,3% of views, followed by the movie theaters (55,7%) and the television providers (42,9%), as seen on figure 4. DVD and Blu-ray are still breathing at 10,0% and 5,6% of participants admit to using torrents to illegally download their movies.

Streaming services, like Netflix, Hulu or even YouTube, have been rising to the occasion in media consumption for a while now subscription streaming have come into widespread use and crossed multiple generational lines (Cox, 2016). With subscriptions from users in forty countries around the world, Netflix has become a household name to many already (O’Toole, 2014). The lead taken by this option is no surprise and it consolidates the picture of modern film experience, closely followed by the more traditional ones.

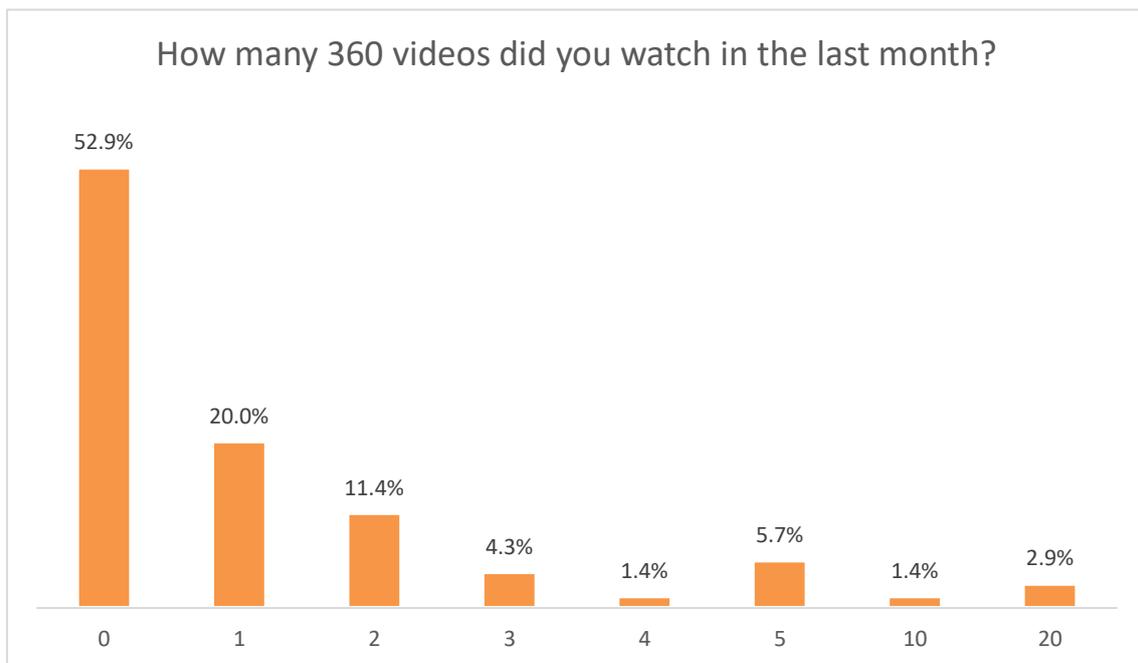
The participants watch most of their movies from the comfort of their own homes, using streaming services and their computers most times. It is important to tap into those viewing rituals. The process that goes into watching a movie through streaming services is quite new and streaming companies are still in constant development through major updates and competition from other apps.

Nonetheless, participants still go out to experience movies with other people and their TV sets still gets a fine workout from playing films. Portuguese audiences reached their peak in viewers per film session in 2001 (43,2), but they have maintained a steady balance between 21 and 25 moviegoers per viewing from 2005 to 2017, even displaying a 0,5 increase last year

(INE & ICA/MC, PORDATA). This means traditional filmmaking and film viewing still has a core role in the film industry for the people inquired, is still very much part of their daily entertainment lives and should not be ignored when looking at audiences' trends.

#### 4.2.2. 360° Video

The second section of the questionnaire introduces 360° video. It is a look at the participants' history with the format, content preferences and opinions about its features. It also establishes a comparison with the habits shown previously for the traditional movie format.

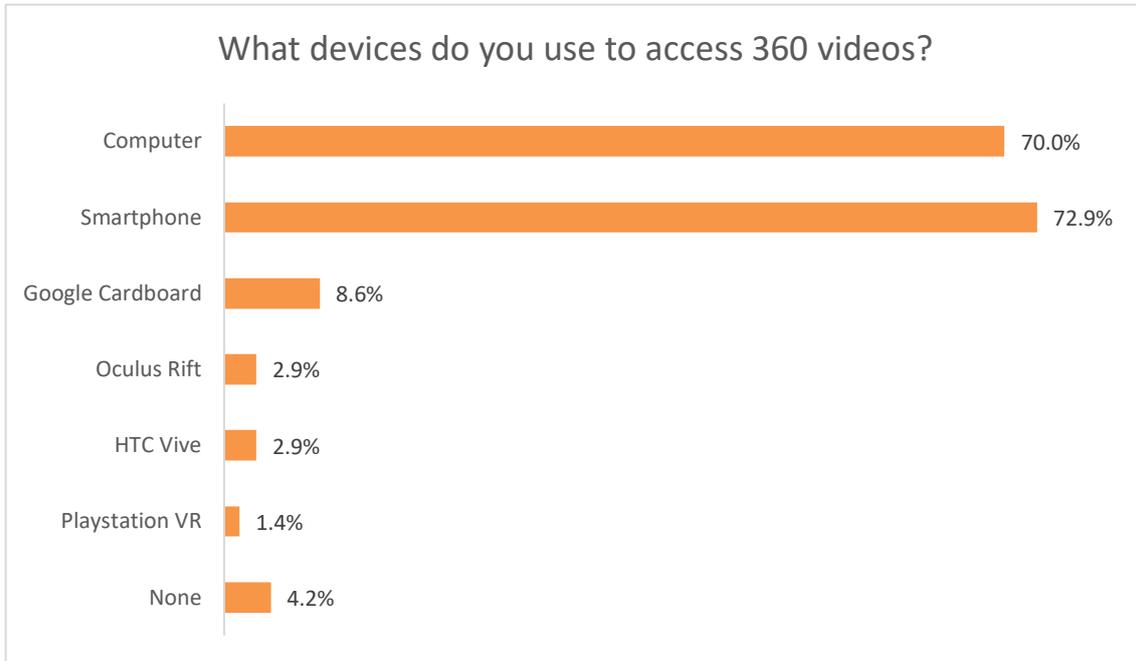


**Figure 5. How many 360° videos did you watch last month?**

Observing the chart on figure 5, it is possible to see that the majority of inquired people (52,9%) had not watched any 360° videos in the month that preceded the questionnaire. 20,0% of them watched just one or two 360° videos. 11,4% watched between three and five videos. 3 of the people inquired pointed at a number between ten and twenty videos.

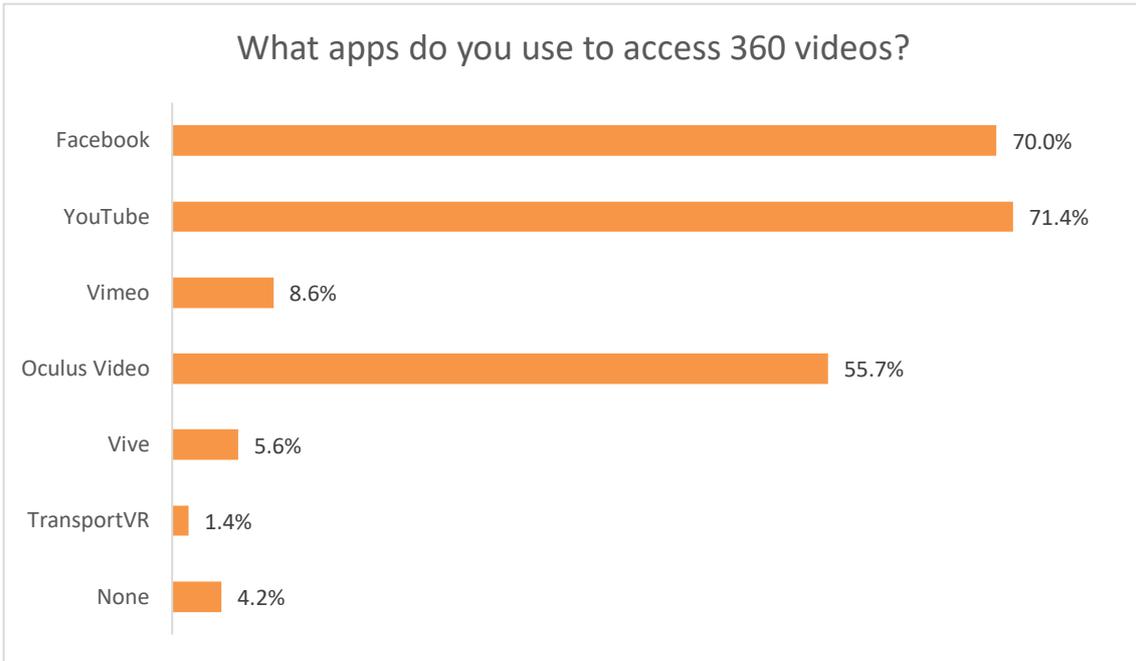
This chart shows the lack of popularity 360° video still faces. People inquired know about 360° and have experienced it at some point in their lives. But they have still to turn it into a habit. They know it exists, they even know multiple genres of it, but they do not watch it on a daily basis and it is clearly for most not their preferred method for consuming video. The fact that their lack of viewings did not stop participants from answering the following more specific questions about the contents of the video, shows that they have curiosity for the format and what

entails. It is important to understand qualities people see in 360° to refer to it and what disadvantages it poses for the same people to not fully adopt it.



**Figure 6. What devices do you use to access 360° videos?**

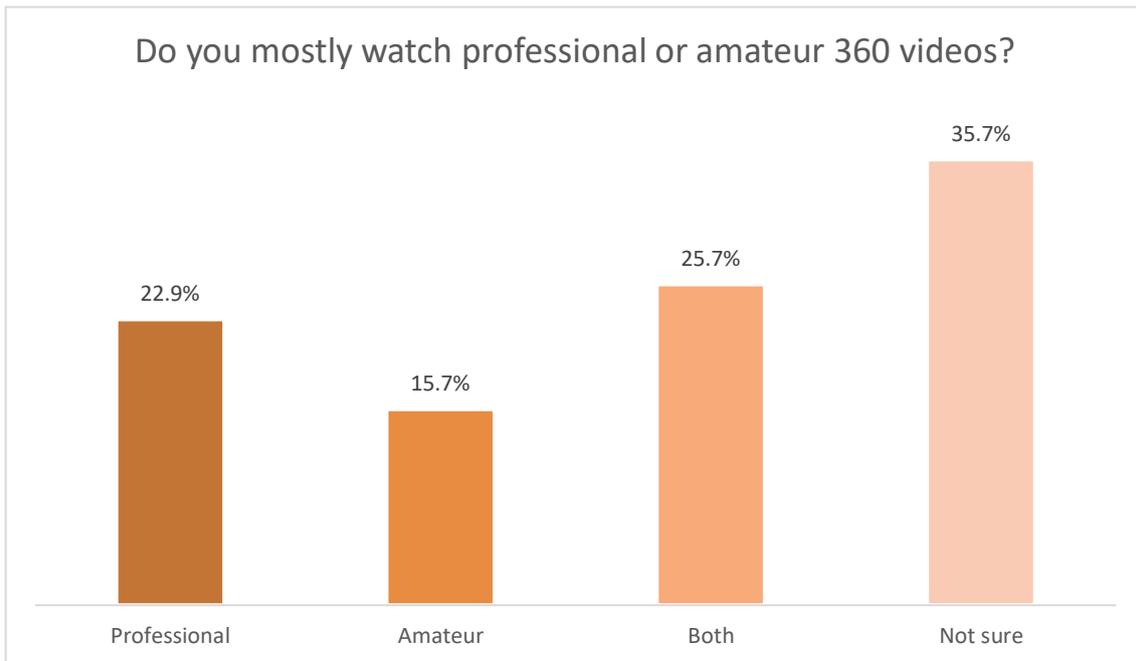
Most users turn to their computer and smartphone to access 360° videos (72,9%), these are by far the preferred devices (figure 6). Google Cardboard comes in as the third most popular option with just 8,6% of users in the sample of participants. The HMDs manufactured by Oculus and HTC in partnership with Valve, have been adopted by 5,6% of the participants, 1 of the respondents also uses Playstation VR to access 360° videos. HMDs are not yet very accessible pieces of equipment, priced at the higher end of entertainment equipment and posing still quite new territory, it is clear why they still remain uncharted territory for most users. Yet, the fact they start popping up on lists of devices used to play video is revealing. It shows that cinema and other audiovisual passive pieces might have a use for them and that users are interested in exploiting their functionalities for more than just video games.



**Figure 7. What apps do you use to access 360° videos?**

The vast majority of participants either use YouTube (71,4%) or Facebook (70,0%) to access 360° video content. Oculus Video comes next at 55,7%.

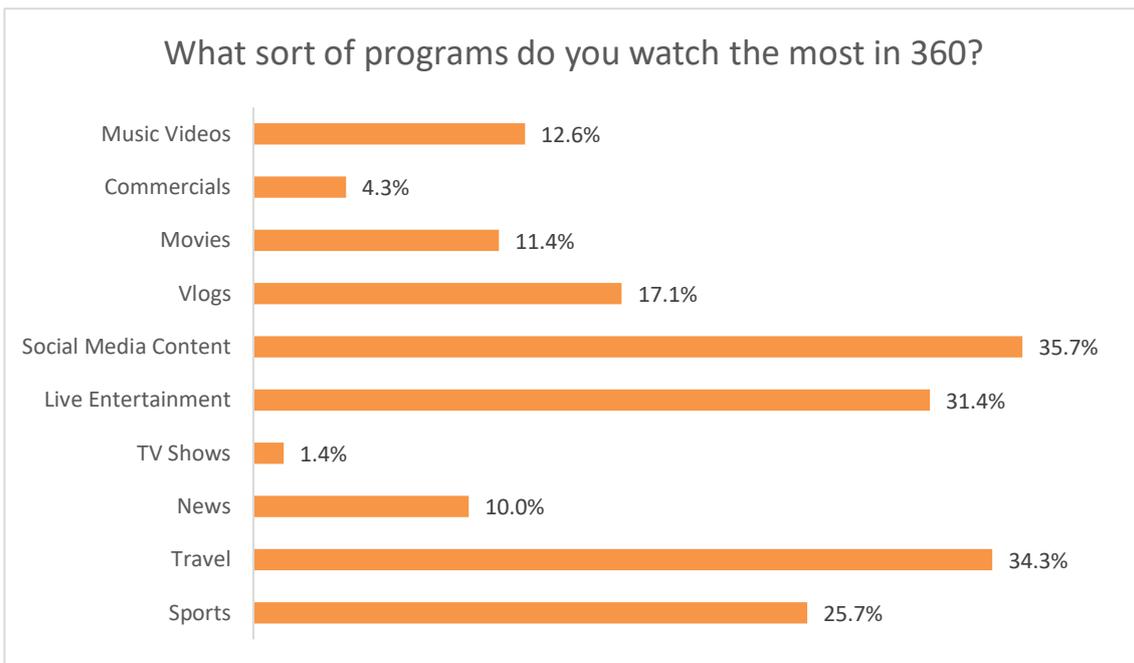
The numbers align with the investment by the two top companies, Google through YouTube and Facebook through Facebook and Oculus, put into virtual reality contents. They also translate platforms best known for shorter videos and social media content, the sort of programs most explored by the participants in the results ahead.



**Figure 8. Do you mostly watch professional or amateur 360° videos?**

35,7% of the people considered in this sample are unsure about if the 360° videos they watch are made by amateur or professional content producers. 22,9% mostly watch professional videos, 15,7% mostly watch amateur videos and 25,7% watch both, as shown on figure 8.

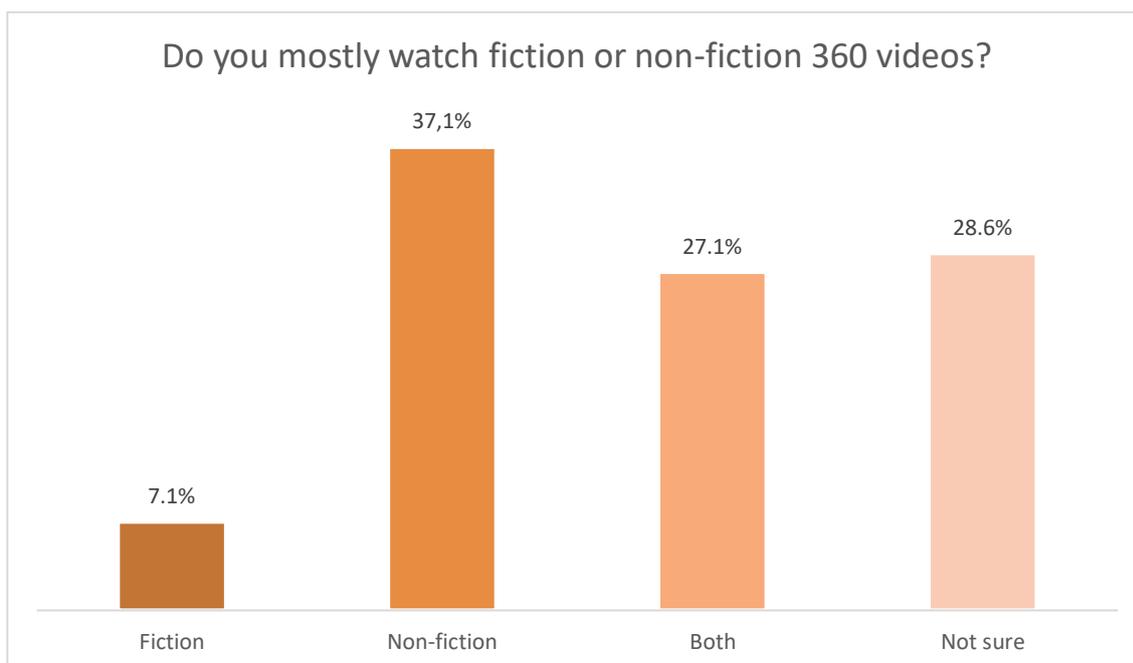
The results are quite diverse in this question. Coming in with similar percentages at all levels, it seems that the participants are not quite sure about the origin of the content they consume in 360° or at least are not particularly selective about it at that level. The uncertainty illustrated in the 35,7% might be the result of two factors. Maybe the participants question whether the people making the videos they watch are professional or not, which is a valid interpretation considering a lot of the participants admitted to watching things like social media content or vlogs, types of content made by producers who usually pose an unclear definition of their job status. Or maybe the participants do not usually put that much thought into the provenience of the content or they can not tell the difference between amateur and professional content. That is also a valid explanation considering there is still a lot of unexplored territory by professional content producers in the realm of 360° and the amount and quality of videos produced is not enough to make the gap between professional and amateur clear cut.



**Figure 8. What sort of programs do you watch the most in 360°?**

The most watched programs in 360° are social media content (35,7%), travel (34,3%), live entertainment (31,4%) and sports (25,7%). Vlogs (17,1%), music videos (12,6%), movies (11,4%) and the news (10,0%) are also reasonably popular.

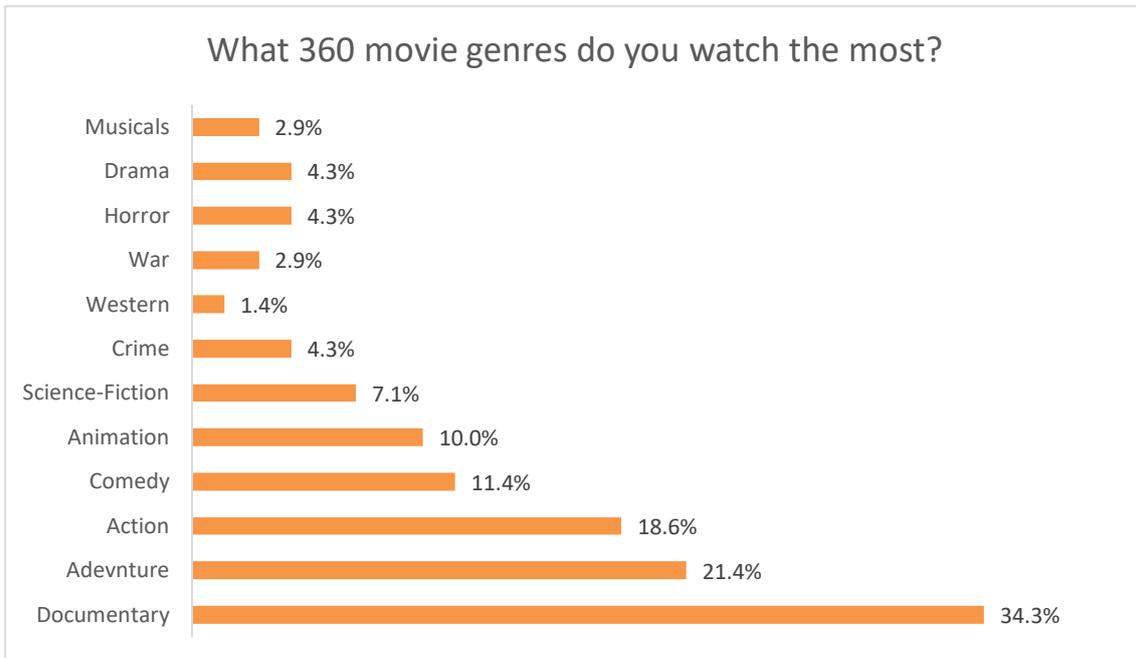
Most participants had their first contacts with 360° videos through social media and the work of influencers and media celebrities and shows, normally are the first to jump into new features in platforms like Facebook and Instagram. These platforms were the first to push 360° video into the hands of the masses, so it is only natural that content on social media, vlogs and the live streaming of events turn in such percentages. The music industry has found a more immersive outlet in 360° video, the music clip format lends itself to immersive short experiences and has been fairly explored by musicians during these early stages. In the music scene, “there is demand for this kind of content and it is evolving at an incredible rate, as consumers get more used to these kinds of experiences and to using Google Cardboard and all different types of headsets for music and gaming and other entertainment experiences” (Mogendorff, 2017). The same logic can be applied to newspapers, looking for the novelty of 360° to attract readers and exploring its possibilities to show documentary-like reports and the conditions of different news worthy locations. It is important to note that most of the content appointed by participants is factual, produced live or lacks a fully-formed narrative. It is far from the characteristics we normally associate with film or at least fictional film, since documentary-like pieces already take a considerably slice of the 360° video cake. What is stopping people from seeing fiction on 360°? Is it a lack of demand or is it a lack of offer?



**Figure 9. Do you mostly watch fictional or non-fiction 360° videos?**

37,1% of the inquired mostly watch nonfiction 360° videos. 27,1% watch both nonfiction and fiction videos. Only 7,1% admit to watching more fiction videos. A considerable number of participants (28,6%) are not sure about the nature of their most watched according to figure 9.

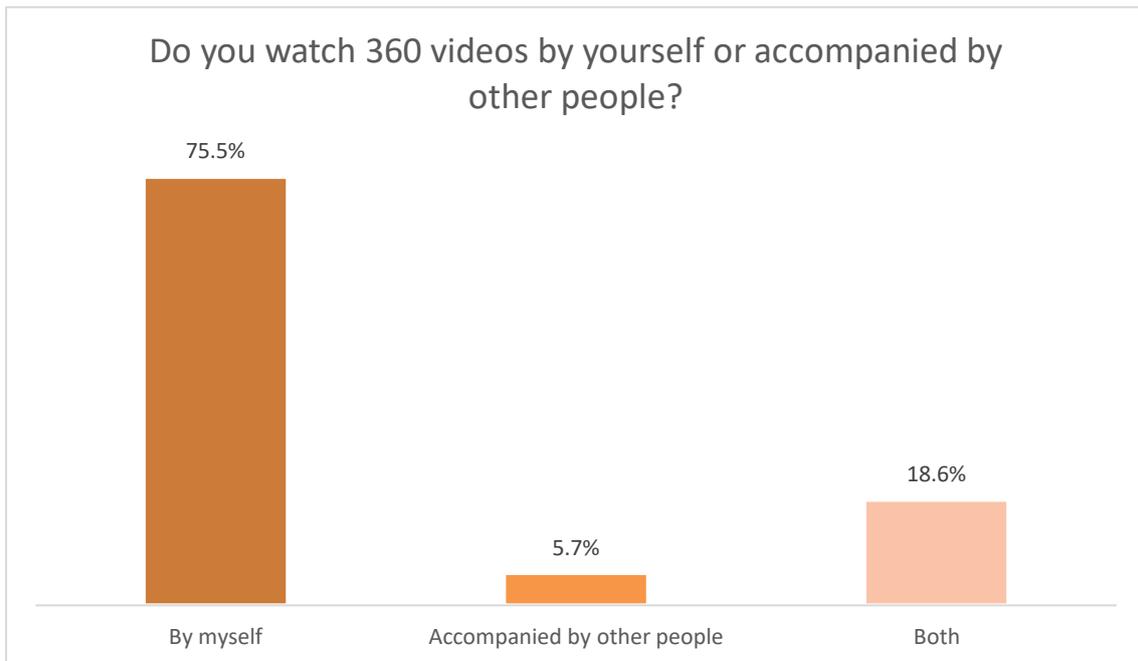
The fact that only 5 people out of 70 think they watch more fiction 360° videos than fact-based 360° videos can be very telling. It can point towards a market opportunity, a portion of the 360° landscape that is lacking content in terms of offer. People enjoy watching fiction in the more traditional forms of video. In a lot of settings, one could even say they mostly gravitate towards it. People like fiction, it is a core component of entertainment. But, apparently, they watch considerably less fictional pieces in 360°. Why is that? What is missing?



**Figure 10. What 360° movie genres do you watch the most?**

In alignment with the fact that participants mostly watch nonfiction 360° videos, their most watched genre is documentary (34,3%). Accoring to figure 10, adventure (21,4%) and action (18,6%) appear behind at significant distance. Then there is comedy (11,4%) and animation (10,0%) and an assortment of other genres like science fiction (7,1%), crime (4,3%) and western (1,4%).

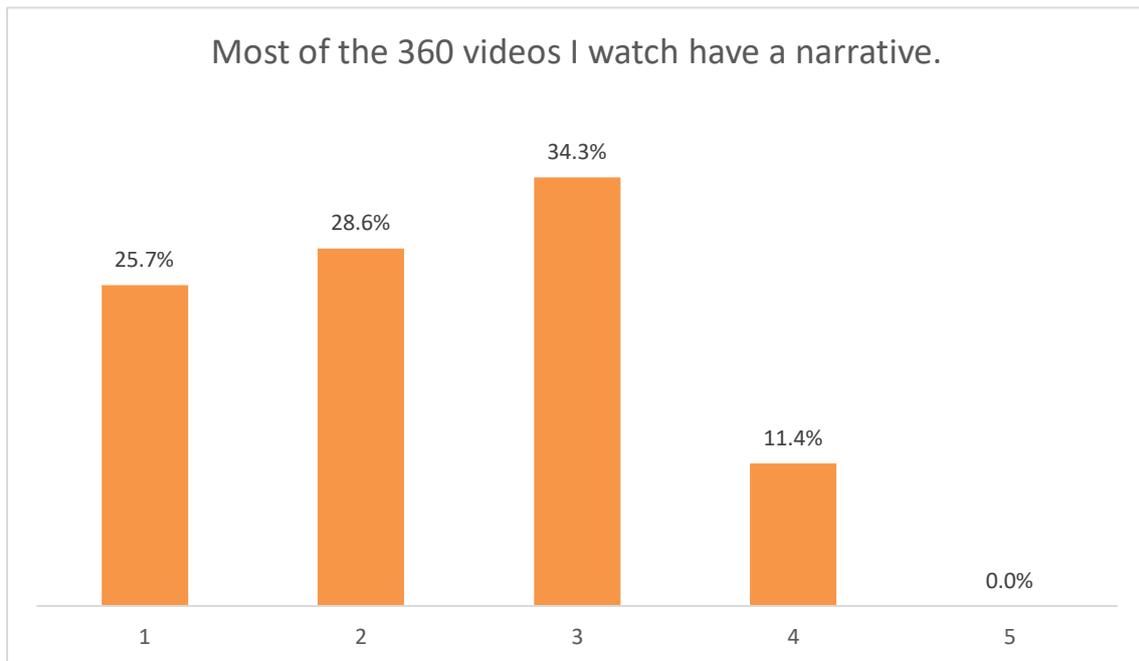
Documentaries take a clear lead in the most popular genres for 360° video. They encapsulate real locations people want to get to know in more detail and real impactful stories that benefit from the immersion 360° video provides. They can also be easier and more cost effective to capture than realistic intricate fictional scenarios and currently the offer for documentaries in 360° is more sizeable and in a lot of cases better looking.



**Figure 11. Do you watch 360° videos by yourself or accompanied by other people?**

Figure 11 shows that 75,5% of participants watch 360° video by themselves. 18,6% watch them accompanied by other people but also on their own and only 4 people (5,7%) choose to watch them surrounded by others.

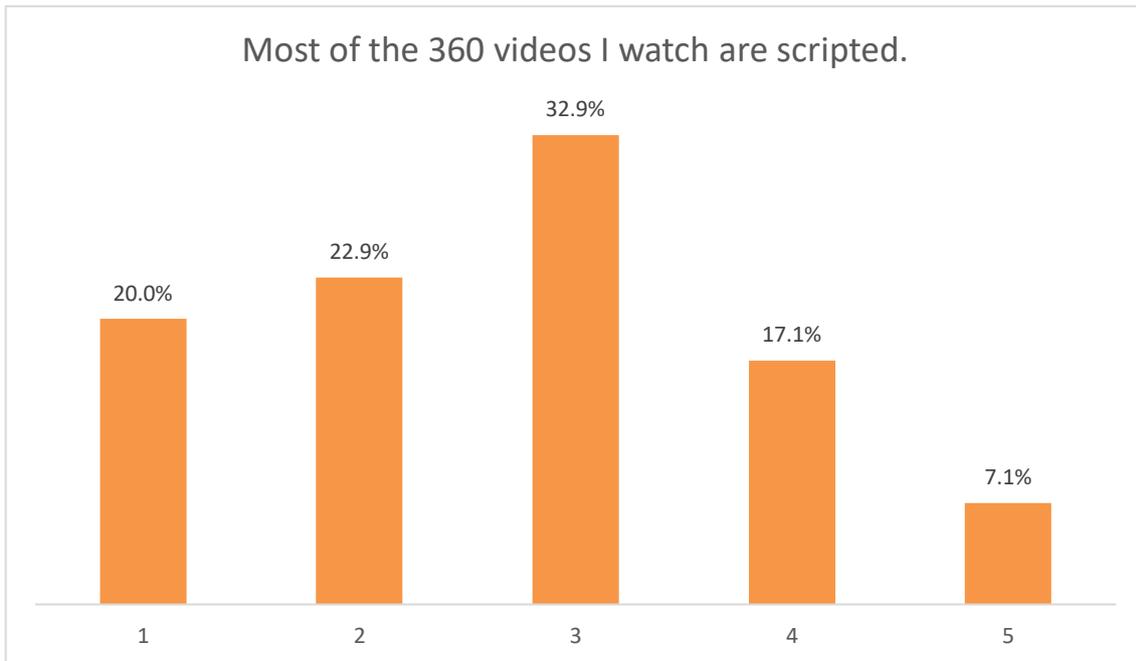
The classic way of watching movies, in the movie theatre, staring at a big screen and surrounded by a big group of strangers or friends, was important for setting the tone to film as an art form, as an industry and a social practice for its makers and its audience (Turner, 1988). Understanding the way in which people choose to watch content is an important step towards understanding what sort of experience they want to have. The fact that most people picked the option “by myself” tells a story on its own. Are they doing it because it is more convenient? In the sense they just open up a tab on their browser when feeling bored and spontaneously go through some 360°? Or is this a deliberate choice? Are people purposefully deciding to watch 360° videos on their own, maybe because they feel the format lends itself to a more intimate viewing? And, with those answers in mind, what stories could be crafted to fit the mold? Should we make more of an effort to come up with more fun and relatable experiences to be shared with friends or should we focus on the personal and private experience and make stories turned to one single spectator?



**Figure 12. Most of the 360° videos I watch have a narrative.**

24 people (34,3%) seem uncertain about if the 360° videos they watch have a narrative. None of them strongly agree with the statement and only 4 (11,4%) agree with it in some degree. More than half of the participants (54,3%) do not think the 360° videos they watch have a narrative.

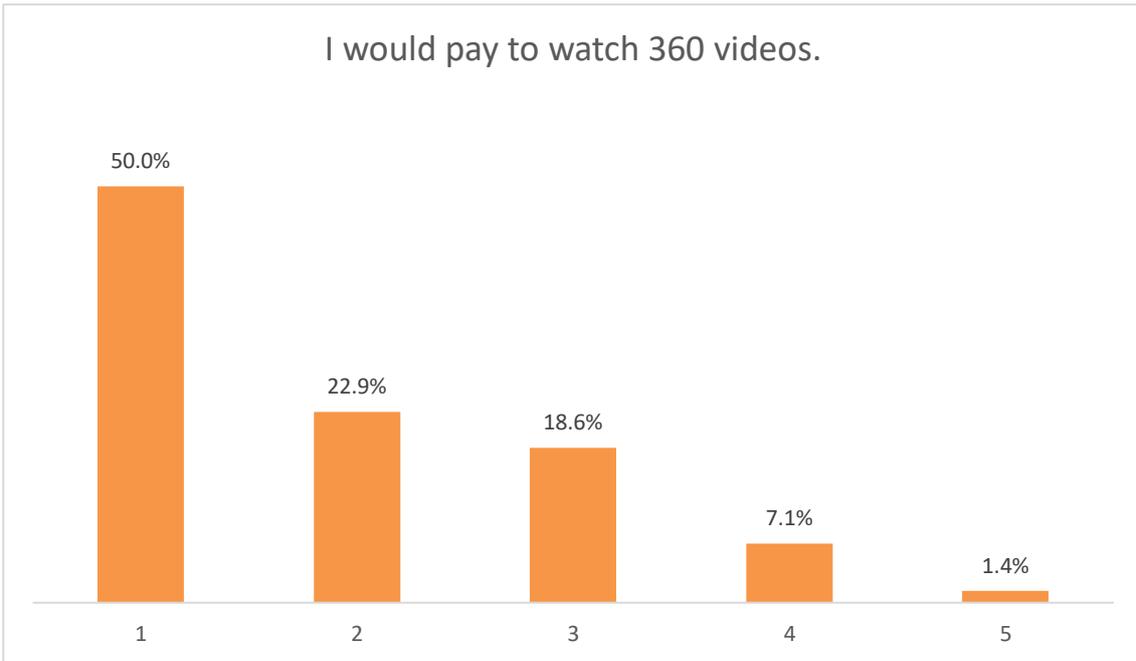
Crafting complex narratives is understandably still unexplored territory in most of 360° content. Creating dense stories or at least videos that clearly are oriented by a narrative is still a difficult endeavor for this new technology. At the same time, finding the grounds to justify that sort of investment in a format that is not yet very popular is hard. Content makers are not yet offering a lot of possibilities in terms of narrative for 360° videos. That is probably one of the reasons viewers do not get to them. But, it is important to also focus on the middle of the chart. A lot of the participants are unsure whether most of the videos they watch have a narrative or not. Why are they having trouble defining their experience? Is it the lack of a consistent experience itself? Or is it a lack of understanding toward the message the content is supposed to get across?



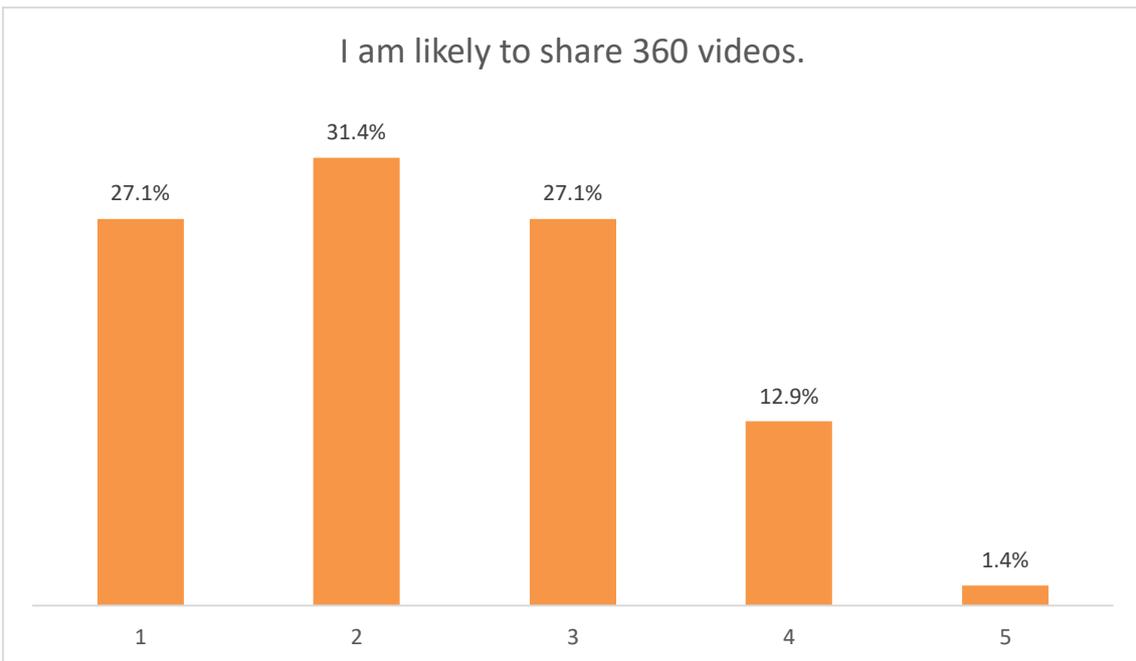
**Figure 13. Most of the 360° videos I watch are scripted.**

When it comes to knowing if most of the 360° videos they watch have a script (figure 13), the participants appear similarly uncertain. 32,9% of them neither agree nor disagree with the statement. At the same time, the majority (42,9%) does not believe most of the videos they watch are scripted. On the other hand, 24,2% agree that they are.

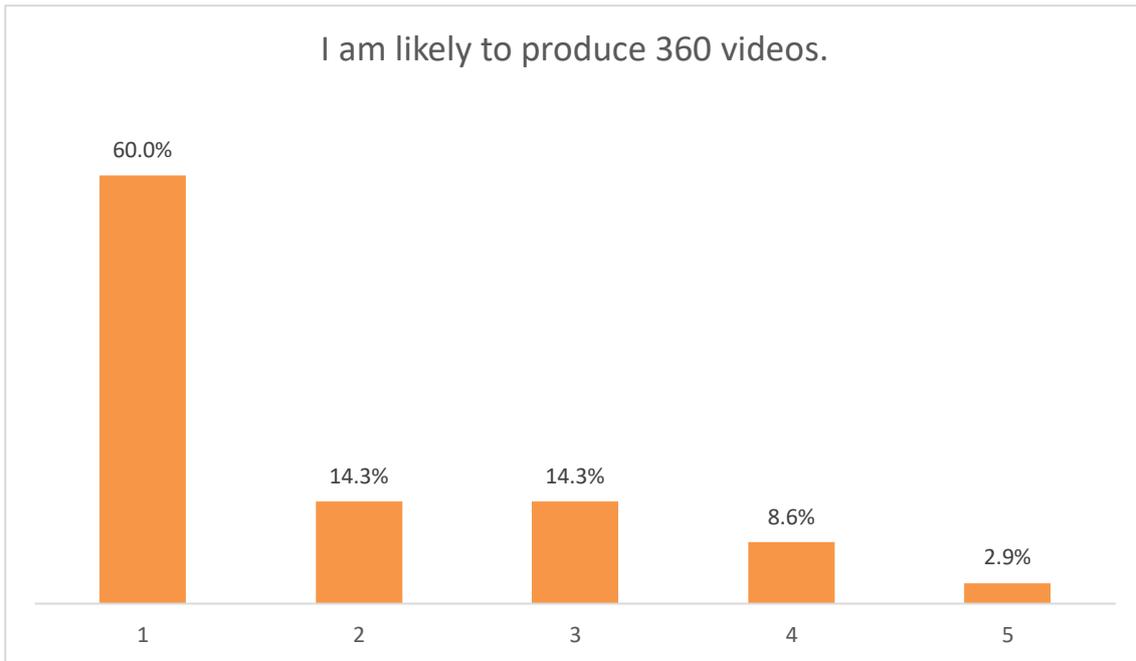
The relative balance of the chart proves there is not a clear trend on this topic. It also points at some uncertainty towards the way in which the content viewed is produced, since a big percentage of the participants do not really know if there is a script involved in the videos they watch. This is in alignment with the fact that the sort of programs most watched include content like vlogs and social media productions, conversations users are usually unsure about whether they are planned or not. At the same time, it might also point to the more documentary-like or location videos that illustrate factual activities and might not seem to have a prepared series of lines. Besides what it might point to, there is also a clear underdog to which it does not. Fiction is usually the clearest form of pre-planned narrative. Participants do not seem to gravitate towards videos that demand pre-production work in terms of narrative.



**Figure 14. I would pay to watch 360° videos.**



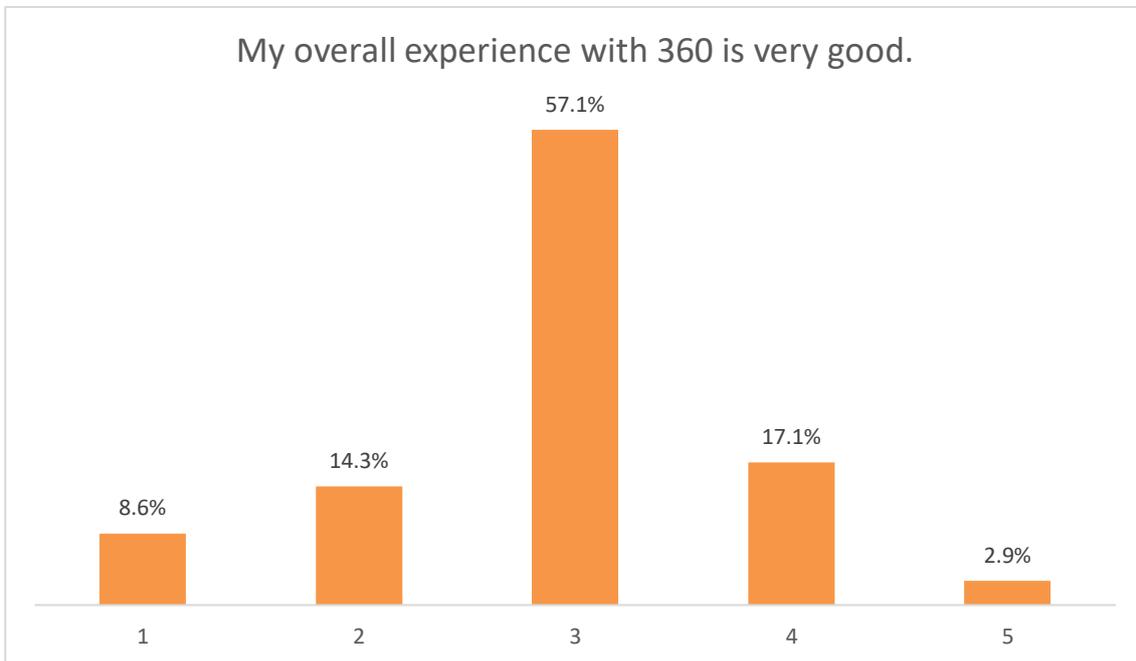
**Figure 15. I am likely to share 360° videos.**



**Figure 16. I am likely to produce 360° videos.**

According to figures 14 and 15, 72,9% of the participants would not pay to watch 360° videos and 58,5% are unlikely to share them. In addition to those categories, curiosity arose during the questionnaire process about whether the participants would consider producing their own 360° content. Therefore, a new statement, presented in figure 16, was added. This is the only question in the series of questions that was not answered by 70 participants, only 35, since it was added after the initial distribution of the forms. Every consideration before this point in the chapter and after supposes a total of 70 participants.

These values are a clear indicator of lack of involvement and commitment to the format from the part of the viewers. The fact that they dab into 360° videos but would not pay to watch them is very telling of the low level at which they categorize them in their media intake. Despite the fact that nowadays it is common practice not to pay for entertainment, this still brings out a negative view on the experience 360° currently represents. More than half of the participants (58,5%) do not even consider sharing the videos. And only 5 out of 35 participants (11,5%) would likely produce their own content in 360°. These numbers show there is still a lot of work to be done in bringing good and exciting content to 360° video that sticks with the user and creates a strong and meaningful impact in their media landscape.



**Figure 17. My overall experience with 360° is very good.**

40 participants (57,1%) neither agree nor disagree with the statement “my overall experience with 360° video is very good”. 2 more people (22,7%) disagree with said statement than the 14 (20,0%) that do agree with it.

You can observe on figure 17 that the participants’ experience with 360° is clearly not very good. Yet, people are curious enough about the format to have experienced it before and have developed opinions about it. So, what are the problems that justify these numbers? And more specifically why are they so uneven? Why are some people excited enough about 360° to deem it very good and at the same time as many people disappointed enough to rate it negatively? And what is bringing all these people to the divide between the two ends of the spectrum?

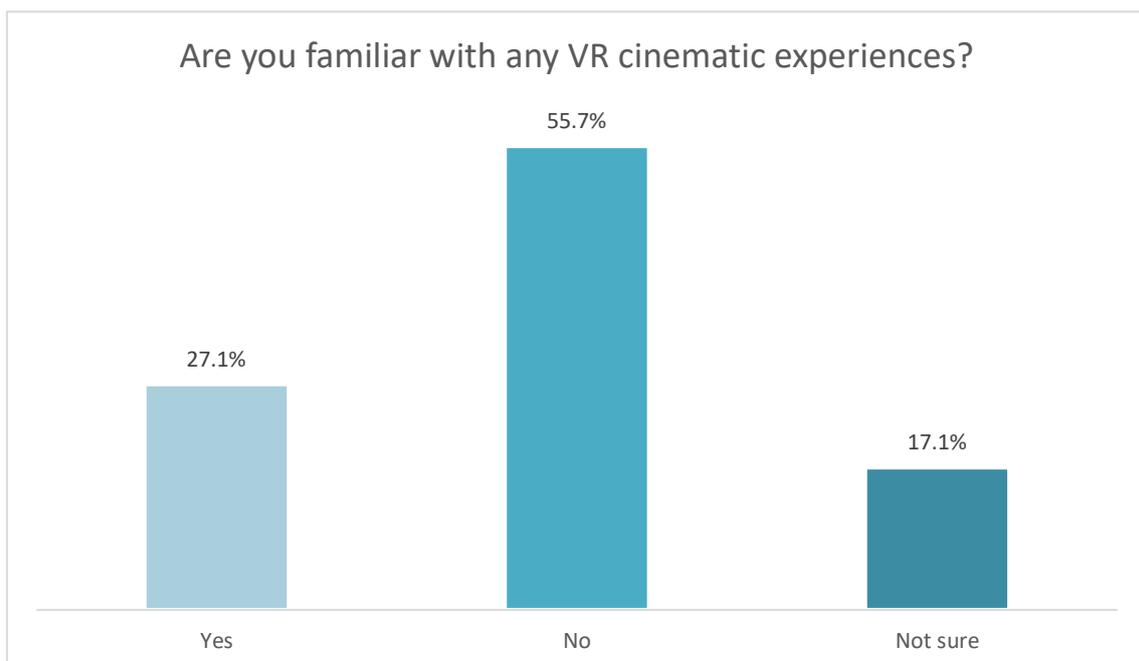
When it comes to best features the clear stand out is the field of vision allowed by 360° and with that characteristic participants associate positive things like the ability to explore (7), freedom (5) to turn to where they prefer and the ability to intake more information (2) from the scene. Most of the participants also refer to immersion as one of the best features in 360° and with that associate concepts like involvement (2) and dynamism (2). Interaction (6) is also a big topic, with complementary concepts ranging from motion (2) to choice (4) to the ability to

explore (7). Participants also talk about the innovation (2) the format represents on itself and the new narrative possibilities it represents (2). A big number of participants also refer to realism (6) and how 360° allows them to feel that the videos they watch are closer to their own reality, other realities in time and locations.

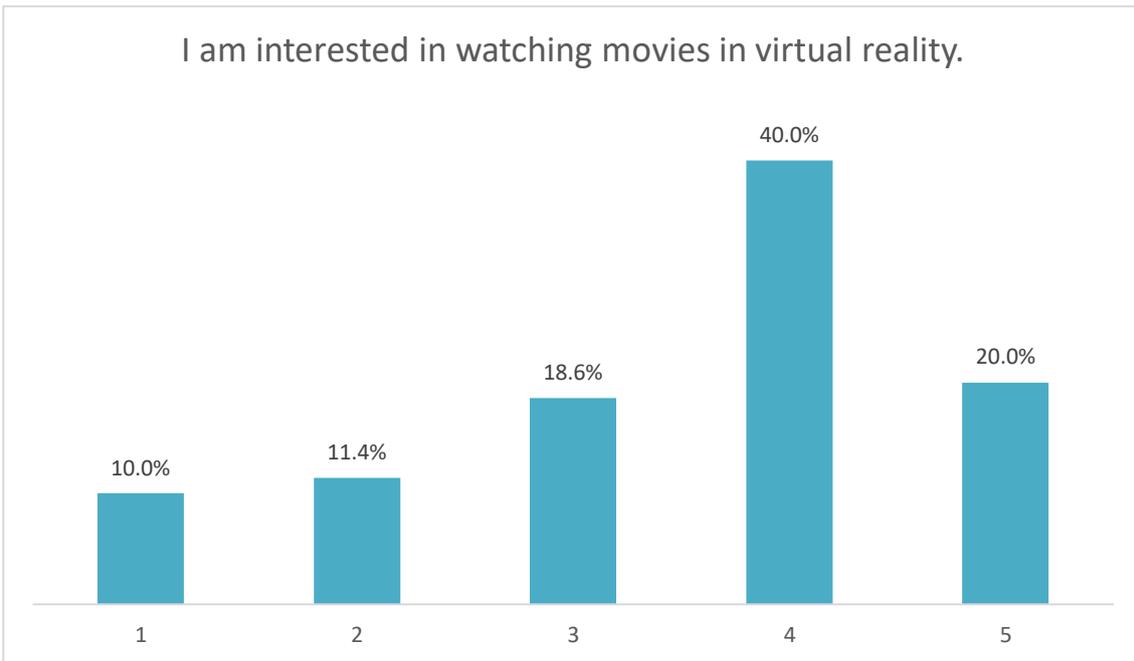
When asked about how 360° videos could be improved, most participants point out improvements on image quality (13), sound (3) and filming and editing (2). Some respondents talk about general accessibility (4) to the format, including entry level monetary values, better platforms for viewing and producing (2) and the sheer number of videos available (3). Other participants complain about experience and story-related features like lack of guidance on where to focus (6) throughout the experience, lack of interaction (5) and unfulfilled potential in terms of narrative (4) or a general lack of purpose or message to the story (2).

### 4.2.3. Cinematic Virtual Reality

55,7% are unfamiliar with cinematic VR experiences, according to figure 17. 27,1% know about them and 17,1% are not sure. These numbers point to a general lack of experience with VR in terms of movie watching and probably a broader lack of experience with VR in general.

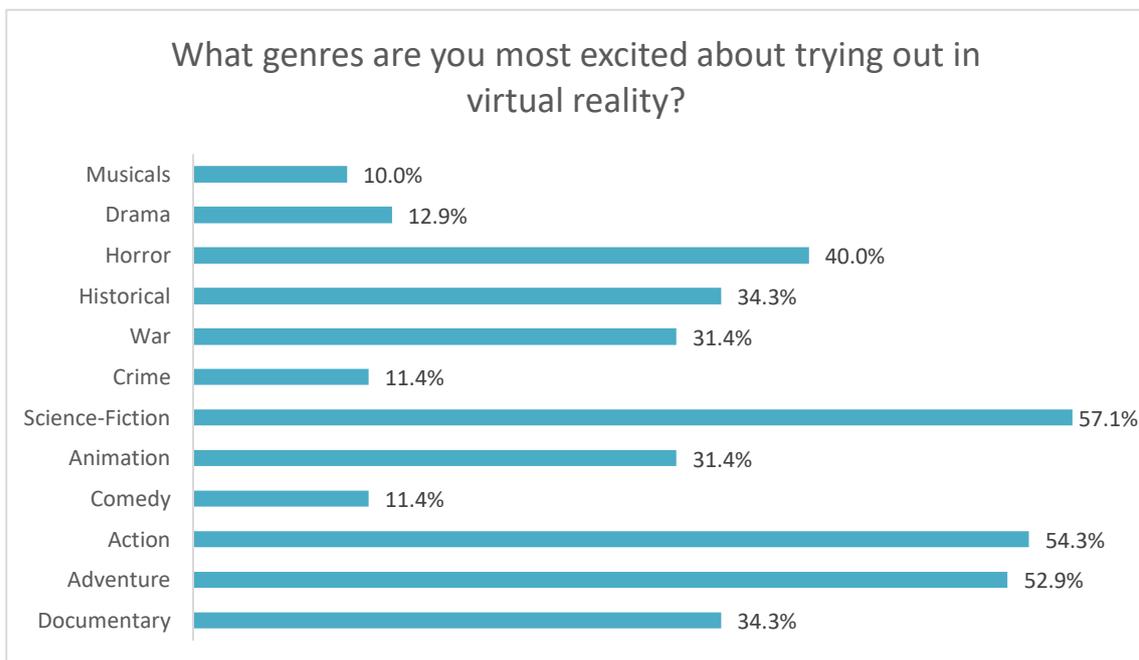


**Figure 17. Are you familiar with any VR cinematic experiences?**



**Figure 18. I am interested in watching movies in virtual reality.**

A staggering 60% of respondents are interested in watching movies in VR, as observed on figure 18. 13 participants (18,6%) neither disagree nor agree with the statement and 15 participants (21,4%) are not interested in watching films in VR. There is clearly an interest for what could be made of this art form in virtual reality, but it is not not unanimous.

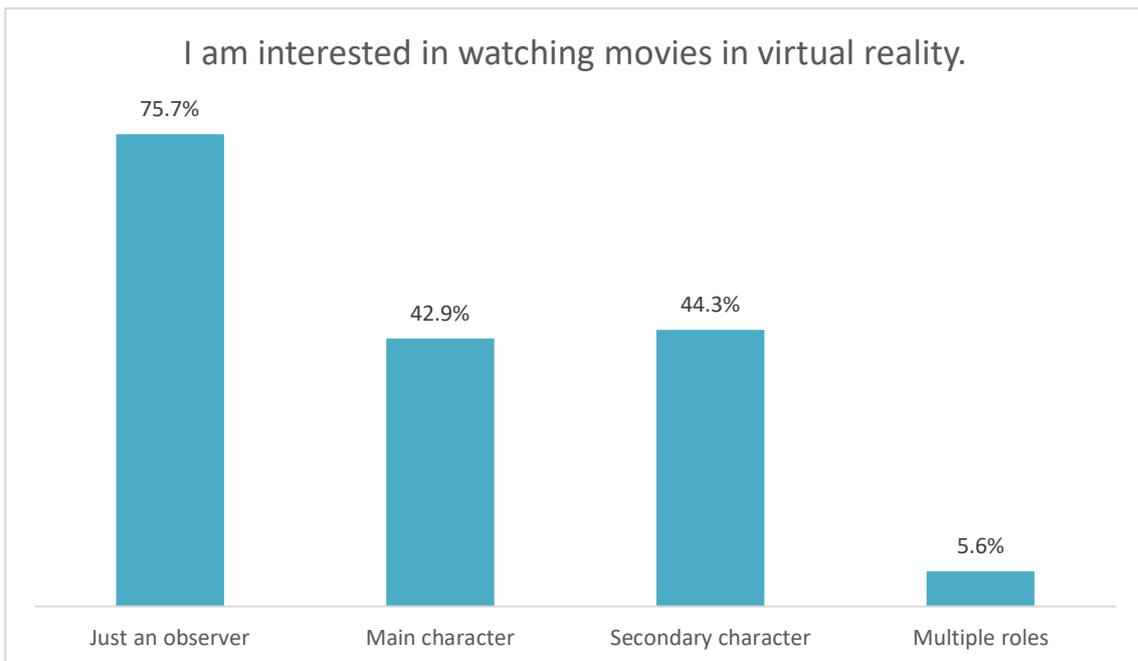


**Figure 19. What genres are you most excited about trying out in virtual reality?**

The three genres participants are most excited about watching in VR are science-fiction (57,1%), action (54,3%) and adventure (52,9%). Followed by horror (40,0%), documentary (34,3%) and historical (34,3%), war (31,4%) and animation (31,4%), in figure 19.

The most watched genre for 360° videos is documentary. Adventure and action still rate high top three on the same category for 360° video, but science-fiction is one of the lesser voted genres. There is a clear discrepancy between the videos participants watch the most in 360° and the videos they would like to be watching the most. This entails a void in the market, a need of the spectator that is currently unfulfilled. There are many reasons for this, one of the most obvious ones is probably the fact that producing good science-fiction videos is a complex and expensive task, difficult to execute in such a recent format.

When participants were asked about what sort of stories they would like to see in VR videos, 21 of them mentioned specific genres like history or time travelling (6), adventure (4), science-fiction (4), horror (4) and documentary (3). 7 hinted at location related tales like exotic and nature filled destinations (3), space (1) and other countries (3). 7 talked about action, not just the genre itself but the intent of adding more action (5), movement (2) and excitement (1) to the scenes. 4 people referred to the opportunity of being characters themselves. 4 asked for more interactivity and 2 mentioned the possibility of different storylines and ending to the same movie.



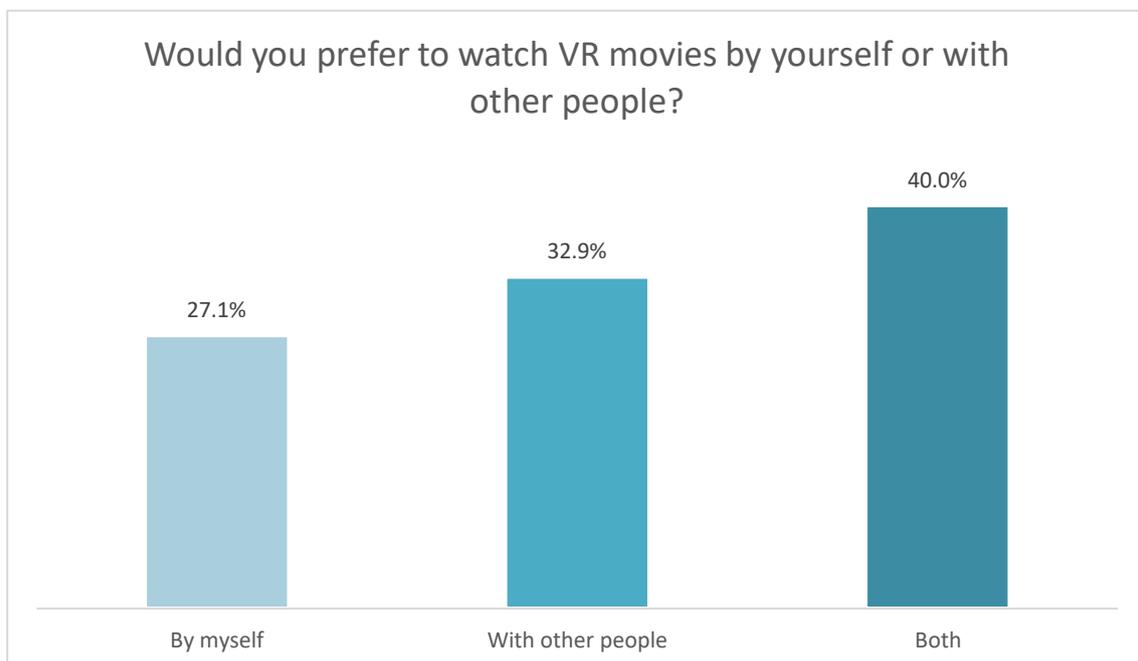
**Figure 20. What role(s) would you like to have when watching a VR movie?**

The vast majority of participants (75,7%), in figure 20, would prefer to be just an observer when watching a movie in VR, 42,9% would like to be the main character and 44,3% would prefer to be a secondary character. To note that 5,6% of respondents would like to have multiple roles throughout different movies or even in the same movie.

The fact that most people prefer to just watch the movie suggests a link between the VR experience and the traditional voyeuristic cinematographic experience. The practice of cinema is only possible through the perceptual passions, being the first voyeurism and the desire to see (Metz, 1982). These participants wish to preserve that passive voyeuristic nature in the virtual reality spectator. Yet, there are still quite a few people considering to take on one of the characters and supposedly interact with the film. The fact that both scenarios have a high level of approval and that there are participants suggesting multiple roles, hints at the audience's will to explore beyond the role they already have whilst keeping the safety net of the traditional experience.

Optimal durations range from three minutes to two hours. Most of the participants (12) point at the "normal duration of a movie" of 1.5 hours, 11 of them wish for 1 hour long movies and 3 of them hint at 2 hour long movies. 6 people stick out for 20 minute long films and 6 other people for half an hour long films. 6 other vouch for 5 to 15 minute movies.

The duration of the movies to be watched in VR seems to be quite uncertain territory. A lot of people seek the same level of involvement and the same amount of story they would get from normal movies, therefore they point at feature films at least one hour long. Yet, there is quite a few people considering to detour toward short films in virtual reality. This could be related to motion sickness concerns or the fact most 360° videos available are short. What is important to understand is that participants seem to want both, the longer not HMD-friendly and shorter experiences.



**Figure 21. Would you prefer to watch VR movies by yourself or with other people?**

32,9% of participants wish to watch cinematic VR with other people, 40,0% would experience the movies alone or in a group and 27,1% prefer to just watch them by themselves (figure 21). The vast majority of participants chose to watch 360° videos by themselves in the previous section's results. This discrepancy hints at a stronger wish to explore movies with a group of people, friends or strangers, in virtual reality. A fact that could be related to the environment in which these participants expect to watch the movie, since if they prefer to watch it in some sort of movie theatre that would imply a collective experience. Or a desire to share the experience with other people that are close to the participants, like watching the movie with friends sharing the same space or remotely.

In terms of location, most participants (43) would prefer to watch VR movies at home, followed by watching movies at the cinema (25) and in special locations prepared for the format (6). The fact that a fair amount of participants that selected they would like to watch cinematic VR experiences with other people also admitted to preferring to watch them at home, hints at the possibility of sharing the experience remotely and not by sharing a common space. Movie theatres still are a popular preferred destination to watch a movie even in this format, although watching in the comfort and privacy of home clearly takes the lead. More so the fact that some people came up with new concepts of locations to watch movies in VR, like "screening" historical movies in monuments which are part of the story is very original.

When it comes to other features participants would like to add to the cinematic VR experience, two clear categories come into play. The narrative is one of them, with 6 people referring to the ability to change the story, 3 of them talking about exploring the world and 2 of them referring to non-linear stories. A lot of participants (15) also talk about sensory experiences like touch, the use of props and sound work.

When asked about what changes they hope VR brings to storytelling in movies, participants mention immersion (11), interactivity (8), realism (5), and presence (5). 7 of them touch on the possibility to create new stories on its own merit. Some participants mention more specific features like multiple points of view (POV) (3), the ability to move around (4) and multiple endings (2).

Participants are mostly concerned about their health (20) when watching VR movies, namely motion sickness (18). 19 participants have no worries at all. 5 are concerned about the price. 7 name the narrative as cinematic VR biggest cause for concern and 2 talk specifically about the hardships of guiding the spectator through the movie.

### 4.3. Conclusions

Watching content in 360° is clearly not a habit most participants have. There is curiosity about the format and they watch it scarcely but it does not take up a slice of their entertainment life. Computers and smartphones are by far the most used devices to access this sort of content and VR sets have yet to make a mark.

Participants were introduced to 360° through social media and carry on watching most 360° videos in the form of social media content, live entertainment, vlogs and such. Due to that and alongside documentaries and news, non-fiction ends up being the most explored genre.

Fiction does not offer as much content, but there is a need for it. Most 360° videos watched by the participants do not seem to have a narrative or a script. On the other hand, there is no substantial effort to engage with the technology since most participants do not feel the need to share, pay for or produce 360° videos. At the same time, they do not seem really please by the state of 360° video content.

There is a series of features of 360° video that stand out for participants and might be important to explore further in the interview process. The benefits to the experience of watching a video include the ability to explore further the environment, the interaction allowed by the movement of the viewer and the realism granted by the point of view (POV). The downsides include crude editing, namely in the transitions, lack of guidance, lack of narrative, lack of interactivity, poor image quality and difficulties in accessing the format, namely the cost of the equipment.

When it comes to virtual reality, audiences still have very little experience with it, but they seem to be excited about the prospects offered by the format. Science fiction, action and adventure are the genres they are most excited about watching in cinematic virtual reality.

There is a series of potential features for cinematic VR named by the participants that should deserve more attention in the interview and focus group processes. The need for action and movement stands out, as well as the desire to become a character in the movie and alter the story by choosing the ending or moving through multiple storylines. There are downsides to the virtual reality experience which are also worthy of a look, like the fear of lack of guidance through the experience and health related concerns related to prolonged exposure to the HMD.

Related to those health concerns, the duration of the ideal VR movie is a controversial matter that should be further explored, since the times suggested fluctuate considerably.

Other ideas appear quite often throughout the answers but seem not quite defined by the respondents themselves, generic terms for which they might not have clear interpretations or knowledge of the extensions of their implementation. Concepts like realism, interactivity, presence, moving around, multiple endings or even immersion demand more in depth discussions and should be included in the interview script.

# 5. Speculative Build Up

The second study in this research looks at the concepts and themes developed in the previous series of questions and builds upon them with the detail offered by semi-structured interviews including 12 of the initial participants.

## 5.1. Methods

The 12 participants answered a series of questions divided into three main stages: from film to virtual reality, inside the movie and final considerations.

### 5.1.1. Participants

12 participants, between the ages of 22 and 38 years-old, took part in the interviews. 6 of them watched two 360° videos using Oculus Rift prior to the the interview process itself. The other six did not.

### 5.1.2. Instruments

The interviews were recorded using an audio recorder and annotated in paper. Considering their semi-structured nature, the interview process was aided by a previously prepared script<sup>2</sup>. All the participants signed a consent form for recording<sup>3</sup>.

The two videos watched by half of the participants were chosen because they fall into the fictional genres previously distinguished in the questionnaire as the most watched in 360°

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<sup>2</sup> Appendix B | Interview Script

<sup>3</sup> Appendix D | Consent Forms

videos and the most promising for VR. One of the videos is an action sequence from Suicide Squad named Suicide Squad: Squad 360<sup>4</sup> and the other is a sci-fi Star Wars experience titled Solo: A Star Wars Story 360<sup>5</sup>. They also each represent topics of discussion for the interview, the first one has two modes, one in which the spectator is just an observer and a second one in which he or she takes the role of one of the characters. The second video is exclusively a dialogue scene.

### **5.1.3. Procedures**

The interviews were conducted throughout the period of two weeks and each interview lasted around forty-five minutes.

Two groups of interviewees were created to understand if the experience of watching videos with the HDM would fuel or hinder the imaginative process of the participant whilst coming up with his or her virtual reality scenarios. The videos watched by six of the participants were viewed from YouTube in no particular order and they were viewed only once right before the interview. The participants watched the videos in a controlled lab environment, all in the same conditions, and they were just assisted with putting on the HDM.

## **5.2. Results and Discussion**

The interview script was developed as an exploration of the sequence of actions involved in choosing and watching a movie. Therefore, more than being divided by topics, it aims at transcribing a narrative of the moment each participant takes with his or her movie.

In the following chapters, results are presented intertwined with their respective discussion for a more wholesome and fluid look at the conversations.

### **5.2.1. From Film to Virtual Reality**

To allow the participants a better understanding of the matter to be discussed in the interview, an introductory first section was prepared around more familiar concepts like traditional cinema and 360° so that the virtual reality topics could seep into the conversation more organically and interviewees had more well-known topics to feed on when unraveling their thoughts.

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<sup>4</sup> <https://youtu.be/oZgXph7bY0o>

<sup>5</sup> <https://youtu.be/YnJqQfYRTEo>

### **5.2.1.1. Relationship to 360° video**

Most of the participants have some experience with 360° video but they do not seek them on a regular basis. They either simply come across 360° content on social media (4), namely Facebook, through commercials and updates from the people they follow or they take the initiative of going through some 360° videos on occasion (4) when browsing platforms like YouTube. Some participants started watching and continue to watch 360° video content because the content producers they already followed, namely YouTubers and influencers, started posting on that format (2). 2 of the participants check out 360° videos out of curiosity sporadically but do not have a routine of watching them.

8 of the 12 interviewees consider 360° video can be a precursor to VR movies, and 3 of them go even further considering the success of the format will determine if movies take on in VR or fail, but the rest of the participants (4) do not think the format is doing a good job at it. Many in the industry see 360 as a useful stepping stone, something that will play a critical role in helping the fledgling VR industry get off the ground (Popper, 2018). All the participants see pros and cons to 360° video. The advantages include the FOV and the newness of the experience, the downsides include the quality of image which 5 participants consider to be subpar.

### **5.2.1.2. Relationship to virtual reality**

3 of the interviewees have experience playing video games in virtual reality using devices like Playstation VR. 7 of them have had sporadic encounters with VR technology or immersive storytelling, in demonstrations at events and stores (4) and 4D and 7D experiences at amusement parks and studio tours (3). They all show excitement at the prospect of using the HMD on a regular basis to access entertainment.

## **5.2.2. Inside the Movie**

The second stage of the interview concerns the moment of watching a film and it creates a parallel between the present scenarios in traditional cinema and the ideal scenarios speculated by the participant. In this part of the discussion, the surroundings, the characteristics of the film and the story within it are reflected upon.

### **5.2.2.1. The Surroundings**

In terms of location, 2 of the interviews watch most of their movies in the movie theatre, whilst the other 10 watch movies almost exclusively at home.

**Table 2. Ideal locations for viewing movies**

| <b>Anchoring concepts for traditional cinema</b>   | <b>Anchoring concepts for cinematic VR</b>   | <b>Ideal location</b>                |
|--|--|--------------------------------------|
| Cost<br>Comodity<br>Variety  | Fear of public humiliation<br>Personal safety<br>Third party safety<br>Intimate experience   | <b>Home</b>                          |
| Special outing<br>Collective experience<br>Nostalgia of traditional cinema<br>Screen size<br>Other formats (3D)<br>Urgency | Traditional cinema experience<br>Collective experience   | <b>Movie theater</b>                 |
|  | Fear of public humiliation<br>Personal safety<br>Third party safety<br>Nostalgia of traditional cinema<br>Intimate experience<br>Collective experience<br>Tailored experience<br>Novelty | <b>New concept for movie theater</b> |

The scenario changes when the ideal location to watch VR movies comes into play, as seen on Table 2. 5 of the 10 participants that prefer to watch movies at home, would continue doing so. 1 of the 2 participants who watch movies in the cinema, would prefer to start watching them at home if they were in VR, because it would make the experience more comfortable and safe not being surrounded by strangers whilst using an HMD, whilst the other one would continue to prefer the movie theatre. Of the remaining 5 participants who prefer to watch movies at home, 2 of them would like to have the opportunity to watch VR movies both at home and in a cinema

and 3 of them would prefer a new space was created specifically to view VR movies, like a movie theatre but with different features, smaller rooms.

**Table 3. Reasons for viewing movies**

| <b>Anchoring concepts for traditional cinema</b> | <b>Anchoring concepts for cinematic VR</b>                        | <b>Reasons to watch a movie</b> |
|--|---|---------------------------------|
| Personal favorite genre<br>Teachings<br>Emotions | Action<br>Science-fiction   | <b>Thematics</b>                |
| Unrealism<br>Isolation                           | Realism<br>Immersion<br>Isolation                                 | <b>Escapism</b>                 |
| Break<br>Passivity<br>Inactivity                 | Break   | <b>Relaxation</b>               |
|  | Movement<br>Action<br>Futurism<br>Colorful visuals                | <b>Aesthetics</b>               |
|  | Immersion<br>Interactivity<br>HMD<br>360° videos<br>VR videogames | <b>Novelty</b>                  |

When asked about what makes them watch a certain movie, interviewees display differentes reasons for it depending on the format, as seen on Table 3. For traditional cinema, 8 of the interviewees state that it depends on the thematics present in the movie, be it the genre or

the teachings it might carry or the emotions it might generate. 2 participants refer mainly to the sense of relaxation and watching movies to take a break from work without much regard to the type of movie itself. The remaining 2 name the sense of escaping their own reality as the main reason to watch movies.

4 of the participants would not change their priorities if faced with the opportunity of watching movies in VR. 3 of them would still focus mainly on the type of movie or themes present in it and 1 would still simply do it as a moment of relaxation. The other person that watches movies mainly to take a break (1), would consider watching movies in VR mostly for the experience itself, meaning the immersion and the opportunity to watch films in a new format. One of the participants focus his priorities in the news aesthetics VR could allow, saying that the more interesting the look of the film the more likely he would watch it, despite referring previously that he picks movies mostly because of their genre. The remainder of the participants would turn to VR to watch a movie if the topics in the story lended themselves to the format or if the genre was action packed enough to make it more exciting in VR.

All the participants already watch movies sitting or lying down. Only 11 of them wants to be able to stand for the entirety of the movie in VR. Of the other 11, 6 want to have both options, standing up or sitting down. And 5 only consider witnessing the movie sitting down.

Only 2 of the 12 interviewees seemed excited at the prospect of sharing the experience of watching a movie in VR with other people. The remaining 10 seemed concerned about their own behavior whilst watching the movie, the prospect of possibly harming others whilst exploring the scenes and a bigger need for space to move around. They would prefer to watch the movie by themselves.

#### **5.2.2.2. The Movie**

All participants consider watching captured films in VR, meaning live-action movies. They consider realism to be one of the most important features virtual reality can lend to film and they highly value that sense of presence and immersion. Only 1 of them referred the possibility of watching truly animated movies.

4 of the 12 interviewees mention other sensory experiences would make for a good complement to the movie, namely props, smell and even changes in temperature or wind in case of locations specially devised for VR movie screenings. 3 of the participants believe the fuss and costs associated with those complementary experiences would not make them worth while.

10 of the 12 participants want for movies in VR to have the same duration as traditional feature films, around one and half hour long. The remaining 2 both watched the two 360° videos before the interview, they both experienced minor discomfort during the viewing, and they both pointed at a maximum of 30 minutes for the duration of movies in VR.

Not one of the participants considered taking breaks or dividing their attention between watching the movie in VR and performing other tasks. They all would exclusively watch the movie for whatever duration they marked as ideal.

In terms of genre, 8 of the 12 participants consider they would change their preferred genres from traditional film to cinematic VR. 6 of those 8 would not consider watching dramas, which were previously one of their most watched genres, and the other 2 besides not wanting to watch dramas would consider watching more documentaries and sci-fi movies than they currently do. The remaining 4 prefer to watch action or adventure movies and would continue to do so, but they would also consider watching more sci-fi stories. There are some considerations which come repeatedly into play when discussing genres, the amount of movement and the novelty of the futuristic environments seem to be the main reasons for the participants to choose action and science fiction.

When talking about positioning inside the movie, 6 of the 12 participants wish to be in the center of the action for most scenes, whilst the other 6 would prefer to be further from the focus of the scene to be able to intake it as a whole.

4 of the participants wish to be able to explore and move as they please. 5 wish there were predetermined sets of paths to take, for fear of losing important pieces of the story, losing themselves in the space or risking to take away from the artistry of the director. The remaining 3 want to have both options and partial freedom to move around in some moments but still be redirected to what is important in other instances.

All the participants want the movies they watch in VR to have characters and again all of them wish for those characters to share some sort of relationship amongst themselves and most importantly to share dialogue. Nonetheless, 2 of the participants point out the amount of dialogue should decrease to allow them to explore the environment without fear of missing out on important conversations.

2 of the participants would consider being the main character in the VR movie, at the same time they would also consider being a secondary character, but 1 of them would not consider not being a character at all. 5 of the remaining 10 participants prefer to simply observe the movie. 2 would prefer to have the option of being a secondary character of just observing in different movies or even on the same movie. 3 interviewees prefer to take part in the story as a secondary character instead of just watching without having a physical presence in the film.

### **5.2.2.3. The Story**

All participants talked about some form of alternative storyline in VR filmmaking, be it different endings, different paths or the ability to interact with different sets of characters. All of them see benefits to this approach to the story of having multiple substories. 5 of them also have two main concerns about it, the risk of losing the imprint of the director or creator of the movie and the fact they would have to watch the same movie multiple times to actually witness the entire movie. The last point is seen as downside by 2 of the participants and as mostly an opportunity by the rest who think of it as a good way for a movie to reinvent itself along multiple viewings.

Another concern that arose during the interview process was the way in which transitions would be executed in VR with 3 participants suggesting that the story should justify the transitions from location to location, so that they could be continuous. Another 3 participants suggested the viewer should simply move with the characters if they had to change locations, but they quickly admitted that technique would not be practical for long journeys. Most of the participants do not have an answer for this problem, but the fact they consider it a problem is already something to take into account.

### **5.2.3. Final Considerations**

The last stage concerns more abstract and complex questions and opinions, some are based on questionnaire answers and others regard participant's opinions about virtual reality and the role film can have in it as well as the limits separating video games from films in this new format.

#### **5.2.3.1. Overcrossing Hybrid**

The majority of the interviewees (9) think that adding interactivity to a movie would not make it less of a film and the remaining 3 seem concerned about the limit between what is truly a movie and what starts to turn into a video game. All the participants demand interactivity from a VR movie either way, but two parameters to that interaction stand out. The amount of choices the viewer gets and the importance they have. Interviewees consider that if the spectator makes a lot of active decisions throughout the movie it defeats the purpose of watching a movie. 4 of them even mention three decisions as being the optimal amount of interactive moments in a film. At the same time, 4 of people interviewed also consider that the choices given to the viewer can not affect the story in deeply meaningful ways or the sense of the movie is lost. This

means things like changing the outcome for important characters' actions or influencing the ending.

#### **5.2.3.2. The Effect of 360° Video**

Participants who watched the two 360° videos previously mentioned in the methodology for this chapter, were more prone to discussing objective concepts, like positioning and dialogue. They displayed a clearer perception of what their wishes for a VR movie could entail. At the same time, and contrary to the belief that lead this portion of the study to have two groups of interviewees, they also accounted for more imaginative descriptions of features and scenes. Watching the 360° videos using the Oculus Rift right before the interview clearly allowed them to have a better grasp on the experience and develop more complex thoughts on it. Participants that did not watch the videos, conducted their conversations with less ease and used more generic and not clearly defined concepts like immersion, they also talked less and seemed less sure of their answers.

### **5.3. Conclusions**

Through the interview process is possible to observe participants are curious about 360° content and they see potential in it but have yet to make a habit of watching 360° videos. 360° videos also appear to be a good format of enlightenment when it comes to the possibilities of virtual reality, granting an intermediate experience that allows viewers to pinpoint features they like or dislike and that could transfer to VR.

Understanding the types of environments in which viewers see themselves engaging with cinematic VR content is an important tool when trying to come up with the stories that fit those surroundings best. Privacy and safety are big worries for the participants when considering the virtual reality experience, they either prefer to watch the movies in the privacy of their own homes or they admit traditional movie theaters would need alternations to fit the format, not just in technical terms with new equipment, but also by creating special rooms for VR experiences.

The reasons leading participants of the research to watch one movie change from the traditional format to the context of virtual reality. Viewers would opt for more action-packed genres, with bolder movements, and science fiction flicks, with exciting visuals, even if their usual favorite is drama. They would also be more mindful of the aesthetical potential of the movie.

From the interviews it is possible to understand that there are important matters to the story told in a movie in VR besides the story within the movie itself. Positioning, the ability to

explore the space and the duration of the film are relevant topics to the potential users. They wish to be given the opportunity to move around in the space of the movie but also to be able to intake the scene sitting down and more relaxed. They understand the limitations the HMD signifies in terms of duration to the film, but they want to be able to watch full feature films anyways.

When talking about virtual reality, contrary to the results hinted at in the questionnaire, participants prefer to have a more intimate experience, having little to no interest in sharing the movie with other people and chatting or commenting on it whilst watching it.

In terms of the look of the films in VR, the audience in this research considers almost exclusively captured live-action as the ideal form of production, considering it closer to reality and therefore more immersive and more natural to watch.

Viewers clearly state a preference for feature films. Despite considering the obstacles to producing and watching long duration movies in the HMD, they still consider 1.5 hours the minimum run time of a movie they would devote some time to or even pay for.

Wanting to explore the space of the movie but fearing lack of guidance and the possibility to lose themselves or lose relevant story points, participants agree on partial freedom when it comes to defining the paths walked in the film. This means they would prefer a balance between moments for free exploration and pre-defined paths to move the plot along.

Characters are important components of the experience, not one interviewee would consider watching a VR movie without a well-established group of characters or without dialog. However, there is a sense that that dialogue would need changes to work in the format, with shorter conversations and clear guidance so that missing out on a conversation would not become a problem.

The role taken by the audience is also a pain point of the conversation. Remaining simply an observer is apparently the go-to option, but it is also closely followed by being a secondary character. The role of the main character is rejected by most, unless the narrative being told would depend on that gimmick in some way. The participants also pointed the ability to choose as an important feature, not necessarily the ability to pick your character at the start of every movie, but the classification of movies according to the role of the viewer, so that they could also pick a film based on how it handles that feature.

Participants are excited about multiple narrative possibilities virtual reality can allow. They mention witnessing different endings, selecting different paths and following different sets of characters as important interactive features to movies. Making the experience richer, more engaging, more interactive and allowing it to renovate itself through different subplots seems to be an important direction to consider according to this audience.

There are some key points, concerns and controversial opinions in the series of interviews that would be interesting to explore in group discussions. Genre seems to be the easiest category

to talk about, participants have a very clear opinion set on the topic, with action and science fiction always taking the lead in every conversation.

The role played by the viewer is another important topic of discussion, with participants having a hard time picking just one way to experience movies. Most interviewees also showed difficulties in describing how they would handle the process of watching a film in VR, not displaying clear views on their position, location or actions.

The topic of interactivity is highly controversial and the ways in which it would be implemented confuses most participants. One thing is clear, they want to experience it. At the same time, they want clear limits between the experience of a film and of a video game, they wish to have an active role in the story, but not as active as a gamer.

Relaxation is a term repeated many times throughout the interview process. Participants do not want to be as active in the film as they would have to be in a video game. They want to experience it mostly passively with moments of interaction. They believe they would be missing out if VR was just for gamers and that there is room for film with this new technology and they are excited about the prospect of making some decisions in the story, but not to the extent of breaking the relaxing qualities of film. They even come up with classifications of their own to separate the movie they want from the game they want to stay away from, pointing at the number of decisions made throughout the process and their importance as important indicators to separate the two. Some participants go even further and mention a hybrid form of storytelling, something that matches movies and video games but in reality, is neither.

## 6. Group Discussion

The third study in this research looks at the concepts and speculative scenarios built during the series of interviews and tests out those ideas on two group settings so familiar to the filmmaking process - focus groups.

### 6.1. Methods

Two separate focus groups of five participants each discussed the genre, characters, external factors and interactivity in cinematic virtual reality through a series of cards and a group exercise.

#### 6.1.1. Participants

Two focus groups were conducted in the same day, one in the morning and one in the afternoon, with both lasting close to one hour and a half. Each focus group included five participants, male and female, with ages ranging from 22 to 36 years-old.

#### 6.1.2. Instruments

To fuel the discussion four card stacks, containing illustrative quotes with opinions from the interviewees in regards to storytelling categories, were used. The participants were also given a pencil, a pen and sticky notes to execute the group exercise on a classroom board. They all signed a consent form<sup>6</sup> for video and audio recording as well as photographic capture. As a support to conduct the focus group discussion a semi-structured script was developed<sup>7</sup>.

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<sup>6</sup> Appendix E | Consent Forms

<sup>7</sup> Appendix D | Focus Group Script

### **6.1.3. Procedures**

The general process was divided in two parts and lasted a maximum of 90 minutes. The first part was comprised of the discussion itself, followed by a group exercise of no more than 45 minutes.

The discussion was conducted in four stages, which represent relevant categories to debate concluded from the interviews. They are genre, characters, conditions external to the movie and interactivity. To fuel the discussion cards containing illustrative quotes with opinions from the interviewees were used<sup>8</sup>. The participants would discuss each category by taking each a card from the pile, reading the cards out loud to the group and debating about them.

The final exercise consisted of creating the ideal scene for a virtual reality movie as a group. Two dimensions with three categories each were laid out in a classroom board to guide the group's efforts. The first concerning the movie itself, including location, character and action, and the second considering the spectator, which included location, role in the movie and interactivity. This exercise was implemented as a means for the participants to execute the topics they discuss and confirm their opinions or understand if they needed to reconsider, its aim is to take the same discussion topics further in a different dynamic and understand which concepts the group naturally gravitates to during the process.

## **6.2. Results and Discussion**

The following combination of results and discussion looks at genre, characters, external factors and interactivity in cinematic virtual reality, main categories derived from the previous study. As usual, the discussion is mixed in with the results to allow for a more fluid read and compartmentalization of concepts.

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<sup>8</sup> Appendix C | Focus Group Props



**Figure 22. Focus group setup**

### **6.2.1. About the Genre**

When discussing genre, both groups unanimously reject drama and more specifically romance. Considering romance the topics of voyeurism and the considerable demand for pornography in VR fueled the debate on the differences between intimacy and sexual content. It is true that, even in these early days of VR porn, “studios are sensing money-making potential the likes of which has not been seen since the internet came along and almost cratered the whole industry” (Rubin, 2018). Furthermore, participants discussed how framing can establish the tone for these scenes in traditional film and loses its purpose in VR, since there is no framing and the spectator can see everything. Both groups gravitated mostly towards action and even more so science fiction. They exalted the potential of more visual genres with higher concentrations of characters and movement.

### **6.2.2. About the Characters**

Discussing characters, both focus groups admitted that assuming the role of a secondary character can bring benefits to the story by allowing the spectator to feel more engrossed in the action. They also stated that, although being a character seemed like an original option to explore, the default should be to just observe without taking part in the narrative. One of the groups even stated this factor was fundamental to distinguishing a VR cinematic experience from a VR movie, saying that when the spectator takes the form of one of the characters the interaction demanded to make that role believable turns the concept of a film into solely an experience and that if the focus is to be the story itself that can only be achieved if the viewer takes no direct part in it.

### **6.2.3. About the External Factors**

In terms of external factors, both groups agreed that having the ability to have moments in the film which are better experienced standing up and moving around whilst allowing for the majority of the movie to be spent sitting down would be the best option. Meaning that there is no right or wrong answer to positioning yourself during a movie and that the story should accommodate both stances and even inform one in detriment of the other.

The ideal duration of the film, as it has been stated in previous stages of the study, seems to be the usual it takes for a feature film, an hour at least. The participants raised some concerns about this decision, though. Firstly, possible health complications and motion sickness that come with long periods of exposure to the HMD. One of the groups was concerned about how tiring the experience would be. Which makes sense considering the higher strain cause by the HMD and the existence of recommended breaks (Wille & Grauel, 2014). Yet, they also admit that less than one hour would not be worth it. If the market value of that solution were up for discussion, they most likely would not pay for a shorter movie.

### **6.2.4. About the Interactions**

Talking about narrative possibilities opened up by virtual reality, both groups seemed excited about the creation of subplots to the movies and the opportunity of watching a movie multiple times and still get different experiences. One of the groups discussed in more depth the chance of watching the movie with other people, different people following different storylines, and how that could generate new forms of viewing, sharing and commenting on movies.

Both groups agreed on partial freedom on the subject of interactivity. Their biggest concerns about having free rein to explore the environment of the movie were missing out on important details of the story and having too many distractions. Their biggest complaint about making decisions about the narrative was the role they would change into as spectators, because they found that with the ability to make too many and too substantial decisions they would become the creators of the movie, a role they do not wish to step into.

### **6.2.5. About the Perfect Scene**

Both groups generally confirmed their opinions on the main topics through the scenes developed in the group exercise.

The first group imagined a trial for homicide in a space station, where the human being being accused of murder would be saved by an ominous proof brought by a hero in a flying car. The second group worked on a crime sci-fi flick, they designed a torture scene set in a mansion on another planet.

Both scenes have science fiction, crime and action elements. They imply big moments of suspense and require a lot of movement and a substantial set of characters. Furthermore, both groups imagined their spectator has an initially passive observer in both of their scenes. The viewer still has a part in both stories. In the first, by embodying the plot twist of the scene and, for the second group, by realizing at the end of the scene he or she is not so passive after all.

**Table 4. Ideal cinematic virtual reality scene for Focus Group 01**

|                              |   |   |
|------------------------------|---|---|
| <b>Synopsis of the Scene</b> | Vadia was killed by a remotely controlled asteroid somewhere in the galaxy. [Undefined male character name] is being trialed for her murder in a space station near planet Earth. The jury is about to declare him guilty until Bruno arrives with the missing proof. |   |
| <b>Genre</b>                 | Science fiction, crime, action.   |   |
|                              | <b>The Movie</b>  | <b>The Spectator</b>  |
| <b>Location</b>              | <p>Closed off room.<br/>Windows overlooking Earth.<br/>You can hear the constant rattle of the AC.</p> <p>Outside a UFO strangely similar to a red Tesla arrives at full speed.</p>   | Seat next to the driver's.  |
| <b>Characters</b>            | <p>12 jury members are in the room. They are all aliens from different species.</p> <p>Inside the UFO, Bruno, a human from Earth, is the pilot.</p>   | Observes using an intercom video device streaming the room the jury is in. It does not have a body. |

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|               |  |                          |
|---------------|--|--------------------------|
| <b>Action</b> | The jury is about to make the wrong call.<br>Bruno barges in with the proof. | The viewer is the proof. |
|---------------|--|--------------------------|

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The participants were quite keen on having the spectator become either an integral part of the story or interacting with the environment in some unexpected way. The first group, because they chose to have multiple sets in their scene, had troubles deciding on where to position the viewer, not breaking the suspense whilst at the same time allowing him or her to see everything need to not lose parts of the story.

**Table 5. Ideal cinematic virtual reality scene for Focus Group 02**

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|                              |  |
|------------------------------|--|
| <b>Synopsis of the Scene</b> | Outside a sumptuous mansion in a galaxy far away, a huge party ensues.<br>Inside, someone is being tortured for answers. |
| <b>Genres</b>                | Science fiction, crime, action.  |

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|                   | <b>The Movie</b>  | <b>The Spectator</b>   |
|-------------------|---|--|
| <b>Location</b>   | In a distant planet, a huge party takes place in the garden of a sumptuous mansion.<br><br>In the dark lobby of this mansion a all different story is being told. | He/she starts off in the garden, surrounded by the party. Then floats into to the mansion’s lobby. He/she is “standing” behind the victim. |
| <b>Characters</b> | The victim sits tied up in a chair.<br>Two big aliens look down on him.<br>Another smaller alien conducts the interrogation. They are all wearing tuxes.          | The viewer does not have a physical presence in this world. It is just conducted through the scenarios                                     |

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|               |   |   |
|---------------|---|---|
| <b>Action</b> | The small alien yells out questions while the victim mumbles and get beat up by the other two characters. | The viewer is just observing. Until a hand reaches over his/her eyes and send him/her into a dark void. |
|---------------|---|---|

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Contrary to the first group, in the second scene the participants's building of the scene revolved around the locations and the transitions. They were a lot more concerned about how the viewer would navigate the space and worried first about that and then adapted the story to the real possibilities for smooth transitions. They had bigger plans for how the torture would ensue, talking about chasing characters and moving outside the room, but they compromised to make the experience easier and more comfortable for the viewer.



**Figure 23. Developing the ideal scene**

### 6.3. Conclusions

Drama, and especially romance, seem to be confirmed as not friendly VR genres in the minds of the audience. More than half of the participants in this research actively referred to them as genres that would not work in VR and not one of the participants disagrees with that

point of view. Science fiction comes at the top closely followed by action in the preferred genres for the focus group participants. Not only did they mention sci-fi the most during discussions, they also constructed their group exercise scenes following those genres.

In terms of characters in the movie, most participants just want to observe. Although, at the same time, they would not mind taking on secondary characters, they would never want to be the main character unless the story absolutely called for it with good reasoning behind it. They do not necessarily want to be in on the action, they just want to witness it.

Both focus groups believe it is important to have the opportunity to fully take in a scene by moving around inside the film and getting up and walking in real life, but they also feel that being up for the entire movie would be asking too much of the spectator and that both positions should be allowed without damaging the experience. In terms of durations, the answer is unanimous, the same as feature films have nowadays, around ninety minutes.

The audience in the focus groups understands there must be compromises to the story for the experience to remain intuitive and smooth to the viewer. They also admit that is one of the biggest challenges in coming up with a script for a virtual reality film and it is a very complex task to complete since they had serious trouble achieving it in just one scene.

Participants are unsure about the nature of the format, if film in VR supposes some form of decision making beyond choosing where to look. Some pose that the amount of decisions might be the line that separates films from video games and others simply propose a new category for the product of the two.

## 7. Discussion and Proposed Framework

The role film is going to have in the new entertainment era of virtual reality is not yet clear. But the need audiences have to include it in the landscape of VR possibilities is, and very much so. Nowadays users want in on the new technology virtual reality entails and they crave the experience, but not all of them are willing to become fully active participants. They want alternatives to gaming and movies are a good alternative. Truly bringing the seventh art into the virtual world will not be an easy task, but there is demand for it and there are also clear wants and needs expressed by the potential audiences.

360° videos have managed to awake curiosity amongst viewers, but they are far from having a substantial role on the entertainment habits of the audience considered in this research. Viewers appear to be more excited about the potential prospects of VR than they are satisfied by 360° productions. Non-fiction content is the most watched in the 360° landscape, through social media and live entertainment, news and documentaries, but there is an unfulfilled need for fiction from audiences.

Since its early stages, film meant more “than its symbolic content, it became a social space around which people started to socialise, and this was also an important influence of cinema on the society” (Pusnik, 2015). When exploring the audience’s relationship to cinematic virtual reality the need to consider the experience as a whole, instead of just a simple movie copy detached from the physical world, arises with even more strength. And that experience does not just encapsulate what the movie is trying to get across but also the external factors that go into the decision and the act of watching it. Because some of those factors have clear implications on the ways in which the spectator intakes the story and navigates the movie.

## **7.1. Location, Positioning and Socialization**

Location and positioning outside the movie are relevant factors to take into account. Because they determine if this format is to be developed for viewings in public spaces or private homes and if people watch the movie sitting down and static or if they get up or move through the environment of the film. The audience of this study is more inclined to watch VR movies at home, but it also does not want to lose the tradition of the movie theater and even considers locations specifically developed for VR viewings should exist.

These viewers also do not want to feel obligated to stand up and move around to watch a movie. This is a factor already taken into account in the gaming industry through devices like the Oculus Rift, which is designed for standing and seated experiences. The tracking system was designed specifically for that. Game developers are going to make some games that are standing, others are going to make some games that are seated, and the users will be able to play whatever experiences they want (Mitchell, 2015). Relaxation is an important concept to their definition of the cinematic experience and, although they see advantages in exploring the virtual environment in more active ways, they want to remain still for most of the movie with occasional moments devoted to explore by moving more than just their heads.

Rituals like chatting during the movie and sharing storylines with friends also came up during a considerable number of discussions, yet the participants agreed on considering cinematic virtual reality a more intimate and personal experience that does not lend itself or needs to be shared, being through chatting or simply watching the movie surrounded by other people. It is relevant to understand that, in the myriad of possibilities offered by virtual reality, sharing the experience does not seem to a priority for viewers and it would be more important to focus on other things first.

## **7.2. Visuals and Realism**

When you want to write a screenplay, there are two aspects you have to deal with. One is the preparation required to write it: the research, character work and structural dynamic. The other is execution, actually writing, laying out the visual images and capturing the dialogue (Field, 2005). In terms of storytelling, two main subjects appeared. The first one can be considered cinematography. The visuals of the movie are outstandingly important for the viewers, they make or break the intent to even watch a movie in this new format. Cinematography is more than just photography, it is the process of taking ideas, words, actions, emotional subtext and tone and all other forms of non-verbal communication and rendering them in visual terms (Brown, 2016).

In what concerns this visual perception of the film, the audience displayed a very strong preference for captured sequences and live-action movies, showing very little interest in animated environments. This is an important conclusion to consider, especially because it is

very contradictory to the definition of virtual reality as interactive computer-generated experience. It shows the viewers crave realism in this sort of content. The closer the movie looks and feels like reality, the better. Viewers look for a combination of the look captured 360° offers and the interactivity lended by VR and those considerations are important when planning for the imagery of a movie and the story it tells. Transitions are a subject that worries the viewers, since they feel the solutions employed in 360° disturb the experience and break the immersion, but they have no clear solutions for them, not wanting clean cuts to change scenes neither wishing to limit the amount of space they can cover by continuously following character's displacements.

### **7.3. Space, Time and Genre**

Inside the movie itself, its space and environment are potentially the greatest vessel for virtual reality's innovations. Participants of the research are excited about exploring the spaces of the movies but they are also concerned about guidance and how to know where to go. They agree on partial freedom to explore, that meaning, combining moments of free exploration of the environment with pre-defined pathways.

In terms of the way they wish to position themselves in that space, the centre of the action is suprisingly not the best place to be. Participants showed preference for more distanced positions. Which would allow them a more general picture of the action and the ability to take in the entire scene without having to move around or look at certain places, in the risk of losing important action due to other distractions.

Time is an important component to take into account especially in immersive experiences. Despite of the fact that most of the existing VR passive experiences and 360° videos are short productions and of the strain caused by HMDs, participants feel very strongly about wishing for longer videos and feature films. They want the normal duration of a traditional movie, instead of shorter experiences.

Another thing is clear. The top genres for cinematic virtual reality enthusiasts are action and science fiction, mostly because they allow more movement and bolder visuals. Therefore, they seem to be the best genres to invest in for producers concerned with the audiences' expectations for cinema in virtual reality. Drama and more specifically romance are rejected from the get-go and seem less likely to appeal to audiences.

## **7.4. Characters and Dialogue**

Characters gain a new meaning in the VR era, because the spectator now takes part in the film as well. Experiencing your own presence in virtual reality is like the process of discerning and validating the existence of self in the natural world (Heeter, 2006). The ways in which content makers decide to insert the viewer into the story greatly influence the experience. Characters are essential to the cinematic virtual reality experience and viewers would not consider to put their time into a movie that does not have any. Dialogue is equally important, although viewers consider shorter dialogue scenes would work best. The role the spectator takes in the movie is an important component to keep in mind when devising the plot. Being just an observer or a secondary character are the preferred methods for this audience and having multiple choices in the role of spectator is important to them.

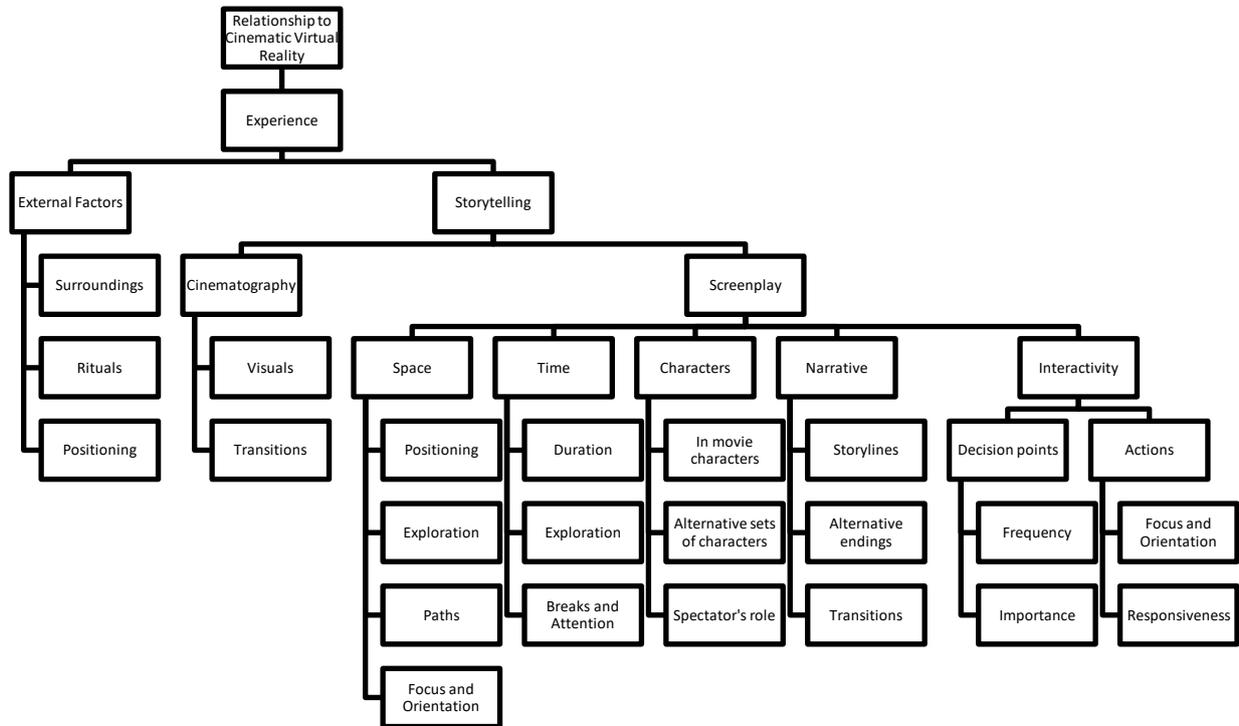
## **7.5. Interactivity**

Interactivity is a must in virtual reality. In general, the term virtual reality refers to an immersive, interactive experience generated by a computer (Pimentel & Teixeira, 1992). While computer generated accounts for the virtual character of the data, the concepts immersive and interactive explain what makes the computer-assisted experience an experience of reality (Ryan, 1999). Interactivity also happens to be the greatest problem to solve in film's jump to virtual reality. The balance between allowing the relaxing passive experience of cinema and the possibilities for interaction VR brings is quite the conundrum. This audience wants both. The ability to sit down, enjoy a movie and do nothing and the chance to take part in the action, make decisions and change the story. They feel very strongly about wanting an alternative to videogames and the separation between the game and the movie is important to them. They define it in two factors: the importance of the decisions and their frequency. If they have to constantly make decisions, it is a game. If the movie cannot function without those decisions, it is a game. The solution appears to be introducing decision points sparsely along the narrative arc and allowing spectators to choose between storylines and a default narrative path.

## **7.6. Framework for Cinematic Virtual Reality Creation**

With cinematic virtual reality, more than to establish desired content, it is important to build a relationship with the viewer, especially in the first stages of establishing a market. Cinephiles are interested in virtual reality due to its novelty, but it is likely that novelty will wear off. Virtual reality demands new devices and a specific state of mind from viewers to intake it, it is not as easy as turning on the television or opening up a laptop to watch a movie,

for now it still requires extended commitment. It is also established as an experience that would encapsulate not just the movie but external factors to that movie. Factors that weigh on how the story is going to be experienced, like the rituals that go into picking a movie, the surroundings and the state the viewer is in. All that is important when taking on the task to develop a story for cinematic virtual reality and the diagram in figure 24 shows an overview of the points to consider when embarking on the storytelling journey of cinematic virtual reality.



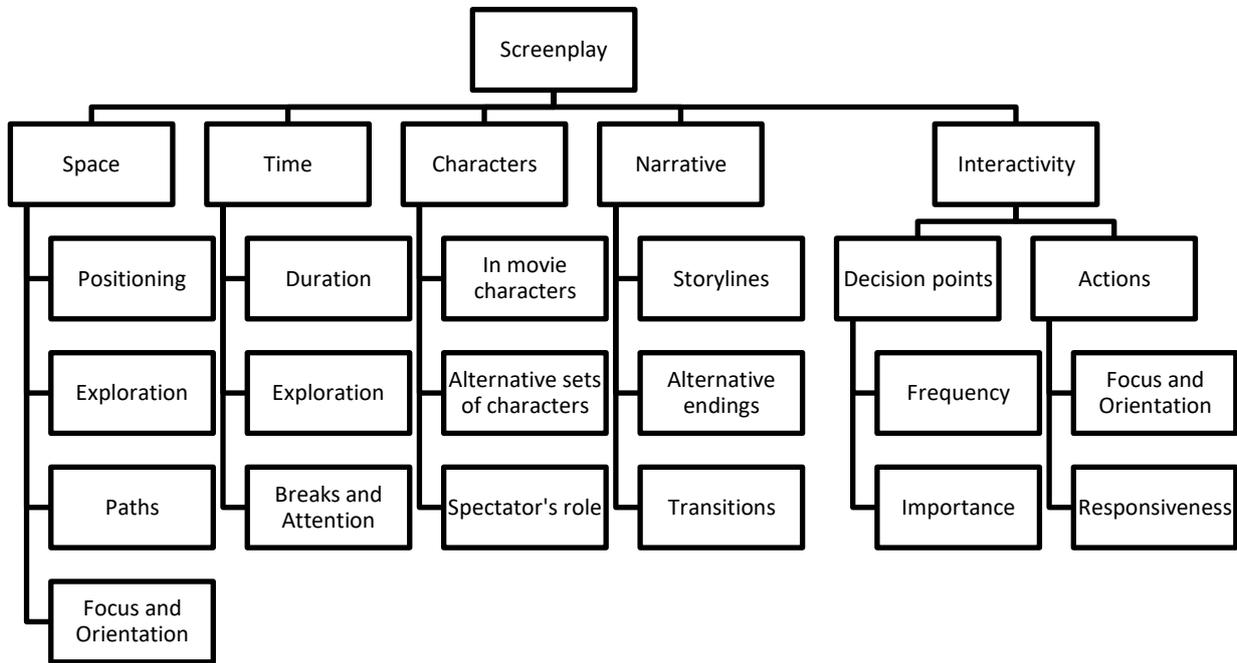
**Figure 24. Storytelling framework for cinematic virtual reality creation**

The screenplay, focused on figure 25, is the core of the storytelling process in filmmaking. To its usual dimensions: space, time, characters and narrative, virtual reality adds a new one – interactivity.

When defining the space inside the movie it is important to consider where the spectators are positioned at all times, when and how they can explore the space, what paths must they take and how to guide them there. Time for exploring is important and so is the duration the movie should have in total and if it demands breaks or not.

The task of developing characters gets three times more complex. Besides developing the main set of characters, it is important to understand how to introduce them to the spectators and

how to allow them to interact with different sets of characters. This world of characters also gains a new player with virtual reality, the spectators themselves, and it is fundamental to their experience to decide on their role in the story.



**Figure 25. Storytelling framework for cinematic virtual reality creation with focus on the screenplay processes and components**

The possibilities in narrative are endless. From alternative endings to different storylines or different sets of characters to follow. Yet, with great power comes great responsibility and each new node to the story is a new problem and each transition is a new editing challenge.

Interactivity is the great big player of virtual reality. Making an interactive movie demands for a tricky balance between cinema and videogames. The interactions viewers have may come in the form of active decisions or the actions they perform when following the movie, where they focus and where they move to and, on the other side, what responses the movie generates to their actions. How many choices the spectator makes and the way in which they affect the story are important considerations to go over when developing the different nodes to the story.

It is also relevant to think carefully how the movie answers back to the viewer in risk of arming his or her sense of presence and suspension of disbelief and break immersion.

## 8. Conclusions

Virtual reality is an important new tool for media and entertainment. It has the potential to renew film as well. Yet, for that new age of filmmaking to arise, it is important that the content can sustain and perhaps guide this new technology. This research aimed at proposing a design framework for content creators wanting to explore interactive narratives in cinema through virtual reality. It sought to achieve that by understanding what audiences need and want to watch in cinematic virtual reality and how those stories can be planned and executed.

Video games and immersive theatre have a lot to lend to this new filmmaking format through their already established narrative principles for immersive and interactive tales. Audiences are getting their first doses of 360° content through social media and news outlets and 360° video might very well become the gateway drug into virtual reality addiction, but audiences are still far from impressed by the format. Both virtual reality and 360° still benefit from the spoils of their novelty, but there is a clear need for storytellers willing to establish narrative conventions and turn these exciting new experiences into a habit for moviegoers.

Through the questionnaire process in this research, it is clear that audiences' experience with fictional stories in 360° is still short-lived and the lack of scripted narrative content is noticeable. There is excitement around the virtual reality format and the possibilities to explore virtual environments and interact with them, but the audience is unsure about the extent of its potential and the challenges it might bring.

From the interviews that followed, it was possible to understand there are important matters to the virtual reality movie besides the story within the movie itself. Positioning, the ability to explore the space and the duration of the film are relevant topics to the potential users.

Live action feature films with a clear set of characters and dialogue between them are some of the traditional features the viewers cannot go without. Action-packed genres are the preferred

escape in cinematic virtual reality but being able to relax whilst watching a movie is fundamental to the experience. Participants want interactivity, but they also want a clear separation between the movie they desire and the video game they wish to stay away from. The number of decisions made throughout the process and their importance in the film's storyline are important indicators for separating the two.

Through the group discussion, drama, and especially romance, are confirmed as the least desirable virtual reality genres. Science fiction comes at the top, closely followed by action in the best sort of flick for the virtual world. Being allowed the choice to sit down and stand up throughout the movie is important. Being an observer or taking the role of a secondary character are the preferred methods to enter the story world. The narratives constructed in the process of adapting cinema to virtual reality might come as a hybrid of filmmaking and gaming, combining the two languages into a new form of entertainment. But only time will tell if there will be a need for new lexicon and fresh conventions.

Virtual reality adds new dimensions to the filmmaking process by turning it into an experience. Considering what is going on the screen is not enough anymore, external factors like the viewers' surroundings, their rituals and positioning can make or break the immersion.

The all-encompassing nature of virtual reality elevates the visual experience, potentially allowing for rich and lively scenarios to become even more engrossing or to destroy the suspense of disbelief with images that cannot quite keep up with the demanded levels of realism.

Virtual reality transforms the classical cinematic dimensions of space, time and its characters. It does so by adding more room to explore and, at the same time, greater need for guidance, whilst opening up space for the presence of the viewer and requiring new storytelling gimmicks to assure truth in that presence. It becomes clear that the screenplay is fundamental to take full advantage of this format in cinema and without a strong script the virtual world created will quickly crumble into pieces.

Multiple storylines and alternatives endings open the floodgates to new and virtual worlds of narrative possibilities and, in the advent of these virtual worlds, interactivity becomes key. Viewers find themselves becoming more than their initial title by making decisions and taking action, turning creators' films partially into a work of their own imaginations.

This research also outlines a world of trouble for virtual reality filmmakers. Each dimension settled for the cinematic virtual reality experience is a subject worthy of research and this study barely touches the surface of storytelling for this new format. The most important future work is to go into production, try and fail, figure out what actually works and make

improvements. Content has the potential to push technology towards what it should become and to engage audiences in supporting it. Now, it is time to find ways to execute that content.

Humans are innate storytellers. Good stories are revelatory of the human condition, the human experience, the human journey. They carry truth (Bausch, 2007). If film is intended to have a role in virtual reality, it must continue to carry that truth, in the stories our societies need, want and deserve to see. The final purpose of this research is to help, guide and inspire the creators of those stories.

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# Appendix A | Questionnaire

## Cinematic VR Audience's Habits and Expectations

Companies like Facebook and Google's YouTube are promoting 360° video content in what appear to be the first steps into popularizing immersive reality in video. Understanding the habits of the general audience in the context of 360o video is important to further comprehend the role virtual reality can have in the future of film.

Cinematic VR refers to the expression of virtual reality in video or movie form. The second half of this series of questions aims for a better understanding of the audience's expectations for the future of filmmaking in this new format.

There are no right or wrong answers. Your responses are confidential and will only be used in the context of the present study. You can answer this form in English and Portuguese. If you have any queries about the current research, feel free to contact me. Thank you for your cooperation.

1. **Gender \***

- Female
- Male
- Other

2. **Birth year \***

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3. **How many movies do you watch per month? \***

- None
- 13
- 35
- 510
- 1015
- More than 15

4. **In what environments do you watch movies? \***

- Movie theatres
- Home
- Outdoors
- Other: \_\_\_\_\_

**5. What devices do you use to watch movies? \***

- Television
- Computer
- Smartphone
- Head-mounted display
- Projector
- Other: \_\_\_\_\_

**6. Where do most of your movies come from? \***

- DVD or Bluray
- Streaming services
- Television providers
- Movie theatres
- Other: \_\_\_\_\_

## 360° Video

360degree videos are video recordings where a view in every direction is recorded at the same time. They are shot using an omnidirectional camera or a collection of cameras. 360-degree videos are typically viewed via personal computers, smartphones or headmounted displays (like Oculus Rift or HTC Vive). During playback the viewer has control of the viewing direction by clicking and dragging when using a computer or smartphone or by moving his/her head if using a headmounted display.

**7. How many 360o videos did you watch in the last 60 days? \***

\_\_\_\_\_

**8. What platforms or apps do you use to acess 360° videos? \***

- Facebook
- YouTube
- Google Daydream
- Vimeo
- Other: \_\_\_\_\_

**9. What devices do you use to watch 360o videos? \***

- Computer
- Smartphone
- Google Cardboard
- Oculus Rift
- Samsung Gear VR
- HTC Vive
- Google Daydream View
- Playstation VR
- Other: \_\_\_\_\_

**10. Do you mostly watch professional or amateur 360o videos? \***

- Professional
- Amateur
- Both
- Not sure

**11. What sort of programs do you watch the most in 360°? \***

- Sports
- Travel
- News
- TV Shows
- Live entertainment
- Social media content
- Vlogs
- Movies
- Commercials
- Other: \_\_\_\_\_

**12. Do you mostly watch fiction or non-fiction 360° videos? \***

- Fiction
- Non-fiction
- Both
- Not sure

**13. What 360° movie genres do you watch the most? \***

- Documentary
- Drama
- Adventure
- Action
- Horror
- Animation
- Comedy
- Crime

- Historical
- Musicals
- Science
- Fiction
- War
- Western
- Other: \_\_\_\_\_

**14. Do you watch 360° videos by yourself or accompanied by other people? \***

- By myself
- Accompanied by other people
- Both

**15. Most of the 360° videos I watch have a narrative. \***

Strongly agree 10    20    30    40    50 Strongly disagree

**16. Most of the 360° videos I watch are scripted. \***

Strongly agree 10    20    30    40    50 Strongly disagree

**17. I would pay to watch 360° videos.**

Strongly agree 10    20    30    40    50 Strongly disagree

**18. I am likely to share 360° videos.**

Strongly agree 10    20    30    40    50 Strongly disagree

**19. I am likely to produce 360° videos.**

Strongly agree 10    20    30    40    50 Strongly disagree

**20. My overall experience with 360° video is very good.**

Strongly agree 10    20    30    40    50 Strongly disagree

**21. What are the best features of 360o video? \***

\_\_\_\_\_

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**22. Can you give some examples of your favorite 360o content and list its best features?**  
Link or describe your favorite 360o videos and explain why you believe them to be such good examples.

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**23. How do you think 360° videos could be improved?**

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**24. Can you give some bad examples of 360o content and list its problems?**  
Link or describe 360o videos you dislike and explain what is wrong with them.

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**24. Can you give some bad examples of 360o content and list its problems?**  
Link or describe 360o videos you dislike and explain what is wrong with them.

---

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## Cinematic VR

Cinematic VR is a branch of virtual reality that covers 360° 3D immersive video experiences, preferably with ambisonic audio and possibly with interactive elements. The differences between 360o video and cinematic VR are not yet consensual and the concept of cinematic VR is still not well defined.

We want to know your own views on where filmmaking and virtual reality meet and your expectations for their dynamics in the future. Remember, there are no right or wrong answers.

25. Are you familiar with any VR cinematic experiences? \*

- Yes
- No
- Not sure

26. I am interested in watching movies in virtual reality. \*

Strongly agree 10    20    30    40    50 Strongly disagree

27. What genres are you most excited about trying out in virtual reality? \*

- Documentary
- Drama
- Adventure
- Action
- Horror
- Animation
- Comedy
- Crime
- Historical
- Musicals
- Science
- Fiction
- War
- Western
- Other: \_\_\_\_\_

28. What sort of stories would you like to see in virtual reality videos? \*

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29. What role(s) would you like to have when watching a VR movie? \*

- Just an observer
- The main character
- A secondary character
- Other: \_\_\_\_\_

30. What would you consider to be the optimal duration of cinematic VR experiences? \*

You can make a distinction between different genres if you like.

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31. Would you prefer to watch cinematic VR experiences by yourself or with other people? \*

- By myself
- With other people
- Both

32. Where would you like to watch cinematic VR experiences? \*

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33. What other features would you like to include in the virtual reality film experience? \*

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**34. What changes do you hope VR brings to storytelling in movies? \***

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**35. Do you have any concerns about cinematic VR? If so, which ones? \***

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## **Invitation**

To conduct further investigation interviews and focus groups will be conducted on these matters.

We would like to invite to take part in this research. You do not need to have any previous knowledge about 360o video or virtual reality to help out. These interviews and focus groups will be conducted at Faculdade de Engenharia da Universidade do Porto (Porto, Portugal). Your responses are confidential and will only be used in the context of the present study. Your personal details are confidential as well.

**36. Would you be available to take part in an interview or focus group? \***

- Interview
- Focus group

- Both
- No

## Interviews and Focus Group

We will be in touch soon to let you know if you were one of the selected participants. Please leave your personal details and contact. Your personal details will remain confidential. If you have any queries about the current research, feel free to contact me. Thank you for your cooperation.

37. **Name \***

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38. **Email \***

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39. **Phone number**

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# Appendix B | Interview Script

## INTRODUCTION

Companies like Facebook and Google's YouTube are promoting 360° video content in what appear to be the first steps into popularizing immersive reality in video. Understanding the habits of the general audience in the context of traditional film and 360° video is important to further comprehend the role virtual reality can have in the future of film and project the desires and needs of the audience. So that those same desires and needs can guide the production of content in this fresh format.

Cinematic VR refers to the expression of virtual reality in video or movie form. This is 360° video filmed using a panoramic video camera system and played back as an equirectangular video file which allows the user to look around the scene as it unfolds.

Unlike in 3D games, however, you cannot move around the scene freely. Your point of view only changes if the camera is moved during filming. Nevertheless, new camera systems and acquisition technologies are being developed to eventually turn that into a possibility.

We are trying to figure out what audiences want to watch as we move forward with the production possibilities. So, there is plenty of room left for imagination here. There are no right or wrong answers, no yes or no questions. You can take your time and be as descriptive as you would like.

## STAGE 01

Background and contextual information, definitional questions.

(1) Cinema, (2) 360° Video, (3) VR, (4) Cinematic VR

01. Tell me about your relationship to movies.

- Why do you watch movies?
- How often do you watch them?
- What are your favorites?
- Why do you watch movies?
- Where do you rank movies among other entertainment options?

02. Tell me about your experience with 360° video.

- What do you watch?
- How often?
- How good is it?
- What you like/dislike about it?

03. Tell me about your experience with virtual reality.

- What have you seen in VR?
- In what devices?

04. Why are you interested in experiencing movies in virtual reality?

- What sort of movies?
- In what occasions?

## **STAGE 02**

Questioning and discussion is more in-depth.

Move from circumstantial to attitudinal/evaluative/ explanatory questions.

Move from general to more specific.

Contrary to the first part of the interview, which is made up of generic and general questions about the interviewee's relationship to entertainment, film and VR, the second stage is a journey through the experience of a movie. It is about analysing the moment the audience commits to when picking this art form. What determines their devotion, what makes it worth it, what sort of reward they take from it. It is also about the environment they choose to insert themselves in when doing it. And above all else it is about the story they wish to see and how it relates to their needs and intentions.

(01) The surroundings, (02) The movie, (03) The story

Let's our imagination run free for a while now. We are going to talk a bit about your personal movie experience. And we are going to jump a bit between what it looks like right now and what you think it could be or should be in VR. There are no wrong answers, we are all exploring here. Take your time, no rush in getting through these answers, I want you to be as descriptive as you'd like.

01A. You said you watch between 3-5 movies a month in the questionnaire I sent you. What determines your will to watch a movie? Why do you do it?

01B. Do you think your priorities would change if you were to watch your movie in virtual reality?

02A. Now that you have decided to watch a movie. Tell me about your surroundings. Where do you watch it? Who is there with you? What is the setup like?

02B. How would that scenario change if you were watching the movie in virtual reality? Don't just stick to the limitations, talk to me about your ideal scenario.

03A. Do you have any rituals when going into a movie? Do they vary according to the genre or type of movie you are watching?

03B. Now you are in virtual reality. Check up on your rituals. What would make your experience more comfortable? What is no longer an option? What would you want to keep?

04. Time to press play. If you were watching a traditional movie you would be (insert place mentioned in 02A). But now in virtual reality, you're in (insert 02B mentions). Look around, what does it look like? What do you look like? Are you sitting down? Are you still or ready to move around? Are there other people around? What does the room you are in look like? Does it have props? Is it especially prepared to watch a movie in VR?

05. The movie starts. What are we watching? Tell me the genre. Is it different than your usual favorite because it is VR? Why? Do you think other genres would not work?

06. What is the look of it? Is it live-action or animation?

07. Are there characters in it?

08. Is there dialogue?

09. How long is this movie going to last? Are you concerned about how you are going to feel experiencing VR for this long?

10. Where do you find yourself inside the movie? Are you still inside the experience or do you move around? Where would you move to?

11. What is your role in the movie?

12. Do you want to change locations throughout the movie? How would that transition work best?

13. Describe a scene you think would be great in VR. Take your time.

14A. We are halfway through the movie. In your usual setting, what would you have been doing so far besides watching the movie?

14B. What would you do in VR? Is there something you wouldn't be able to do anymore? Would that be a plus or would you miss it?

14C. In the questionnaire some people suggested movies in VR could have "real time chat with other viewers". How do you feel about that?

15. Now that the movie is over. Do you picture yourself doing this often? Or is it just for special occasions? Do you think VR could replace the way in which we watch movies now? Will they coexist?

### **STAGE 03**

More abstract concepts and questions.

Questions looking to the future, suggestions.

01. Can film narratives truly be passive in cinematic VR? Do we want them to be? How would you add interactivity to movies in VR?

02. I am going to give you some examples collected during the questionnaire phase and you can tell me what you think about them.

02A. "Other sensory experiences." Touching props or using props "A running mat or accessories". Smell. Temperature.

02B. Room to "explore the environment". Allowing the viewer to "choose where to go". "Putting the viewer right in the story."

02C. "The possibility to have a non-linear experience." "Multiple views and perspectives." "Multiple endings."

02D. Even further, "Allow the viewer to change the story." "The possibility to guide the narrative."

03. Where is the limit between that and video games? Do you think video games and movies will coexist in the VR medium? Will they merge into a hybrid?

04. Do you think 360 could be a step towards popularizing VR?

05. What do you envision for the future of VR? Do movies have a role in it? What role?

06. Any final comments or suggestions?

# Appendix C | Focus Group Props

The following descriptions represent the text included in the cards used to prompt the focus groups' discussions. They are organized in six stacks: genre, characters, external factors (positioning and duration) and interactivity (action and interactivity). Each card represents a quote registered during the interview process from other participants interventions.

## **Stack 01 \_Genre**

It has got to be action. I want everyone around me jumping around. Picture yourself in Game of Thrones, knights falling off their horses, blood flying around. And you are there for the all thing. That would be awesome. It is the only way of getting the full experience.

Sci-fi would be awesome. I want to be that guy inside a TIE Fighter seeing what is going on in the ship and shooting a bunch of aliens.

I think romances would be terrible. You are watching the movie and all of a sudden there is a couple making out. That is weird. Watching it on screen? I guess that is okay. But, actually being there? No, I do not think romances would work.

I want to see a comedy. Picture a snowboard competition. I am just there floating above the lane and it is a really hard course or something. And the only thing you see is a bunch of guys falling left and right. I think that would be hilarious.

## **Stack 02\_Characters**

I would not want to be floating around like some god. I am that person at the party no one speaks to and I also speak to no one, but I am someone.

I just want to watch. If it is a shooting scene, I want to know I do not have to worry about being shot.

Picture a horror movie. And I am the monster. But I never see myself, just other people's reaction to my character.

I would not want to be a character, any character. Much less the main character. I want to just chill and watch what is going on without having to do much.

I would like to be the hero. Everytime you change places, you are the center of attention. Can you imagine being in a movie where everyone reacts to your presence instead of you being the one reacting to other characters?

### **Stack 03A and Stack 03B\_External Factors**

I want to watch it sitting down. I do not care how you find a way of making me see what I need to see, but I am not standing up an hour and a half of movie.

I think you have to watch it standing up, right? That is where all the fun is at. You have to be able to move around to really enjoy the movie.

Fifteen to twenty minutes. Half an hour tops. I would end feeling noxious otherwise. They could make the movie with the normal duration in the conventional format and then adapt the story to something shorter in VR. That way I could go to the movies first and then watch the VR version as well if I felt like it would be good.

One hour and a half to two hours. The usual duration. I do not think there would be any problems. Less than that would not be enough.

### **Stack 04A and Stack 04B\_ Action and Interactivity**

Partial freedom. I think that is the ideal scenario. You can explore the space of the movie in pre-defined paths. Otherwise you will lose yourself in the story or loose part of the story.

It would be best to just get shoved wherever you needed to be. Otherwise you will lose the personal mark of the person who made the movie. You lose the art and vision of the director and I think that is important too.

You must be able to go everywhere and see everything. The scenes have no secrets anymore and you choose what matters to you in each one.

There can only be one story. If you decide on the sequence of events, it becomes a game. I do not think that makes any sense.

It is not just because you choose to listen to this character instead of that one or you let some other character die that it, all of a sudden, becomes a game. In a video game you are always making decision, the goal is to make decisions. Deciding about two or three things throughout a movie does not make it less of a movie, it does not turn it into a videogame, it just turns it into a more interesting movie.

I want to decide everything. If she gets the one or if she dies in a car crash. I want to make the ending. I want to make everyting.

Picture this. You are watching a movie with your friends and each of you is following a different storyline. And you can even comment about it amongst yourselves while watching. That would be awesome.

If I can make decisions that will influence the ending, then I have to watch the movie a bunch of times to truly watch the entire movie. I would be left thinking “what if” everytime if I did not do it. I do not think I would have the patience for that.

Multiple endings are good for the film industry. You could hit the movie theatre half a dozen times for the same movie and pay for the ticket everytime.

# Appendix D | Focus Group Script

All the focus groups were conducted in Portuguese. Therefore, the supporting script is also written in Portuguese. This script was written merely as a support tool, its execution was not strict, leaving room to improvise around each group's discussions and adjust times accordingly.

## INTRODUÇÃO

Olá a todos. Hoje vamos falar sobre realidade virtual e cinema. Vamos explorar um pouco o potencial renovado que este novo formato traz à sétima arte e perceber de que forma muda o jeito de contar histórias nesta nova realidade. Nesta fase ainda tão jovem da realidade virtual e do vídeo nesse meio, não há respostas erradas, muito menos no domínio da escrita. Por isso não se acanhem se tiverem pensamentos mais originais. Antes de começarmos, poderíamos dar uma volta à mesma para apresentações e aproveitar para assinar a autorização de registo de audio e vídeo.

Este grupo de discussão está dividido em duas partes. A mais extensa será a primeira e esta será fundamentalmente de discussão. A segunda parte pede por um pouco de trabalho de equipa, mas eu logo explicarei quando lá chegarmos.

Antes deste grupo de discussão, eu levei a cabo uma série de entrevistas. E são as respostas destas entrevistas que vão orientar a nossa discussão. Aquilo que têm nos cartões são transcrições de excertos de respostas dadas por outros participantes.

Cada monte de cartões representa um tópico. E eu vou-vos pedir que retirem um cartão e o leiam em voz alta para o resto do grupo. Depois, podem discutir entre vocês o que acham do que está nos cartões.

### **10min**

O primeiro bloco de cartões tem que ver com uma das grandes formas de classificar a história dum filme, o género. No primeiro grupo de cartões os participantes deram as suas opiniões sobre os géneros cinematográficos ideais para realidade virtual.

### **15min**

No segundo bloco falamos de personagens. Mais especificamente que personagens quem vê o filme quer ou não assumir enquanto o vê.

### **15min**

No terceiro bloco, vamos falar de questões externas ao filme. Fora da realidade virtual, na realidade bem...real. Falamos do posicionamento de quem vê o filme e da duração ideal.

### **20min**

No último bloco, falamos de ação e interatividade. O que é que podemos acrescentar ao meio tradicionalmente passivo do cinema através dum formato que é fundamentalmente interativo da realidade virtual.

## **50min**

Muito bem. Ficamos sem cartões. O que significa que estamos prontos para a última parte. O desafio aqui é criarem uma cena de filme em realidade virtual em conjunto.

## **EXERCÍCIO DE GRUPO**

Há duas dimensões importantes a considerar aqui. O filme em si e o espetador. Porque quem vê passa a estar dentro do filme, entra na equação. É importante trabalhar à volta disso também.

### **O Filme**

Sinopse da cena. O que é que se está a passar aqui.

### **Localização**

Qual a localização  
Como é o ambiente  
Como está o tempo  
Qual é a altura do dia

### **Onde está?**

Onde se posiciona na cena?  
Está no meio do espaço?  
Movimenta-se?

### **Personagens**

Há várias personagens? Quantas?  
Há uma personagem principal?  
As personagens falam umas com as outras?

### **Quem é?**

É uma das personagens?  
Está só a observar?

### **Ação**

O que é que se está a passar?  
O que é que o causou?  
Como é que a cena acaba?

### **O que está a fazer?**

Move-se?  
Está a participar da ação?  
Está a decidir alguma coisa?

# Appendix E | Consent Forms

## CONSENTIMENTO INFORMADO

Eu, \_\_\_\_\_, autorizo, por meio deste termo, a investigadora Ana Rita Jesus Costa a realizar a gravação da minha entrevista para ser utilizada como técnica de recolha de dados na dissertação da sua autoria realizada no âmbito do Mestrado em Multimédia da Universidade do Porto e orientada por Rui Rodrigues e Luciano Moreira (Faculdade de Engenharia da Universidade do Porto).

Esta autorização foi concedida mediante o compromisso da investigadora acima citada em garantir-me os seguintes direitos:

1. poderei ter acesso à minha gravação e resultados extraídos da mesma;
2. os dados coletados serão usados exclusivamente para gerar informações para a pesquisa aqui relatada e outras publicações dela decorrentes, quais sejam: revistas científicas, congressos e jornais;
3. a minha identificação não será revelada em nenhuma das vias de publicação das informações geradas;
4. os dados coletados ficarão sob a responsabilidade da investigadora;
5. serei livre para interromper a minha participação na pesquisa a qualquer momento e/ou solicitar a posse da gravação da minha entrevista.

Porto, \_\_\_\_/\_\_\_\_/2018

Assinatura do participante da pesquisa

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Assinatura do investigador responsável

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## CONSENTIMENTO INFORMADO

Eu, \_\_\_\_\_, autorizo, por meio deste termo, a investigadora Ana Rita Jesus Costa a realizar o registo de áudio e vídeo da minha participação do grupo de discussão para ser utilizado como técnica de recolha de dados na dissertação da sua autoria realizada no âmbito do Mestrado em Multimédia da Universidade do Porto e orientada por Rui Rodrigues e Luciano Moreira (Faculdade de Engenharia da Universidade do Porto).

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Porto, \_\_\_\_/\_\_\_\_/2018

Assinatura do participante da pesquisa

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Assinatura do investigador responsável

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