

# The Audience is All in (or Not): Perceptions of the Affordances of Journalistic 360° Video

Jessica Kunert 

School of Journalism, Johannes Gutenberg University Mainz, Mainz, Germany

## ABSTRACT

This study shows how the affordances of journalistic 360° video shape and interact with audience perceptions. 360° video is a form of immersive journalism that allows news to be experienced from a first-person perspective while surrounded by a digital space, with the goal of achieving immersion. It is asked how low-level affordances (i.e., storytelling elements of immersive journalism) are perceived and connected to imagined affordances of 360° video, as well as high-level affordances (i.e., communicative outcomes). In-depth interviews were conducted with 37 German news consumers between the ages of 23 and 80, who were shown two videos on different topics and with two headsets of different sophistication. The study found that the low-level affordances of navigating the self in the story (use of a virtual body, direct address) were often perceived as confusing. Moreover, the use of the spatial narrative (use of the 360° space, unusual perspectives) clashed with interviewees' ideas of how journalism should be presented. The high-level affordance of immersion was achieved nevertheless; however, fears of manipulation were expressed. When the immersion was successful, interviewees felt as they were active participants in the digital world. All in all, careful tailoring of storytelling can help create fruitful immersive journalistic experiences.

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## Introduction

Journalism as an experience is the promise of immersive journalism. It uses storytelling techniques and innovative technology that allow audiences to experience and interact with news by putting them directly into the news world “that we used to watch on the screen” (Nash 2018, 97). The term “immersive journalism” was coined by Nonny de la Peña as “the production of news in a form in which people can gain first-person experiences of the events or situation described in news stories” (de la Peña et al. 2010, 291). The audience gains power over how they follow a news story by making their own decisions about where to focus their attention—they are not passive, but engage in “storyliving” (Mabrook and Singer 2019, 2098) and are offered “a sensory experience of reality”

**CONTACT** Jessica Kunert  Jessica.Kunert@uni-mainz.de

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(Sirkkunen and Uskali 2019, 1). This particular perspective creates a new sense of presence, which then allows for a deeper emotional connection of the audience to the content (Gynnild et al. 2020, 2), as well as a deeper understanding and even recollection of the events (Goutier et al. 2021, 1656; Sirkkunen and Uskali 2019, 1). One form of immersive journalism is 360° video.

The terms used to describe immersive journalism are often not clearly defined. The distinction important for this study is between “Virtual Reality” [VR] and “360° video”. VR provides audiences with an open, often computer-generated world that they can explore and manipulate (e.g., open doors). 360° video allows audiences to look around, but does not offer interactivity or self-exploration, only a linear narrative and thus “minimal agency” (McRoberts 2018, 113). Both are used in journalism, but with a strong emphasis on 360° video due to production costs and time. The way 360° video works is familiar from video games: Facts are visualized in three-dimensional images using omnidirectional cameras (van Damme et al. 2019, 2056). The recipients find themselves in a digital space that surrounds them and in which they can choose their point of view in a first-person perspective (Shin and Biocca 2018). However, they are “in a fixed position within the recorded scene” (Rose 2018, 134), which means that there is only an “illusion of choice” (Dooley 2017, 170). Interaction is limited, as the audience essentially watching a video, albeit with different points of view; thus, 360° video is also referred to as “linear VR [Virtual Reality]” (Green et al. 2021, 808). For this intense and emotional experience of presence in digital space (Baía Reis and Coelho 2018), a headset can be used to fully immerse the recipient, although the degree of immersion depends on the headset (e.g., made of cardboard or as special glasses) and storytelling techniques (e.g., chosen point of view) (de Bruin et al. 2022). With 360° cameras and corresponding headsets now relatively inexpensive, such videos are increasingly being produced and consumed (Mabrook and Singer 2019). However, as the production of 360° video is still complex, the format is more suited to documentary-style pieces than timely news, as well as to topics that promise an exciting, unexpected backdrop or topic to watch (Vindenes and Gynnild 2020).

Immersive journalism has been making headway into journalism since around 2015 and was even part of a series that won the Pulitzer Prize in 2018 (Gynnild et al. 2020, 1; Vázquez-Herrero and Sirkkunen 2022, 2). In addition, outlets like the *New York Times* have produced immersive journalism formats extensively, even sending out cardboard headsets to all their subscribers in 2015 so that they could try out their new app (NYT 2015). In Germany, the public service media offer 360° experiences, for example for history, culture, or nature topics (e.g., ARTE n.d.; ZDF n.d.). However, many productions are outsourced to production companies which specialize in immersive journalism and then bought by media houses (e.g., IntoVR, NowHere Media). Moreover, education providers such as “Reporterfabrik” (German: “reporter factory”) offer hands-on courses for developing and producing journalistic 360° video. Even if 360° video is not yet widely used, and even if the headsets are still quite expensive, immersive journalism has intriguing characteristics that raise many questions about the development of journalism formats, especially in its added value of supposedly being “a much more faithful duplication of real events” (de la Peña et al. 2010, 299) than traditional formats.

Through 1.5 h in-depth qualitative interviews with 37 news consumers across a wide age range, this study seeks to examine the perception of immersive journalism while

focusing on the consumers' evaluation of the interaction with the affordances of journalistic 360° video.

The study asks:

**RQ:** How do the affordances of journalistic 360° video shape and interact with the perceptions of the audience?

I begin by describing the affordances approach in relation to storytelling, before presenting how storytelling is used in immersive journalism and how journalistic 360° videos have been perceived by news consumers in previous studies. I then explain the methods used, move on to the results and discussion, and end with the study's conclusions.

## Affordances Approach and Storytelling

The affordances approach in media and communication studies allows to describe and analyze how people—media users—interact with media technologies and their features and which meanings they may ascribe to these (Bucher and Helmond 2018; Gaver 1991, 80; McGrenere and Ho 2000). Thus, the affordances approach puts the users' "needs and abilities" (Gaver 1991, 79) in the center.

The affordances approach is appropriate for assessing the perception of 360°, because, as Gaver (1991, 79) says: "Designs based primarily on the features of a new technology are often technically aesthetic but functionally awkward"—which might also apply to 360° video in journalism and which may lead to the videos not having the impact they were desired to have. McGrenere and Ho (2000) also distinguish between the "usefulness" (for the user) of the medium and its "usability" (i.e., the appropriate design of features), both of which should be considered for a successful use, and both of which are discussed below with regards to the characteristics of immersive journalism.

The affordances approach is used in quite a few disciplines in various ways, from its origin in psychology to its use in designing technologies, which is why a distinct conceptualization of "affordances" is needed for this study (McGrenere and Ho 2000; Nagy and Neff 2015). For this study, I define the affordances in terms of the design of the technology through journalistic storytelling features and devices (see Norman 2016) (i.e., low-level affordances), the imagined affordances that may arise, and the communicative implications of using the medium (i.e., high-level affordances) (see Bucher and Helmond 2018).

In their basic sense, affordances "furnish" the given environment (Gibson 2016, 119), which is in this case the digital space of 360° video. Thus, the affordances can be described as the features of a particular medium, i.e., the design and properties, and how these prompt the users to act and shape their behavior (boyd 2010; Norman 2016). These *perceived affordances* (Norman 2016) point to how media should be designed to encourage the action desired by the designer, in this case the journalists. Focusing on the features, i.e., on the materiality (Bucher and Helmond 2018), means focusing on "low-level affordances" that encourage users to take certain actions while using the medium. This type of affordance is crucial for this study as journalists make use of storytelling devices to guide the user in the 360° environment, and have specific actions in mind when filming. If the users do not follow the designed storytelling, the message may not get across, which is why this study analyzes how the users perceive the features and their usability, i.e., the intended possibilities for reacting to the medium, for journalism.

I focus on the following low-level affordances (i.e., storytelling features) that are specific to 360° video (as described in detail below):

- The self of the audience in the story: use of a virtual body (e.g., de la Peña et al. 2010), direct address of the audience as a participant of the story (e.g., Bösch, Gensch, and Rath-Wiggins 2018, 105),
- The spatial narrative: use of unusual camera perspectives (e.g., Sirkkunen et al. 2020, 17–18), and the use of the 360° digital space (Feyder and Rath-Wiggins 2018, 61).

Beyond the mere perception of the features, the interaction with the medium is captured by the concept of *imagined affordances*. This concept analyses the interplay between the designer's intentions and the interpretations of the users. These interpretations are shaped by the users' expectations, beliefs, emotions and attitudes towards the medium, which may not be "fully realized in conscious, rational knowledge" (Nagy and Neff 2015, 5), as well as their "culture, social setting, experience and intentions" (Gaver 1991, 81). These pre-conditions and -conceptions thus play a major role in how the medium is perceived and what behavior is induced. Moreover, Nagy and Neff (2015, 4) claim that also the designers—in this study the journalists—are shaped by their expectations and attitudes, and design a medium for "imagined users", which might result in a distorted image of the audience.

Moreover, on a more abstract level, so-called high-level affordances demonstrate "the kinds of dynamics and conditions enabled by technical devices, platforms and media" (Bucher and Helmond 2018, 239), i.e., the consequences of the media use. This means that these high-level affordances focus on the communicative outcomes of the technology use, the following altered practices, thus going beyond individual features and focusing on what is made possible by the media use (Schrock 2015). For 360° video, outcomes that occur within the media use episode and that I focus on in this study are (both explained below):

- Immersion in the digital world (e.g., Baía Reis and Coelho 2018, 1093).
- The illusion of active participation in said digital world (e.g., McRoberts 2018, 105–106).

Going beyond the media use episode, the concept of *social affordances* explores how social interactions and the social structure are shaped by the studied technology use (Bucher and Helmond 2018). In the case of this study, I ask about the consequences of the use of 360° video for journalism for the social environment.

As claimed by boyd, both low-level and high-level affordances need to be considered together, as "the properties of bits" shape "the connection between bits", and thus the interactions between the users, the features, and the communicative consequences are a crucial part of the media experience (boyd 2010, 39).

All in all, the affordances approach allows us to analyze the user experience of 360° in the journalistic context in a multifaceted manner, looking at the reception of design features as well as the consequences of interacting with them. The concept also allows to take into account the different experiences of the interviewees, as the affordances concept claims that the interactions with the medium are not uniform, as the users

may react differently to these affordances, and ascribe different meanings to them (Bucher and Helmond 2018).

## Storytelling in (Immersive) Journalism

Storytelling devices are a staple in audio-visual journalism, especially in the ones that make use of narration. Regardless of the content and of the format, the key points of a narrative—and with it, the journalistic ethos of telling the truth in an ethical way (Wu 2023, 394)—stay the same. These are the key devices in narrative journalism: setting the scene with an anecdote, describing events in sequential order, and more detailed forms such as “setting, point of view, characterization, personalization, conflict, dialogue, suspense, climax, metaphors, or irony” (Tenenboim-Weinblatt 2009, 953), along with a suspenseful dramaturgy, a description of the place of action, and a fitting choice of language (Sturm 2013, 20–21). Then, the provision of verifiable and “objective” information and using these narrative elements of storytelling are not to be seen as opposites in journalism, but as interdependent (Wahl-Jorgensen and Schmidt 2020, 264; see also Schudson 1978). Thus, storytelling devices can also be observed in hard news, as the use of narratives can be found on a “storytelling continuum” (Tenenboim-Weinblatt 2009, 953). The characteristics of a narrative also apply to immersive journalism, but this type of journalism makes use of them in a way specific to the medium and its affordances, especially the point of view and the setting (Feyder and Rath-Wiggins 2018, 58; Wahl-Jorgensen and Schmidt 2020, 268).

Nonny de la Peña succinctly summarizes the importance of storytelling for immersive journalism: “if the storytelling sucks, it is not going to work at all” (in Goutier et al. 2021, 1665). While the narrative structure or storytelling principles are on a basic level similar to those of other narrative media (Dooley 2017, 165; Mabrook and Singer 2019, 2097), they have to be adapted to the medium’s conditions, i.e., the inherent sense of place and emphasis on emotion, meaning that a new “screen grammar” (Dooley 2017, 165) has to be found. This is a process of trial and error—and should adhere to journalistic norms (Goutier et al. 2021, 1649).

The journalist is “not a conductor [anymore], they offer a world of experience” (Feyder and Rath-Wiggins 2018, 58; translated from German), meaning that *the audience becomes a part of the story* (Shin and Biocca 2018), which is probably the biggest difference to traditional audio-visual journalism. Thus, the audience must negotiate their “self” in the story, and be directed as to what their role is supposed to be, for example by directly addressing them as a participating character in the video. For the audience, it must seem plausible to be in this space, which can be reinforced with medium-specific storytelling-devices, such as allowing the viewers to see themselves through a virtual body in the digital space, a “transformation of the self” (de la Peña et al. 2010, 298; Kang et al. 2019, 296); as for the virtual body, it can be shocking if it is missing (McRoberts 2018, 112). The audience may then have a “response-as-if-real” (RAIR) (de la Peña et al. 2010, 293), which means that while they are aware what they are seeing is not real, they still feel as if they are there (Baía Reis and Coelho 2018, 1093), which, in the case of tourist destinations, might even cancel the need for experiencing the issue at hand in real life (Leotta and Ross 2018, 151). Whether it is the first- or third-person perspective, the audience may thus feel that they are part of the digital space, as the technology fades away in

their perception (Goutier et al. 2021, 1652; Kukkakorpi and Pantti 2021, 787); they then “create a perceptual illusion of telepresence” (Kang et al. 2019, 296).

In order to take advantage of the 360° view, the *spatial narrative* must be at the forefront when composing the video or experience, i.e., taking into account the lack of frames and not being able to select exactly what the audience sees (Feyder and Rath-Wiggins 2018, 61), as it determines how the audience perceives the story and the characters (Kukkakorpi and Pantti 2021). This new screen grammar must consider that audiences may simply look away, essentially ignoring the story they are supposed to be following, perhaps because they don't feel included enough in the environment (Witmer and Singer 1998). These effects have to be accounted for in the storytelling, and might become quite technical, such as through choosing camera perspectives that are not too close and not too far away for the viewer, but which are unusual enough so that the audience is willing to follow the video, and which are located in a field in which the audience is willing to move their head (Feyder and Rath-Wiggins 2018, 62–64, 68; for a comprehensive list of modalities in immersive journalism see de Bruin et al. 2022, 490). After all, making the most of the 360° view is what the medium sets out to do, which is why the presentation of the topic should be adjusted to having a full view of the scene, and not just of part of it like it would be on a TV screen. However, this new screen grammar also comes with concerns. Journalists have been found to be cautious about balancing the informational function of journalism with the goal of immersion—for immersive journalism to work, providing context and information is just as important as working towards that special sense of presence (Sirkkunen et al. 2020, 21). In addition, journalists need to acquire a range of new skills and understandings of how scenes and dramaturgy can work (Wu 2023, 395–396).

The communicative goal of storytelling in immersive journalism is to reach immersion, which is “the sensation of experiencing an alternate reality that is objectively provided by virtual reality technologies” (Baía Reis and Coelho 2018, 1093), which means that the audience becomes an active participant and engages with the story before them (McRoberts 2018, 105–106; Rose 2018, 134; Vázquez-Herrero and Sirkkunen 2022, 3).

## Perceptions of Journalistic 360° Video

Studies of journalistic 360° video have measured viewers' perceptions in conjunction with the technology, with their assessment in comparison with other formats, and with their traits and needs. These studies provide the basis for assessing the importance of storytelling in 360° video, because, as claimed by the concept of “imagined affordances”, the audience's assessment of the technology is shaped by the expectations and beliefs about the medium, as well as the context in which the medium is used. The studies presented find an impact of the quality of the headset, the topic, and the audience's understandings of the topic as well as the willingness to become immersed.

Focusing on the technology, Kang et al. (2019) found that respondents wearing headsets felt more present in the news and found the news more credible than those watching the same news on a 2D computer screen, despite using a less sophisticated cardboard headset. van Damme et al. (2019) support these findings on the perception of disaster news, finding that even when watched through a cheap cardboard headset, 360° video news is associated with a high sense of presence and enjoyment. Greber, Aaldering,

and Lecheler (2023) explore whether immersive journalism formats are perceived to be worthwhile, and found that the technical characteristics were rated positively, and that greater familiarity with the medium leads to higher ratings of worthwhileness.

Furthermore, Kelling et al. (2019) focus on a comparison of immersive journalism formats with traditional ones. In their comparison of the news experience of a print article, audio, 360° video on a smartphone, and 360° video with a headset, VR and 360° video scored lower than the other options for an information-dense video on telephones. Their video on meditation, on the other hand, was found to be useful in the immersive formats. They suggest that immersive journalism needs to be carefully considered for its narrative possibilities and treated as a medium in its own right (10). Vázquez-Herrero and Sirkkunen's (2022) respondents felt more presence, realism, involvement, and commitment to further engagement with the topic when consuming a 360° video compared to an online article on the same topic. However, their respondents also felt they gained less knowledge and felt better about the written article in this case.

A number of authors focus on the audience and its traits or needs when assessing how 360° video is perceived. Shin and Biocca (2018) investigate what affects the meaning of immersion, and conclude that immersion depends on the viewers's expectations, intentions, and traits, and not primarily on the technology or the headset used. These include their understanding of the displayed topic, which influences their motivation to engage with that topic, and their overall willingness to become immersed. Thus, immersion and becoming immersed is a process, not a static outcome (2815). Nielsen and Sheets (2021) follow a similar line of inquiry and assess that immersive journalism satisfies several gratifications, namely experience (through immersion and transportation through the content), affect (namely both positive and negative emotions and empathy for the protagonists), and agency (gaining information and control, especially in videos where the audience can choose viewpoints). They say that affect, even when negative, can lead to deeper understanding and may be the most relevant to the potential impact of immersive journalism, especially when compared to traditional journalism.

Furthermore, in their longitudinal study of households, Green et al. (2021) demonstrate the urgency to focus on storytelling in their findings: They found enthusiasm and a great sense of immersion in the content for non-fiction VR, but interest quickly waned. There were also some concerns, such as being thrown into the content without any introduction to the subject, leading to limited understanding, the potential for manipulation, and the anti-social nature of the medium.

All in all, I examine the affordances of journalistic 360° by first focusing on the audience's assessment of low-level affordances, i.e., perceived affordances that are storytelling devices that allow them to become a part of the story and the spatial narrative. I do this by analyzing them in relation to the imagined affordances of 360° video, which are shaped by the audience's personal and social context. Finally, going from low-level affordances as they present themselves as storytelling devices, I analyze the high-level affordances of journalistic 360° video, which are the communicative outcomes of immersion and the illusion of active participation in the digital world. I thus ask:

**RQ:** How do the affordances of journalistic 360° video shape and interact with the perceptions of the audience?

## Method

This study uses guideline-based qualitative interviews to assess how the affordances of journalistic 360° video shape and interact with the perceptions of the audience.

### Sample

With the help of two student assistants, I interviewed 37 German news consumers in August 2021. Germany is a growing market for VR, especially for video games and films, and in 2023, 59% of Germans have used or considered using a VR headset in the future (Bitkom 2024a and 2024b, as cited in de.statista.com). The sample consists of 49% women and 51% men, with an average age of 56 years (min: 23, max: 80). The sample thus includes many older news consumers who do not fall into the category of “digital natives” who have been found to be more inclined to adopt 360° video (Wu and Kuo 2017). However, focusing on an older sample provides a new perspective on how 360° video can be fruitfully applied beyond a small consumer group or the often studied university students (as also suggested by Nielsen and Sheets 2021, 13).

Participants were recruited via an open call in the authors’ area, with especially older people being encouraged to take part. This strategy resulted in a mixed age range, and attracted people with a variety of experiences with 360° video. In the sample, 26 people had never experienced 360° video before, and of the 11 who had, five had used a VR headset regularly. Thus, most of the interviewees were beginners, and we were able to closely accompany their “preparation and entry experience” into immersive journalism, as Johnson (2021, 78) calls for. The interviewees were informed in advance about the ethics and their right to stop the interview at any time. I have pseudonymized all names in the manuscript.

### Stimulus Material and Procedure

The interviewees were subjected to two journalistic 360° videos and interviewed on their experiences. Firstly, I chose two videos that differ heavily in their journalistic storytelling, and secondly, during the interview, the interviewees were subjected to two different headsets.

The short news videos, taken from two leading news media outlets in Germany, were chosen to be as different as possible in their storytelling approach to ensure a broad experience. The interviewees were shown one video on an informative and local topic (a report on the museum Miniaturwunderland [Miniature Wonderland, showing miniature worlds], from the online edition of the daily newspaper *Süddeutsche Zeitung*), and one video on an unfamiliar topic (a report on shark research on a remote island, from the Franco-German public service broadcaster ARTE). The videos were distributed on YouTube, which offered a 360° view as part of its player technology.

The museum video was a “reporter-led narration”, where an invisible reporter leads through the video not unlike in traditional formats, while the shark video was a “source-lead narration”, where a person in the video tells the story (see Jones 2017; Sirkunen et al. 2020, 15). Furthermore, in the museum video, the audience is a passive observer, whereas in the shark video, the audience is considered part of the research team and

is addressed as such (see de Bruin et al. 2022, 494). The videos varied in complexity and emotionality. Both videos were about five minutes long and were in the interviewees' native language. Thus, we evaluate both informative and entertaining content, thus overcoming the dichotomy between journalism and entertainment in the context of 360° video (see Scholl, Renger, and Blöbaum 2007). The videos used as stimulus material had to meet the basic quality criteria of journalism, namely journalistic information/knowledge transfer and journalistic credibility and objectivity. In addition, the videos were evaluated for their storytelling qualities, namely for how they were made (e.g., effects, sound), how they engaged the audience (e.g., calling out to the audience), and how they added value through the use of 360° technology (e.g., through camera perspectives).

During the interview, we asked the interviewees to watch these two videos twice: first with a cardboard headset, and then with the PlayStation 4 (PS4) headset. In this way, we presented the possibilities of 360° video with a low- and mid-price headset. The whole procedure lasted 1.5 h per interviewee.

### **Interview Questions**

After each video, the interviewees were asked about the storytelling aspects that led to their evaluation of their interaction with the affordances of journalistic 360° video. Thus, we asked about their perceptions of the images in terms of quality and storytelling devices, their impression of the added value of 360° video and its specific characteristics, their immersion within the videos and the challenges to that, and what kind of content they thought it was appropriate for. We also observed the interviewees as they watched the video to gauge their engagement and problems with the technology as well as their emotions.

### **Coding**

The interviews were fully transcribed and coded by the researcher. The study follows Schreier's (2012) systematic top-down approach in building the deductive categories, with inductive categories added during multiple iterations of the coding process. It was coded for storytelling aspects in 360° video found as in the academic literature and for aspects relevant to the research question, namely the low-level affordances of "the audience becomes a part of the story" (e.g., direct address) and "the spatial narrative" (e.g., ability to look around freely, added value of the 360° perspective). Other journalistic aspects, mainly imagined affordances, were added inductively (e.g., evaluation of the possibility of manipulation). The high-level affordances of immersion and the illusion of active participation were also coded. The consequences for sociality and the social environment, the social affordances, were mainly coded inductively.

### **Limitations**

First impressions of 360° video can be powerful, as other studies have found (Green et al. 2021, 811). Therefore, the response of those who were exposed to 360° video for the first time that day needs to be evaluated in this context. Furthermore, as this is a one-time data

collection, it was not possible to measure progress in the adoption of 360° video, but only the evaluation of the storytelling devices for these two videos at one point in time. Finally, of course, the results of this qualitative study cannot be generalized to the news consumer population as a whole due to the relatively small sample size compared to quantitative research.

## Results and Discussion

I first present the findings on how the affordances of journalistic 360° video shape and interact with the perceptions of the audience by focusing on the low-level affordances, which I found to interact with imagined affordances, before moving on to high-level affordances.

### *Low-level Affordances*

#### *Perceived Affordances: The Audience Becomes a Part of the Story*

In each of the two videos, the viewer had a different role in the story. In the Miniature Wonderland video, the viewer was not offered a role by the journalist (or a virtual body), but rather floated through the scenes. The interviewees were uncomfortable with this storytelling decision, with Thomas (57) wishing for “chair legs or my own feet or something”, as he felt “that you’re hanging somewhere, sometimes quite far in the air”, and felt that this was not natural. This was also mentioned by Harry (80), who said that while he was fully immersed in the museum’s story about miniature cities, “I might get scared if I’m standing on the Eiffel Tower and I keep looking and I can’t see my own feet”. For Leo (38), it felt like “I was like a ghost. I was not there at all”. However, for Leo (38), actually discovering a virtual body would have been deeply disturbing because “those feet would not be mine”. Theo (42) didn’t agree, and would have liked to have feet, “any feet that you could interpret as your own”, because he found it strange that “you could lean forward as far as you wanted. The picture went on. But you saw nothing of your body”. Thus, the interviewees were rather confused about their literal place in the story.

The shark video took a different approach, in that it placed the viewer in the role of a team member on the research vessel. However, being directly addressed as a new team member by the protagonist of the video elicited mixed reactions. Some interviewees immediately accepted that they were now part of the team and would be boarding the research vessel with the researchers in real time (and some were even looking underwater for “their” team members), like Ava (32) did, as she “just sat there with them, that was quite nice”, and Albert (79), who said “it was as if I was there myself. That was really impressive, as he [the protagonist] said ‘so, take the knife’, then I thought, oh yes, that’s me now”. They were sure of their role in the story. Others were not sure who was being pointed at or spoken to; some asked if it was the cameraman.

What can be seen here is that these low-level affordances of journalistic 360° video interact with the imagined affordances of the audience. Their expectations of what should happen, of what their role should be in such a video, affects how they assess the storytelling devices of the use (or lack of) a virtual body and direct address (McRoberts 2018, 112). One can also see that this experience is highly subjective, as the storytelling

device of direct address can work, but only for people who are inclined to feel immersed in the video (as also found by Shin and Biocca 2018) and who are also inclined to let go of expectations or even mistrust of a medium that has no frame around its images.

### *Perceived Affordances: The Spatial Narrative*

Apart from being confused by the lack of a digital body and direct address, 15 interviewees struggled to navigate the spatial narrative, i.e., the 360° digital space in general.

All interviewees had a strong reaction to the technology, especially the older ones. They “wanted to see what’s going to happen with the turning” (Oliver, 71), and said that “you’re used to just looking forward, like on television” (Charlotte, 73). Therefore, it took time to get used to the technology (Greber, Aldering, and Lecheler 2023). However, even though it was explained at the beginning of the interview what 360° video was, many interviewees did not initially move while watching the video and only seemed to remember at a later point what the point of the new format was, like Albert (79), who only started moving after being reminded, as he said, “that was not clear to me at all at the beginning”. It seems here that the affordance of using the spatial space was not consciously implemented, even after they received explanations and put on a headset. Moreover, some interviewees rejected this way of watching a video, as they felt it was an “unnatural head position [because] no one goes through the world looking left, right, up, down all the time” (William, 61) (see also Feyder and Rath-Wiggins 2018, 62–64, 68). This shows that headsets and 360° video are still a niche technology which would require more time and reach in order for people to be immediately comfortable with the setup.

Moreover, interviewees bemoaned a lack of focus in the stories, and thus did not make the most of their power of choice in their perspective, but rather saw it as a hassle, as they were “distracted from the actual content” (Florence, 44). The narrative conventions they were used to in journalism, the focused and crafted stories, were missing (Sirkkunen and Uskali 2019, 2), as felt by Archibald (no age given): “The risk with 360° video, in my eyes, is that I get bogged down too quickly [...] when confusing sequences pop up”, and Fred (71):

I have to get used to the fact that I’m now taking a position that doesn’t even exist here [in the shark video]. This is a fixed, fisheye or some other kind of camera that just records everything in 360°. And now I realize that guidance is missing.

In fact, some interviewees were concerned that they might miss something if they looked in what they perceived to be the wrong direction (Jones 2017, 182). The structure and focus of the videos were very different from what many of the interviewees were used to seeing on television. As such, the freedom to look around was not well received, as they imagined 360° video to present the affordance of orientation which would be similar to what a “2D” journalistic piece would offer. Here, the interviewees’ expectations of how journalism should be presented (in Schudsonian (1978) terms, more in line with “information” than “story”, i.e., narrative elements) interact strongly with their experience of the spatial narrative. However, when the 360° view was paired with traditional reporting conventions, Eve (40), for example, became more comfortable with the format: “[When the story focuses on one person] I get a break, it’s now about one person who

is now saying something. I don't even have to look right and left anymore". This means that the perceived affordances of journalistic 360° video aligned with the imagined affordances, resulting in a more relaxed experience of the medium.

In addition, although the unusual camera perspectives used were praised by the majority of the interviewees, some were critical of, for example, being reduced to the size of a figure in a miniature world, looking up at giant onlookers. As Ava (32) reported:

You are the size of a figurine, you must get used to it: You are small. Everything else is big, everything around you is colorful and much bigger than it should be. And of course that's a lot of information at once.

This was also found to be uncomfortable: "Practically three quarters of my field of vision was taken up by this guy. It just looked awfully creepy" (William, 61). Again, the perceived affordances as they were presented clashed with the imagined affordances, to the point of confusion and even discomfort. While unusual camera perspectives are part of the storytelling toolbox, they were perceived as unnatural (Sirkkunen et al. 2020, 21), which interfered with arriving at the high-level affordance of immersion, as discussed below.

As a final point on the spatial narrative, the choice of the video's topic played a crucial role, as for Isaac (62), who said that with the shark video, "I was right in the middle of it. I thought that was good. With the other one, I was more of an observer", which he thought to be less interesting. Supporting this view, Eve (40) felt that "the subject [of the first video, the local museum] didn't necessarily call for 360°. But with this one [the shark video], it's a totally exciting perspective for the viewer, and it was really fun". Poppy (23) agreed, especially as she had previously visited the local museum: "These are quite normal situations, or rather, I already knew the situation from the visitor's perspective". Again, the shark video was popular with the interviewees because it offered quite the sensory experience and proved to be an interesting enough environment for 360° video (Feyder and Rath-Wiggins 2018, 60; Wu 2023, 394–395). Thus, the expectation, the imagined affordance of being shown an exciting topic being shown is clearly visible here, with the rejection of "normal" (or even bread and butter) topics of journalism for this medium.

## **High-level Affordances**

### **Immersion**

However, once the interviewees had familiarized themselves with low-level affordances described above and became immersed in the story, they would "respond-as-if-real" (de la Peña et al. 2010, 293). An example of this is Grace (78), who saw water under a bridge in the shark video, pointed at it, and excitedly told the interviewer what she had seen—except that she was pointing to the floor of the lab. So she was at a middle level of immersion—she was there, on the island, on the bridge, but she was also aware of the interviewer and wanted to share what she was feeling. Charlotte (73) summed up this phenomenon well:

You have to keep telling yourself that: It's just a game. It's a test. You're sitting on a chair. But through that you realize how intensely it's suggested to you that somehow you're really sitting or standing over the abyss. It's very well done, that visual.

Some interviewees were so immersed that they said they no longer felt the need to go diving themselves—they had experienced it in the shark video, as in the case of William (61): “And I was there, yes. So I don’t need to dive in reality anymore”. This is particularly fascinating in the case of those who were afraid of diving but then said that the experience was very valuable to them, such as for Poppy (23) (also Leo (38) and Leah (41)): “I would never do this in real life. But I could do it this way, it was very interesting”. For others, the practicalities keep them from diving—“You have to be allowed to dive there, you have to have a license, you have to have the equipment” (Emily, 64), but with 360° video “you felt like you were just diving along” (Emily, 64). Oscar (57) notes that 360° video could provide opportunities for those who cannot travel, whether “for economic reasons or because of age or disability”. The difference from television was seen as a big plus and, allowing immersion and achieving what television struggles to do: interviewees claimed that the experience was so convincing that they no longer felt the need for the real thing anymore (Leotta and Ross 2018, 151), they said “respond(ing)-as-if-real” (Baía Reis and Coelho 2018, 1093; de la Peña et al. 2010, 293) was enough. Nevertheless, it is important to find a balance between information and that sensory experience (see Schudson 1978), which is a challenge for topics that do not appeal to emotions as much, such as the local museum video (Kelling et al. 2019, 10).

But there is another side to immersion, which leads to communicative affordances, meaning the consequences of interacting with journalistic 360° video. As the effect of immersion could be used in less noble contexts, interviewees were concerned about the possible effects of the sensory experience and escapism gone wrong. While they agreed that this kind of video, this kind of journalism is quite an experience, some said that the “illusion of telepresence” (Kang et al. 2019, 296) that 360° video provides would not be suitable for violent or highly emotional topics as the medium could be used in a manipulative way. As William (61) remarked:

Because you’re putting people into a kind of dream world, so to speak, in which they can seemingly participate or take part. But that’s not the case at all. [...] You should never leave people alone with something like that, never,

which is supported by Leah (41): “It’s a bit scary for people who can’t handle it”. Thus, many interviewees felt that “experiencing an alternate reality” (Baía Reis and Coelho 2018, 1093) could easily be perceived as a threat or used for manipulation (Green et al. 2021; Sirkkunen et al. 2020). Interviewees discussed the problem of improper distance—and were often grateful that they were not exposed to the suffering of war and pain as Western onlookers during the study (Sánchez Laws 2020, 224). Here, one can see that journalistic 360° video is also subject to social affordances paired with imagined affordances. The medium is initially approached as being a journalistic one, with the implicit evaluations that the term “journalism” brings to the discussion. While concepts such as objectivity or journalistic ethics were not discussed with the interviewees, the answers above paint a clear picture of what journalism is supposed to be, and the dangers that can follow if the medium is not used with ethical intentions. In the context of the study, 360° video was presented as a journalistic medium and was therefore imagined as such. However, if 360° video were to be used for disinformation purposes, the consequences for social relationships as well as the trust in journalism could be disastrous.

This skepticism indicates that the screen grammar (Dooley 2017) of immersive journalism needs to be further developed, along with a code of ethics and specific guidelines for the medium (Baía Reis and Coelho 2018; Goutier et al. 2021, 1649; Wu 2023, 394). Furthermore, as Nielsen and Sheets (2021, 2646) point out, immersive journalism needs to be careful not to give its recipients a “video game feel” that ultimately makes them feel detached from the issue, which is the opposite of what immersive journalism is trying to achieve.

### *Illusion of Active Participation*

Another high-level affordance was realized by 22 interviewees: As they were “diving into another world” (Freya, 63), they felt that they were actively participating in the story, which meant that they felt they were getting much more information from 360° video than from television. As Isabella (65) said, “It’s not like on television, [with a] frozen frame . . . . No, you can decide for yourself where to look”, and Alexander (57) and Emily (64) both added: “[360° video is] very rich in information”, and that there was an “instant learning effect” (Willow, 65). Olivia (33) also appreciated the 360° view because “you can just look around better, I say. Just that feeling that I can look around and just look again here or there”, which, for Amelia (27), “was just instinctive” and uncomplicated. Being active in the news consumption experience therefore played a big role for them, as Alexander (57) explained: “By performing the active movement in order to be able to perceive this information, I feel that I am actively involved”. They feel immersed in the video and also compare 360° video to television—but for them, television loses out. As Isla (40) reported: “I think this free looking and free exploring, I say, as you want to do it yourself without being guided, I think it was great the way it was”. In this exploration they did not feel overloaded with information because they “crossed out” (Harry, 80) what they did not need or were not interested in. These interviewees wanted to explore for themselves, and not be guided or given more focus, as “I wouldn’t have that in real life either” (Olivia, 33; also Theo, 42). Despite these assessments, they were still “in a fixed position within the recorded scene” (Rose 2018, 134), meaning that there was only an “illusion of choice” (Dooley 2017, 170)—but one that felt very real.

## **Conclusions**

This study adds to current scholarship on the affordances of journalistic 360° video by showing how viewers interact with low-level perceived affordances (i.e., storytelling devices) and even high-level affordances (i.e., communicative outcomes)—thus showing how audiences might be “all in” if the used storytelling devices are carefully aligned to the viewers’ imagined affordances of 360° video. Answering the research question of how the affordances of journalistic 360° video shape and interact with the perceptions of the audience, the study focused on low-level affordances in conjunction with imagined affordances, and high-level affordances. As for the low-level affordances, i.e., the storytelling devices, it was found that the interviewees were often unsure of their role in the story when confronted with the storytelling devices of a virtual body and direct address. The absence of a body was often found confusing, as was being addressed within the video. The low-level affordance of the spatial narrative was also met with difficulties. Many interviewees were confused by the 360° digital space and felt that its

use led to a lack of focus in the journalistic story. Thus, these low-level affordances clashed with their imagined affordances of how journalism should be presented. These evaluations of the low-level affordances influenced the assessment of the high-level affordances of immersion and the illusion of active participation. When the interviewees were no longer confused by the low-level affordances, they generally felt immersed in the story. However, this was met not only with joy, but also with concern, as the interviewees feared that people could be manipulated while being immersed in a video. Related to immersion, interviewees also felt that they were an active participant in the story even though they were watching a linear video.

As can be seen from the results, affordances in 360° video need to be carefully evaluated, as they have the power to deter consumers from using 360° video as much as they can attract them. If not used in a way that meets the audience's need to match the perceived affordances, i.e., the storytelling devices, with their imagined affordances, i.e., their attitudes and expectations, the viewer may lose focus, leading to limited understanding of the subject being shown (Green et al. 2021). What can be seen is that many interviewees crave a focus provided by the journalists. Thus, the fear of journalists that they have to give up control of the narrative in 360° video (see Mabrook and Singer 2019) is unfounded. In fact, many interviewees did not experience the high-level affordance of the illusion of active participation in the story, but rather desired a clear-cut information-rich, yet focused narrative with the opportunity to look around, as they do not aspire to be the creators of their own story world and rather appreciate the "minimal agency" (McRoberts 2018, 113) they are given. Thus, while the storytelling needs to adhere to "spatial narrative" (Kukkakorpi and Pantti 2021), it needs to be tailored to be clear to the audience. In essence, this means that journalists should reflect their storytelling choices on the "storytelling continuum" (Tenenboim-Weinblatt 2009, 963) and carefully decide which devices to include in their piece, always keeping in mind that "objective" information can indeed be paired with storytelling if done in an ethical way (Wahl-Jorgensen and Schmidt 2020, 264). Many people are still unconvinced of the format, and careful tailoring can help create fruitful immersive journalistic experiences.

Furthermore, many interviewees were unaware of the possibilities of the technology prior to the study, and therefore unaware of the affordances of the medium—but once introduced, some of them were put off by the unfamiliar kind of journalistic presentation. It seems that the storytelling devices used for 360° video need to be refined—or combined with traditional storytelling conventions, so that the leap from linear "television-like" watching is not so stark. It is not possible to make the comparison between written articles and 360° video, as Kelling et al. (2019) and Vázquez-Herrero and Sirkkunen (2022) did, but the study can attest that 360° can be information-dense if done with the appropriate storytelling devices, making the most of the viewers' attitudes and beliefs and the spatial narrative space. Working with more technological finesse, such as more careful planning of where and how the focus moves from scene to scene—might be one answer. Doing more user research with the aim to create useful rather than primarily aesthetic pieces (see Gaver 1991, 79; McGrenere and Ho 2000), and thus getting away from an "imagined user" (Nagy and Neff 2015, 4) that might not even exist, may be another. All in all, 360° video is challenging viewing habits—but it often leaves news consumers wanting more once they get a sense of the possibilities, even those over the age of 60.

However, these findings must be considered tentative because they were obtained in a small qualitative study.

A notable aspect of the study is the age of the interviewees. Although it is often said that new technologies are made for the younger generation (Wu and Kuo 2017), 360° video is an inclusive technology for all ages in its handling and narrative value. The results confirm this, as the assessment of the storytelling techniques cannot be evaluated by the age of the interviewees. Skeptics and enthusiasts were found across all age groups, even though 360° video mainly appeals to the consumption habits of the younger digital natives. However, many of the older interviewees saw the value of 360° video for journalism—not as a replacement, but as an addition (Nielsen and Sheets 2021). Thus, the older interviewees were indeed interested in the possibilities of 360° video for journalism, but actively compared this medium to their (often printed or otherwise traditional) news sources. As such, their imagined affordances of journalistic 360° video were different to those of the younger generation, who were more willing to let the experience come first, and did not weigh it against expectations of what journalism is supposed to be like. However, as the results show, this doesn't mean that the older generation didn't get immersed, they rather had a more complex set of imagined affordances to go through before they engaged with the experience and its interaction with the high-level affordance of immersion.

As previous research on the perception of 360° video has shown, the quality of the technology provided plays a role in influencing the perception of the video, as the experience in terms of image quality, immersion, and handling is very different if the video is watched with a cardboard headset or a more sophisticated one (de Bruin et al. 2022, 494; Sirkkunen et al. 2020, 22). Thus, the quality of the headset is an important contextual factor in the perception of journalistic 360° video.

As for the scholarship on immersive journalism, the literature shows that many angles have been explored, from the audience's involvement in a story to the medium's worthwhileness, and, in this study, the affordances of journalistic 360° video. It seems that none of these studies and their implications for scholarship and practice can overcome one of the most pressing problems of 360° video: it is a solitary medium. As such, the interviewees mentioned an affordance that is not addressed by 360° video, but which they all felt was very important: sociality, and the need to share their media experience with someone. Here, the concept of social affordances comes into play, which are the consequences of the medium use for sociality and the social environment. As such, especially when watched with a headset as has been done by the interviewees, 360° video cannot be shared and is a solitary or even "anti-social" (Green et al. 2021) endeavor. This assessment was strong for all interviewees, and no storytelling device or any other content factor could compete with this notion. This could be a major barrier to the adoption of immersive journalism—as other media may simply be chosen over immersive formats.

What do these findings mean for the practice of immersive journalism? While immersive journalism was hyped and heavily funded by Facebook and Google in the late 2010s, there seems to be a plateau in the 2020s—or what we're seeing now are just teething problems. For what drives what—does content drive innovation, or vice versa? As Rose (2018, 139) mentions, there is a "close relationship between content creation and technology innovation" for immersive formats, and what we are facing is a

chicken or the egg problem. As many interviewees said, they would consider buying a headset if there was more content—but the common media outlet narrative is that there need to be more headsets in households for them to create more content. It would take some bold steps towards more innovation to solve this conundrum. Exorbitant costs can no longer be the main reason for not producing immersive formats, as equipment has become cheaper and easier to use (Mabrook and Singer 2019, 2096). There may still be what Sirkkunen et al. (2020, 20) call a “culture of fear”, which deals with more than monetary costs, such as the need for skilled professionals.

As shown above, 360° video has its own screen grammar, and producing 360° video takes much more time than standard video at all stages of the production process, from storyboarding to editing. Moreover, while the cost may not be as prohibitive for producers anymore, it is still for consumers, as high-quality headsets are expensive (Vázquez-Herrero and Sirkkunen 2022, 12). I would therefore be cautious in my assessment of the routinization of 360° video in journalism. It would require a technological push on the part of production equipment and consumer hardware, as well as a willingness of media outlets to (further) innovate in this area. At this point in time, 360° video seems to be often outsourced to external production companies for special projects, and is therefore more of an addition to reporting than an everyday technology. What has come to the fore in recent years is “XR”, i.e., extended reality, which not only includes 360° video and VR technologies, but also augmented reality experiences. Moreover, XR does not necessarily require expensive equipment, as “screens, displays, glasses, headsets, but also chic Ray-Ban glasses” (Becker 2023) could be used, thus a wide and also affordable range of hardware. One example for XR is “München ’72” (German: Munich ’72) from Bayerischer Rundfunk (BR 2022), which combines VR technology with a historical retelling of the Olympic Games of 1972. A broader use of the technology could be a way forward for (immersive) journalism.

All in all, the study sheds new light on what journalists can do to make the most of the storytelling tools in journalistic 360° video, and what affordances they should consider to immerse their audience in the story—so that the audience is “all in” rather than driven away.

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**ORCID**

Jessica Kunert  <http://orcid.org/0000-0001-6370-1558>

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