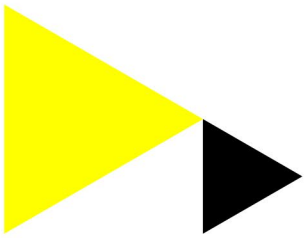
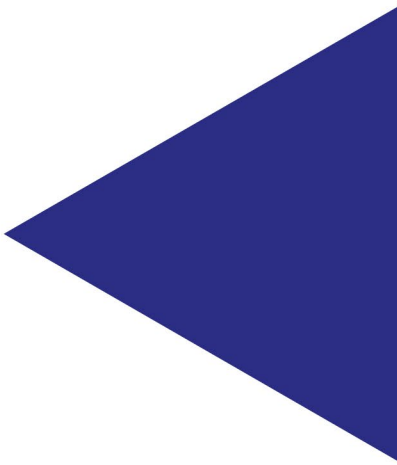
Who are you?

Voice-over perspective in surround video





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Who Are You? Voice-over Perspective in Surround Video

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Abstract. With the renewed interest in VR, new questions arise for content creators, as existing cinematic practices cannot simply be transferred. In this paper, we describe two experiments investigating which voice-over perspective elicits the best sense of presence for viewers of cinematic VR content. For the first experiment different voice-over narrations in first, second and third person perspectives were added to a VR video. This test showed that viewers preferred the voice-over in second person perspective, as this provided them with the strongest sense of presence and a feeling of 'being in the story'. In the second experiment, we used a short 360° documentary with a first person voice-over perspective, and compared it to a version of the same documentary with a second person voice-over, using a quantitative survey. In this experiment, however, no significant difference was found between the two groups of respondents. In our discussion, we explore several possible reasons that may have contributed to this outcome.

Keywords. User Perspective· Presence · Cinematic VR · Oculus Rift · Virtual Reality · Interactive Narrative Design · Voice Over

1 Introduction

As the loud marketing-driven headlines of the VR renaissance slowly disappear from magazines like *Wired* [1] and *Forbes* [2], a different challenge takes center stage: how can we produce compelling content, which keeps viewers entertained and intrigued, after the initial 'wow-effect' that VR tends to elicit, has worn off? Or, to be more exact: what do we need to do, in order to distinguish VR from film and other forms of entertainment media and thus establish VR as a viable new form? The answer, to be sure, lies with artistic choices. But while making the first steps towards developing an 'aesthetic language' of virtual reality, producers have come to realize that many questions concerning the production and user experience of VR still remain unanswered.

Indeed, we argue that concrete, transferable knowledge of interactive narrative design methods is still scarce and thus this topic demands continuing attention from scholars and practitioners. [3,4] Especially creators who explore the possibilities of 360° video content (in contrast to rendered VR content), find themselves probing a new field of media production that offers some of the characteristics of video games on one hand, while also possessing some cinematic qualities. Yet, many existing cinematic practices seem to be no longer applicable, and therefore researchers from both academic and industrial backgrounds are busy exploring the basic demands of VR production. When it comes to user experience, we have only just begun to study the ways in which users (or patients, or clients, or customers) may indeed be affected by a message they encounter in an engrossing environment, instead of observing it through the established fourth wall of movie watching [5, 6, 7, 8, 9]. It is becoming clear that there are many fundamental knowledge gaps that still need to be filled in this domain, not only about the production of surround video content, but also about the way how the resulting products may be enjoyed by various audiences. After all, only appreciation amongst the general public will eventually lead to market success. It is therefore useful to start experimenting with specific characteristics of this new kind of media entertainment, and evaluate the impact on audiences.

For the two studies that are presented in this paper, we have explored a specific topic, the narrative perspective of video footage experienced with a head-mounted display such as Oculus Rift. Because the footage has been recorded in 360°, the viewer has a strong sense of being present in the movie, in contrast to traditional movie or TV consumption. This relates directly to the theoretical concept of 'presence', that is defined as 'being in the story world' [10]. In the context of interactive narrative, we relate presence to immersion (cf. Murray's affordances [11]), especially narrative immersion as described by Ryan [12]. She sees narrative immersion as an important aesthetic goal for interactive narratives. According to Ryan, this immersion can take at least three forms: spatial, temporal and emotional. While most traditional media are linked to emotional presence (for instance being immersion in a book, or a movie) that builds up over time, a VR experience immediately offers a sense of spatial presence. From the perspective of traditional film production, the problem is how to adjust to this condition, or more concretely, how to present stories for surround video content that suit the sense of presence that users experience. One solution to this problem is by adding voice-over narration: the voice of someone talking who is not visible in the video [13]. In order to use voice-over narration effectively, however, the first question that needs to be answered is about the perspective in which this voice-over should be talking: first person, second person, or third? In the next sections, we first give a short overview of voice-over in films, perspective in interactive experiences like video games and presence in virtual reality before we present the results of our experimental study on this topic.

2 Voice-over and perspective

Movie critics and storytelling experts have usually been suspicious, if not downright disapproving, of using voice-over in movies. McKee is quite explicit in his aversion to it: the trend toward using telling narration throughout a film threatens the future of our art [14]. He admits that someone like Woody Allen may have the gift to use counterpoint narration in a delightful way, but dismisses the efforts of most other scriptwriters: "it takes little talent and less effort to fill a soundtrack with explanation" [14]. After all, in a métier where 'Show, don't tell' is the basic rule, adding an extra voice to a scene is seen as a cheap shortcut and almost equals to admitting one's own woeful incompetence.

However, two particular advantages of using voice-over can be identified [15]: the first is the unique opportunity for intimacy that it provides, by offering insight into the character's mind. The second is the possibility to create irony through the clash of verbal comments with the visual track. Tabarraee defines the voice-over simply as: "[…] the voices in fiction film, whose sources are absent from the image frame" [16], but one specific kind of voice-over that immediately defies the previous definition, is the one in which the protagonist speaks straight to the camera, as is for instance the case in *High Fidelity*. [16]

Here the source of the voice is clearly present within the frame, but by directly addressing the viewer, the protagonist steps out of the frame of the narrative. Another recent example of this type is seen in the popular HBO series *House of Cards*, in which politician Frank Underwood also addresses the camera directly, adding both insights into his actions and motivations, as well as irony to the story as it unfolds.

When looking at the position in time that a voice-over can address, Laamanen [17] makes the distinction between a voice that reflects back on the films' events from any point in the future, and a voice-over that speaks from a 'timeless present'. In her analysis of the use of voice-over narration, Kozloff [13] makes the distinction between first person narrators and third person narrators. A first person narrator can be either a character within the film that addresses the viewer from his or her particular point of view, but it can also be a nameless, omniscient narrator [13]. The third person is often also omniscient, and both can add new insights, intimacy and irony to the scene. It is remarkable that the second person perspective has hardly been the topic of scholarly analysis. One notable exception within recent history has been the by interactive fiction (IF) offline text adventure games like *Adventure* [18] and *Zork* [19]. Second person was also used in text-based online MUDs and MOOs. In the latter virtual worlds, that by now have gained a somewhat obscure legendary status, the user was often addressed from an second person perspective. In these examples, the text on the screen did not only describe the position of the avatar in the textual world and the characteristics of the specific location, but often also added insights into motives or the inner state of mind that the character was to experience. *LambdaMOO* [20], has in the past been a popular object for the examination of virtual-world social issues, for instance by [21]. Here, the player 'woke up' in a dark closet, gently encouraged to explore the adjoining spaces with the following text:

> *You open the door and leave the darkness for the living room, closing the door behind you so as not to wake the sleeping people inside.* [20]

For our current explorations into VR narrative perspectives, we intend to reconsider this specific focalization, to find out whether it may have a new relevance in current media environments.

3 Presence and immersion in VR

An important concept that comes up in both academic and industrial debates around the use and creation of VR is *presence* and, in relation to that, *immersion* [11,12]. The term presence is usually defined as the 'sense of being there' [12]. Roth differentiates immersion from presence by defining immersion as an objective criterion which depends on hardware and software [22]. Presence is subsequently defined as the psychological more subjective sense of being in the environment, and mainly influenced by the content of the mediated world. Immersion could be seen as a quality of the medium, in this case a VR movie, while presence is a characteristic of the user experience. North and North [23] have pointed out the importance of evaluating the user experience within the design and development of VR systems. Specifically, they identify an increased need to conduct empirical studies in which the factors that create a higher sense of presence are investigated. When a producer of VR content wants to evaluate the immersive quality of a specific experience, or compare two or more different solutions for problems that occur during production, one of the possible ways to accomplish that is to measure the amount of presence that the user experiences. In the standardized assessment toolkit that Roth developed [24] to measure user responses to interactive stories, presence is accounted for with the following items (short scale version):

1. I felt like I was a part of the environment in the presentation.
2. I felt like I was actually there in the environment of the presentation.
3. I felt as though I was physically present in the environment of the presentation [24]

An important online source on the development of knowledge about production and reception of virtual reality experiences is the website of the Oculus Story Studio. In their blog, the members of the VR team write about their latest projects, and specifically about the challenges they encountered while creating them and the lessons they learned from it. Many of these insights are focused on the links between presence, narrative and interactivity and how they sometimes seem to exclude or overrule each other in VR. In November 2015, an article was posted on what author Matt Burdette named the "Swayze effect" [25]. This term refers to the way that a user may feel like a ghost when he or she is immersed in a virtual reality experience, and feels related to the characters that inhabit it, but at the same time is ignored by them. It seems that the absence of viewer agency creates an invisible wall between the viewer and the virtual environment. Or, as Burdette states: "The actors ignore you, the world remains indifferent to your presence, and yet you are so undeniably there." [25]

In the next section, we will describe our first study in which this sense of presence was used as a qualitative measurement to compare different versions of a VR video. In the second study, we will then proceed to investigate the possibility of overcoming the *Swayze effect* by adding an appropriate voice-over to a 360° documentary.

4 First study

Taking into account that voice-over can add an important element to a movie, that is intimacy, we want to compare how different perspectives can add to the immersive experience that 360° video can provide. We compare the first and third person perspective, but we also want to explore the position of a narrator that is common in gaming but has thus far hardly been used in film, that is, the second person narrator. We choose to present all three voices in the 'timeless present', that is, speaking in the here and now, and we want to find out which narrator position would best suit the particular point of view that cinematic VR offers, and adds to the viewers experience presence, that is: of being 'in the middle of the movie'.

4.1 Method

For this experiment, we wanted to explore the impact of different voice-over perspectives, experienced while watching a movie in a surround video system such as Oculus Rift. We therefore recorded three different audio tracks of the same story: one was told in the first person, one in second person and one voice-over in third person. The video footage we used remained exactly the same in all three versions. It consisted of a boat ride through the Amsterdam canals. The viewer can look around and see the streets, the water and other boats. In the back of the boat is a man, who does not talk and does not react to the camera, but quietly guides the boat through the canal. The story we used was written by a professional screenwriter, and inspired by Greek mythology. In the text, the protagonist is a famous skater who realizes that he has just broken his neck and died while doing a trick, and is now carried to the hereafter by a ferryman. For the three recordings of the three different perspectives, the following scripts were used:

First Person	Second Person	Third Person
I opened my eyes and to my amazement I was not at the skate park anymore. Instead I was on this strange boat and I had no idea what I was doing here. When I looked down, I noticed that my body was gone. When I looked behind me, I saw a guy. He seemed friendly, smiling and all, but he was completely silent.	*You open your eyes and to your amazement you're not at the skate park anymore. Instead you're on this strange boat and you have no idea what you're doing here. When you look down, you notice that your body is gone. When you look behind you, you see a guy. He seems friendly, smiling and all, but he is completely silent.*	*Fredric opened his eyes and to his amazement he was not at the skate park anymore. Instead he sat on this strange boat and he had no idea what he was doing there. When he looked down, he noticed that his body was gone. When he looked behind him, he saw a guy. The guy seemed friendly, smiling and all, but he was completely silent.*

Table 1: The first lines of the scripts that were recorded to experiment with voice-over perspectives

The experiment was conducted with 21 respondents, who volunteered to take part in this study. The sample consisted of eleven male and ten female respondents, between the ages of 20 and 34. The experiment was conducted in a room at the Medialab at the Amsterdam University of Applied Sciences. The respondents first received a short instruction on the use of Oculus Rift, and then were shown the same video twice, but with two different audio tracks. The versions were randomly assigned, which meant that respondents watched either first perspective voice-over and second perspective voice-over, second and third, or first and third person, in a random order. Afterwards, the sense of presence that the users had experienced was examined by asking them to compare the two versions. They were confronted with the three items from assessment toolkit by Roth [24] and asked to rate these statements for both the videos they had seen. After that, they were asked to determine which of the two versions had given them the strongest sense of being physically a part of the environment, and of being *in the story*?

4.2 Results

Our experiment showed that of the respondents that were given a choice between second and first person perspective, and second and third person perspective, a large majority (75%) preferred the second person perspective. After the test, the respondents were asked to reflect on their experiences and to discuss the differences they had perceived when watching the two variations of the test scene. Many respondents stated that the third person narrative felt more like listening to an audio book, and that this perspective gave them the sense of just having to sit back and listen. Apparently the third person perspective did not stimulate them to engage or to look around, and they did not feel actively involved in the movie. With the first person perspective, on the other hand, many respondents indicated that they had a hard time identifying with

the voice that was telling the story. It remained difficult for them to accept that this 'I' that was talking, was referring to the viewer himself or herself, instead of to an anonymous narrator that was talking from a position outside of the screen. With the second person perspective, however, a majority of the respondents experienced a strong sense of presence. They indicated that in this version, the visual perspective that was provided by the surround video content seemed to relate closely to the perspective that was given by the voice-over narration. This version also triggered them to look around and actively engage with the surround video content. In short, the second person perspective provided the strongest sense of actually being part of the story.

5 Engagement in documentary VR

In the previous sections, the focus has been on VR experiences that lean towards drama and fiction. However, amongst the producers of traditional news media there is also a strong interest for the use of VR for documentary purposes. De la Pena et al. have introduced the concept and discussed the implications of immersive journalism, which they describe as the production of news in a form in which people can gain first person experiences of the events or situation described [26]. The ability of current VR technology has lead filmmaker and digital artist Chris Milk to state that VR can be considered as an 'empathy machine' [27]. However, this perspective has gained considerable criticism, for example from Janet Murray, who notes that empathy comes from the experience of carefully crafted works and not as an automatism from a particular platform [28].

Earlier in this paper, we introduced the so-called *Swayze effect*, that may occur when a user feels immersed in story world, but at the same time left out, as the story world itself and the characters inhibiting it seem completely indifferent to his or her presence. To overcome this perceived clash between presence and engagement, producers of VR experiences need to develop strategies that give the viewer a sense of urgency within the story world, even if they are not directly addressed by the characters within that world. In dramatic productions, this feature may be incorporated within the narrative, that may contain a plausible explanation for why the viewer is not made part of the action. However, with documentary VR, other means may be needed to prevent the user from feeling neglected in a world that he or she is actually expected to connect to and empathize with.

Elaborating on the experiment on voice-over perspective, we proposed to explore the possibility of overcoming the clash between engagement and presence in documentary VR by adding an experimental voice-over that addresses the user from a second person perspective. In the next section, we will describe our second study.

6. Second Study

Our second study was set up in cooperation with VPRO, a Dutch national television broadcast company, and IDFA, the International Documentary Festival in Am-

sterdam, in November 2016. For this experiment, 360° footage was used that had been shot on location amongst an Amish community in the US, by VPRO television. In the fragment, that lasts about 5 minutes, the viewer is introduced to Norman Yoder, who talks about his life in the countryside and the way the Amish community handles the pressures of modern communication technologies. In the original version, Yoder addresses the viewer from his own first person perspective. For the experiment version, a new voice-over was written and recorded that contains the same information, but addresses the viewer directly in a second person perspective (table 2).

First Person	Second Person
I'm Norman Yoder, and my wife Annie. We have three children. *And I don't understand all that media, Facebook, Twitter and all that.*	*Your companion introduces himself as Norman Yoder. He and his is wife Annie have three children. Norman informs to you that he doesn't understand all that media such as Facebook and Twitter.*

Table 2: The first lines of the original **voice**-over as spoken by Norman Yoder, and the experimental version that was written in a second person perspective

During three days of the IDFA festival, the experiment was conducted in the IDFA DocLab, a space within the festival that is devoted to explorations into new media and VR. The two versions of the Amish video were installed on two Samsung Gear VR Headsets. Visitors of the festival were invited to take part in the experiment, and were randomly assigned to watch the original or the experimental version. Afterwards, they were asked to fill in our questionnaire.

Elaborating on our insights into the use of voice-over perspective in VR, as described in the first part of this paper, we expected that the experimental version may give users a higher sense of presence, and may thus help in overcoming the *Swayze effect*, as was discussed in the previous paragraph. Thus, we reached the following two hypotheses:

H1: Participants feel more addressed in the 360° documentary using second person voice-over compared to the first person version.

H2: Participants experiencing the second person voice-over have a higher sense of presence in comparison to participants experiencing the first person version.

6.1 Method

A total of 119 participants (62 males, 57 females; average age M = 36.24 years, SD = 14.34 years) attending the IDFA festival event were randomly assigned to one of the two voice-over conditions, watched the documentary for 5 minutes.

Subsequently, they completed a questionnaire on user experiences, which includes short scales on the following dimensions: usability, enjoyment, personal meaning (eudaimonic appraisal), attention, spatial presence, social presence, perception of being addressed. These dimensions were measured with a 5-point-Likert scale ranging from 1 (totally disagree) to 5 (totally agree), using between four and six items each. Reliability scores for all scales were satisfying (see table 3). Participants had a moderate degree of computer game literacy (M = 2.38, SD = 1.09) and VR literacy (M = 2.32, SD = 1.00, both on a scale from 1, no experience, to 4, a lot of experience).

6.2 Results

Between-subject comparison by means of independent samples t-tests revealed that the voice-over manipulation had no effect on the perception of being addressed (see table 1). Therefore, our first hypothesis is rejected. As a possible result of not feeling addressed, neither social nor spatial presence was significantly higher for the second person voice-over condition. Thus, H2 has also been rejected. Albeit not significant, we see a tendency of better ratings for the second perspective voice-over condition in regard to the level of attention and spatial presence.

	Control group		Voice-over			
Exp. dimension	M	SD	M	SD	*p*	Rel. α
Enjoyment	3.91	.58	3.93	.63	.860	.78
Attention	3.86	.64	4.11	.73	.063	.84
Meaning	3.04	.63	3.01	.74	.835	.84
Spatial presence	3.12	.90	3.45	.82	.079	.89
Social presence	2.75	.77	2.75	.68	1.00	.78
Feeling addressed	2.82	.54	2.97	.49	.121	.67
Usability	4.05	.47	4.09	.56	.630	.69

Table 3: Group comparison with mean values (M), standard deviations (SD), significance level (p), and reliability of the scales (α).

A general assessment of the experience based on all participants revealed that overall enjoyment, attention and usability were rated positively (around 4 on the 5-point Likert scale). We conclude that participants liked the experience, had no usability issues and were paying attention to the content (festival events can be loud and distracting, which was apparently not influencing the experience and results). However, perceived spatial and social presence and the perception of being addressed were all around the neutral mark (score of 3).

Independent-samples t-tests show that participants with VR experience (N = 81, M = 2.97, SD = .50) felt significantly more addressed than people without previous VR experience (N = 27, M = 2.65, SD = .48; p = .002), regardless of the voice-over ma-

nipulation. Furthermore, participants without VR experience (M = 4.20, SD = .46) rated their enjoyment significantly higher compared to those with previous VR experience (M = 3.82, SD = .59; p = .001).

7. Conclusion, discussion and future research

Reflecting on our previous discussion of voice-over in movies, and how users were addressed in early video games, we may conclude that the use of voice-over narration seems a good solution to connect the viewers visual experience of a 360° video to the story that is told. While the use of voice-over has been frowned upon in movie-making circles, the new kind of 'presence' that 360° video content provides indeed seems to overrule previous 'laws' of cinematic storytelling. When looking back at the use of narrator perspectives in different media, it seems remarkable that the second person perspective that was already used in early text adventure games, but is not very common in films, now seems to provide a good way of engaging the user in the narrative that is being presented. This means that in the new domain of interactive storytelling that has opened up with the use of surround video content, principles of video gaming and movie watching can be productively combined, creating new kinds of media experiences for new audiences.

Our qualitative study indicated that viewers of 360° documentaries prefer the second-person perspective, as the first-person perspective creates a mismatch between the need for identification and the attributed voice of a stranger. In the quantitative study, one condition featured a second perspective voice-over instead of the original audio, which was presented to a control group. Results showed that this manipulation had no effect on the perception of being directly addressed by the voice-over and did not affect presence as hypothesized. However, we found that participants' general VR literacy plays a crucial role for their user experience. Participants with previous VR experiences felt significantly more addressed (independent from the voice-over manipulation) than those without any VR literacy. Participants that experienced VR for the first time were most likely focusing on experiencing different aspects of the system without paying much attention to the voice-over perspective. We therefore hypothesize that, once this group gets more familiar with VR systems, the novelty effect fades and nuances in the content, in our case the voice-over, should become more relevant. Nevertheless, the majority of our participants had prior VR experiences and still were not significantly influenced by our voice-over manipulation. Based on the results of our current experiment, we can therefore not claim that the so-called *Swayze effect* may be overruled by adding a voice-over to create an extra layer of intimacy that connects the viewer to the virtual world.

Another possible explanation for our results is a negative effect on the impression of authenticity of the interview material caused by replacing the original audio with a voice-over. In a study on the use of voice-over in television shows, Semmler, Loof and Berke [29] showed that narration by the title character was significantly associated with increased parasocial relationship experience. This could indicate that in the experimental condition of our study, in which users were not directly addressed by the

main character, they may have experienced a considerable reduced parasocial connection. Our results, however, do not indicate a loss of enjoyment and perceived meaningfulness due to the exposure to the second perspective voice-over.

The specific characteristics of the group of respondents that were involved in in the second experiment may have also had impact on the results. After all, this study was conducted during an international documentary festival, and many of the respondents who watched our experimental footage and filled in our questionnaire, may have been looking at the presented material with a much more professional and critical eye, focusing more on the aesthetics of the documentary material itself than on characteristics of the VR 'carrier' that the material was presented through.

Another explanation for the lack of clear results from our second study may have had to do with the survey itself, and especially with the items of the scale that measured presence. After all, the items that we used to measure the amount of presence that viewers experienced were not specifically developed for use with virtual reality. For instance, it might be that the scales that were used focus more on emotional presence, than on spatial presence. Further investigations will be needed to reconsider the relative value of these scales within a VR context.

Addressing the user directly is a promising way to start as our first study shows. However, a third-person perspective might work as well and create a different experience. This might be beneficial for documentary productions, which might want the audience to remain in some distance to a given character. In our next experiment, we aim to implement the findings of the current study, and use a voice-over from a second person perspective to guide the viewer through the narrative. In this project, however, we will add interactive elements to create an experience that is one step closer to fully-immersive interactive narrative. In this project, so-called interactive hotspots will be implemented in the video, that are triggered when the user looks at them for some time. The next research question we will explore is to find out how voice-over narration may guide the user towards the points in the video that he or she needs to look at in order for the story to proceed, without disrupting the sense of 'presence' that is induced by the surround video experience. Within this study we also aim to explore differences between respondents in their reactions depending on previous experience with VR, or video games. Future studies should also examine possible effects on character believability and perceived authenticity. Mixed audio, combining scenes with second perspective voice-over (e.g. to directly address the audience and to provide extra information) and original audio (to preserve the authenticity of the material) might be a fruitful design approach.

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