

# Pattern while Watching 360° Videos. On the Reception of Immersive Commercials

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*360° videos allow the recipient to freely select a section of an image within a spherical spatial construction. In the presented study we will analyze two chosen 360° spots from the automotive industry of the brands BMW and VW initially regarding their 360° "storytelling" side. In the next step we will depict the reception behavior of the subject group according to their head movements, compare these to each storytelling approach and finally discuss them regarding the background of the reception experience.*

*Keywords:* storytelling, immersive media, 360 degrees video, lean forward commercials.

## Introduction

By now, it is no longer a futuristic vision to lay on the homey couch and, at the same time, dive with sharks, visit the Coliseum in Rome, ride rollercoasters or to take on the role of the hero in video games or movies. It has become reality; virtual reality. Meanwhile, by using their own smartphone, anyone can experience the revolution of media consumption at home and immerse into the world of 360° videos, with help from a simple head-mounted-display (e.g. Google's Cardboard). Because of the increasing growth of user-friendly 360° camera systems on the consumer market and the technological integration of corresponding content on social media platforms such as Facebook or YouTube, the popularity and spread of these videos grow from day to day. The immersive potential of this technology promotes a special experience of presence (Singer & Witmer, 1998, p. 225) that allows the user to "dive into" the visualized world and lets them become a part of the story line (Hebbel-Seeger, 2017).

In advertising contexts, new communicational qualities are established when the recipients are surrounded by the molded brand- and product worlds (Gocht, 2016). But "Storytelling" like within "classic" audio-visual video formats no longer works with immersive videos. The attention of the users can no longer be guided by focal lengths, perspectives and cuts in the sense of a story. The narration of a story works here only indirectly via cues or is completely transferred to the user when "stories" only manifest individually in the mind of the users: "The frame has two very important purposes, which first one is to separate what is visible in the storytelling from what is not visible and where lays the imagination of the spectator" (Lescop, 2017, p. 254).

Since an explicit user guidance in 360° videos is not possible due to the user's free choice of selecting an image section, a new type of "storytelling" is needed (Díaz-Kommonen et al., 2018), leading the recipient through a specific room

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design and providing information incentives. Hence, one can impart between the possibilities of the medium, individual experiences, interests of the recipients and the intended communicational goal of the advertisement.

The sketched concepts of a storytelling within 360° videos about cues on the one hand side and an individual story formation on the other hand's side are examined in the present article. By the example of two selected commercials we investigate the gaze directions and head movements of probands to look for specific patterns

### **360° Video**

360° videos are cinematic portrayals of reality in which the surroundings are equally captured on every level.

"The mapping of a space in all directions characterizes 360° photos and videos. Proceeding from a chosen point, namely the position of the camera, a specific occurrence is depicted in its spatial complexity" (Hebbel-Seeger, 2018, p. 273, translated from German into English).

In a spherical projection of these contents the viewer finds himself in the center of this projection. In the course of the process unfolding itself, every viewer can freely choose which extract of the projection to explore. Meanwhile, it is neither possible to affect the plot, nor to change the camera position or to interact with the objects in the depicted area.

360° videos are captured with "spherical-, 360°-", or omnidirectional cameras, which depict a space in every direction with their two or more wide-angle lenses. In contrast to a "classic" video format, there is no "behind-the-lens" in a 360° video. Everything is recorded at all times and the users alone decide, which extract they want to choose, using either the computer-mouse, the keyboard or a head-mounted-display ("VR-glasses"). Especially in combination with VR-Glasses the immersive potential is higher in 360° videos (Slater & Wilbur, 1997), as at least two senses (hearing and seeing) are usually affected here, which broadly shields the recipient from the outside world. An appropriate media quality provided, the best requirements for a presence experience are given; the feeling of "actually" being in a place that illustrates a storyline in an audio-visual manner (Singer & Witmer, 1998; Dörner & Steinicke, 2013, p. 33ff).

### **Storytelling**

"In 360-degree videos, similar to traditional storytelling, the viewer does not influence the plot (Vosmeer & Schouten, 2014, pp. 141-142); the interaction with characters is fixed, and the viewer has no control over anything but their gaze. However, unlike VR where player's actions form the story, the illusion of movement cannot influence the story development (Miller, 2013, p. 120). Thus, interactivity within this medium is only an illusion" (Elmezeny, Edenhofer & Wimmer, 2018, p. 9).

In a promotional context, the term "storytelling" is understood as the communication of an advertising message in a narrative frame. This embedding follows mechanisms of narratives that function regardless of whether a story is told at a campsite or within a digital space (Herbst, 2008).

When storytelling is defined in digital media, the term "digital storytelling" acts as a differentiation (Herbst & Musiolik, 2016, p. 7); the distinctiveness of digital storytelling mainly lies in two central approaches that determine how a story is aligned and how it can be told: the linear approach and the nonlinear approach (Herbst & Musiolik, 2016, p. 80ff):

- a) **Linearity:** The linearly conceived story describes a story with a clearly defined "path" which the viewer can follow. Thus, the story is constructed in such a way that a foreseeable action can be followed clearly from the beginning to the end.
- b) **Non-linearity:** In a non-linear concept the "path of the story" unfolds differently. The viewers have the same starting point with the beginning of the story, yet it is not predefined, which path the audience will follow subsequently. Through "cross references", the recipient is able to influence the course of the story. Based on the reception of 360° content, the viewer can choose, for example, what he wants to look at.

### Storytelling in 360° Videos

Telling a story and conveying a message are goal-oriented processes. Therefore, our guiding question was, whether and how the user's behavior demonstrates storytelling through a 360° video, and if there are any inter-individual reception patterns, although or even because the users have the free choice of choosing an image section.

We decided on using two 360° commercials from the automotive industry as research objectives, one of them being based on the linear concept and the other on a nonlinear concept. The commercials concerned are taken from the launch campaigns of the automobile manufacturer BMW<sup>1</sup> (new model "M2") and VW<sup>2</sup> (up!-special edition "beats") (Figure 1).

In April, 2016 the German automobile manufacturer BMW launched a new sports wagon: the BMW M2 Coupé, the sports version of the 2er BMW, which achieves about 370 PS. Due to the size, the limousine can be categorized as part of the compact class (Götze, 2016). The market entry of the M2 was communicated through a global launch campaign, involving the model Gigi Hadid and the new sports wagon. The centerpiece of the predominantly digital campaign is a commercial, in which the model enters in one of five M2-Coupés, all of which then drive through the Nevada desert in a "speedy" choreography and perform a type of "cap game" (Theobald, 2016). The 360° spot was conceptualized by the regular agencies of the automobile manufacturer, Serviceplan (Munich) and KBS

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<sup>1</sup> <https://youtu.be/nlB3Zsr-heE>.

<sup>2</sup> <https://youtu.be/1rL5vT1sCFo>.

(New York). Aside from TV (two-dimensional adaptation), the expansion of the commercials mainly took place in the digital field. Client and agency relied on the media coverage of the testimonial, Gigi Hadid, to spread the advertisement, who currently has 4.2 million likes of Facebook<sup>3</sup> and 37.1 million followers on Instagram<sup>4</sup>. The selection of the testimonial was Gigi Hadid as her circle of fans corresponds with the target group that BMW wants to approach with communication on the M2 (Theobald, 2016). In general, the commercial can only be described in a minimized way, since it is composed of a few prominent elements only. The most distinctive elements will be described and shown in a timeline in the following.

*Figure 1.* Screenshots Taken from the Mentioned 360° Commercials from BMW (Left) and VW (Right)



### 360° Commercial from BMW

**Room.** The main idea behind 360° videos and VR is to transport the user into a new world; into a new space. In order to implement this as effectively as possible, the BMW-Spot used a space that can hardly be surpassed in terms of spaciousness: the desert. Incentives used over the course of the plot encourage the recipients to view certain image excerpts instead of a free exploration of space; in this case, those excerpts in which the testimonial moves and cars drive around. In the previous part of this paper, continuity was mentioned as an important part of storytelling. One of the ways in which this element is implemented in the BMW spot is that only one location used in the plot.

**Story.** The storytelling within the ad follows a linear approach: at the beginning of the spot, the testimonial gets into one of three parked cars in the desert and the viewer is asked to keep his eyes locked on the vehicle in which the model is sitting. Afterwards, the three cars race away and two more vehicles are added. All five vehicles look identical. A "cap game" begins as the cars constantly change positions and formations. At the end of the commercial, the action slows down and all cars come to a stop on the road in a row. Numbers from 1 to 5 show up on front of the cars and the viewer is asked to take a guess in which car the testimonial is sitting on the microsite "EyesOnGigi.com". The story is "classically" divided into three phases: Introduction, main part, end. The story line of the spot is

<sup>3</sup><https://www.facebook.com/officialgigihadid/>.

<sup>4</sup><https://www.instagram.com/gigihadid/>.

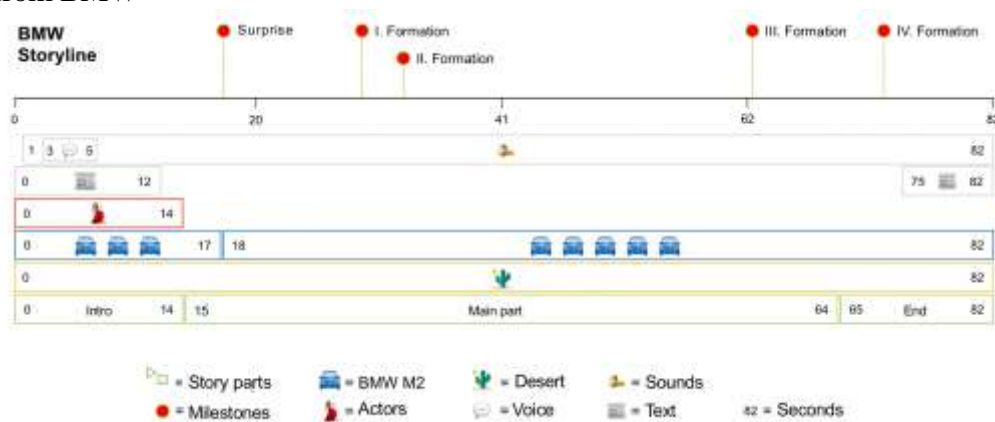
heavily reduced from the beginning to only a few distractions. The question "Can you keep your eyes on Gigi?" that is posed at the beginning of the spot makes the purpose unmistakably clear: The viewer is supposed to follow the testimonial, no matter what happens. After the testimonial enters one of the vehicles, it becomes obvious that this task is not so easy: anyone who wants to keep an eye on the testimonial has to remain highly focused while facing all distractions caused by crossing vehicles and order-changing maneuvers. Thereby, the attention of the spectators continuously lies on the vehicles. The entire story follows a pattern that the viewer intuitively understands within the first few seconds.

**Cues.** With its reduction to the essentials, the BMW spot makes use of fewer cues, meaning fewer things that attract the attention of viewers: no more than five vehicles, the testimonial and the road are visible in the spot. Hence, there is little to distract the viewers' attention. This spot also uses various means to direct the attention of viewers. For example, the testimonial is wearing a dress in deep red, a signal color. The vehicles are painted in dark colors, which poses a strong contrast to the surroundings (relatively colorless) and the protagonist in red.

**Further components.** For the further control of attentiveness, engine noises are used already in the first few seconds of the spot and thus underline the dynamics of the action. As acceleration increases, the intensity of engine noise deepens and the squeaking of the tires can be heard, underlining the speedy design of the spot and the dynamic driving maneuvers. At the beginning of the spot, viewers are introduced to the scenery through text and language. They are told what this is about. The text and the linguistic invitation to follow the testimonial are intended to direct the recipients' attention without restricting the feeling of potential freedom of movement.

In the following, the term milestone will be used to explain the structure of the spot in more detail. Milestone describes important action points in the spot. These are elements that stand out from the rest of the action by their importance and/or their dramatic significance. With the help of various milestones, this spot pinpoints the attention of viewers repeatedly. These milestones are, for example, the four formations that the vehicles occupy during the "cap game" (Figure 2).

Figure 2. Visualization of the Story Line of the Selected 360° Advertising Spot from BMW



### 360° Spot by VW

With the "Always right in the middle of it" (German: "Immer mittendrin") campaign, Volkswagen is promoting a new special model of the up! series: the smallest car from the German manufacturer, the "up! Beats". This model is a special edition of the already existing up!, whereas the integrated sound system of Beats-Audio serves as the distinctive characteristic. The feature of the built-in premium music system is intended to attract young buyers in particular. Part of the campaign, that was designed by the Hamburg-based agency Grabarz & Partner and was mainly developed for print and TV media, is the 360° spot which is analyzed in this thesis. In addition to the new audio system, more features are meant to be advertised that enable a coupling between smartphone and car. This coupling primarily expands the multimedia range offered by the car (Schobelt, 2016).

**Room.** The space depicted in the video is divided into three locations: the entrance area in front of a discotheque, the somewhat further away parking lot of the same disco and, at the end of the spot, a black room with several VW logos. Within the spot there are four up! that encircle the viewer. About 40 people dance around these vehicles and form a visual boundary of space.

**Story.** At the beginning of the spot, the viewer is situated in front of a discotheque and their gaze is aimed at the entrance due to the preset viewing direction in the video. About twelve people are standing in front of the nightclub talking while quiet music is playing in the background. Suddenly, a female person approaches the camera and starts to dance. In the same moment, three vehicles appear opposite of her (three are clearly visible, in the next scene there are four). After about seven seconds, the first camera cut takes place and the location shifts from the setting of the entrance to a large parking area within the range of vision of the discotheque. The woman is still visible in front of the camera and behind her, there are now four VW up! parked in a circle. Most of the dancers are wearing roller skates, letting their movements appear very dynamic but also causing a lot of confusion. The aforementioned woman comes along and moves towards the camera again, interacting with other dancers. After 44 seconds, the dancing scene is over and fades into a black picture with several VW logos while the music continues to play. The spot was developed according to the approach of non-linearity, whereas this concept is not brought into play by using the content of different spots, but only within this one 360° video.

**Cues.** The actress who is approaching the camera at the beginning, functions as a hint, but only initially so. Later on, she does not stand out from the crowd of dancers strongly enough to attract the attention of the audience. In addition, the four cars encircling the spectators are spread out in the parking lot, serving as a cue.

**Further components.** Similar to the BMW Spot, the VW video works with acoustics: In order to draw attention to the products, the cars are cheered on by the crowd. Calls, whistles and gestures signal the viewer that a decisive action is happening. The honking of the cars also serves to promote the direction of vision. Along with the first camera cutting in this spot, a change of location occurs and the

spectator now finds himself in the middle of the dancers. Aligning with the technical cut, the music builds up and becomes louder. Afterwards, the main actress and the other protagonists dance around the camera (and thus around the recipient) and between the cars. The second and last cutting is followed by a black room with several Volkswagen logos. These logos are all designed in an identical manner and placed around the camera. Once again, it does not matter which one of the logos the viewer looks at. The placement of several logos suggests that the producer's intention is as follows: Since it is impossible to predict which part of the room the viewer is at the end of the video, logos must be placed everywhere so that they cannot be overlooked.

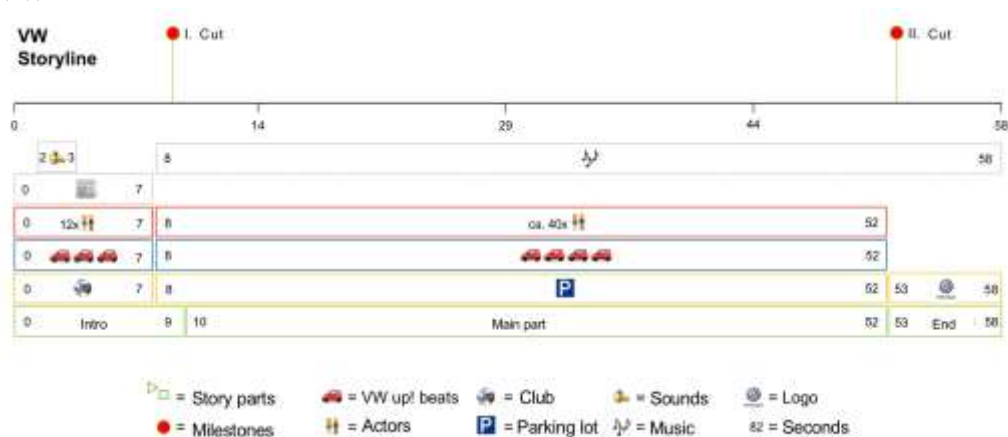
### Comparison of Storylines

The storyline describes what happens when, where, and how things are related to each other. For the visualization of the storyline we decided to use a timeline. Figures 2 and 3 demonstrate at which point in time which cue appears and disappears in the respective spots. The representation serves to visualize the interaction of individual components and to emphasize their continuity. For the marking of the components, different colored bars are used. Additionally, the most important milestones in the plot are marked by red-green markings on the timeline.

In the BMW Sport, the recipients are being guided at the beginning as the concept of the story is conveyed. At the end, a call-to-action follows. During the spot, the viewer is "left alone" and his or her attention is directed only by the plot (Figure 2, "milestones"). The location and presence of the cars with the smooth transition from three to five cars are clearly visible in their continuity. This ensures a structured process that enables the audience to be guided and orientated in space.

On the other hand, much more is "happening" in the Volkswagen spot. There are three places of action and four vehicles, which are staged by about 40 dancers. Music is playing, the actors are celebrating in front of a disco, the audience is in the center of the cheering crowd and is invited to join in by gestures.

Figure 3. Visualization of the Story Line of the Selected 360° Advertising Spot by VW



Volkswagen is all about partying, friends and fun, being there in an intoxicating and colorful dynamic lifestyle. Attention should be paid to the party and the audience should be "right there". The up! is the faithful companion, but not the center of attention. What really matters is people having fun with friends.

BMW, on the other hand, is all about the vehicles: performance, sportiness, speed and controlled driving. It is focused on the essentials: Performance and design. The vehicles are the center of the action - nothing is to distract from them. To ensure that this message reaches the audience, a testimonial is used in combination with the provocative invitation to follow along.

The differences outlined between the two selected 360° advertising spots are based on different framework conditions and communication goals. One spot is a new product introduction (BMW M2) and the other one is an adaption of an already known model (VW up!). As a result, the focus of attention in the first video is mainly on the (new) vehicle, while in the second spot, the attention is to radiate from performance action onto the product, so that the focus is less on the car and more on the surroundings.

### **Reception of the Selected 360° Commercials**

The selected 360° advertising spots focus on two vehicle models that can be assigned to a rather younger clientele due to price, design, communication and image (Volkswagen Media Services, 2016; Theobald, 2016). These are two cars of the compact class, the BMW M2 and the Volkswagen up!, which embody a fresh and youthful image. This may be one of the reasons why the models are advertised, among other things, via the 360° video, as this media format enjoys a high level of acceptance within the target group (GfK, 2015, cited by Scholz, 2016).

In the context of this study, we have investigated the reception behavior of subjects consuming both 360° advertising videos. The guiding question in our research was, whether inter-individual patterns can be identified in the reception of 360° videos, despite the freedom of choice in selecting the image section, and if and in what context these patterns of reception are related to the storyline.

Considering the research question, we were primarily concerned with capturing the head movements through which the individual selection of an image section in a 360° video is made. In order to record the head and body movements of the test persons, a 3-axis sensor system was added to the VR glasses (Samsung "VR-Gear") mounted on a smartphone (Samsung "Galaxi S7"): Another smartphone with a corresponding recording function (we used the "Sensor Kinetics Pro" app) was placed above the patient's head and connected to the VR glasses by means of a self-constructed holder (Figure 4).

When developing the holder, it was of utmost importance that the sensors were located in the middle of the head and thus at the point of rotation. Since a 360° rotation with a simple graph cannot be displayed, the measured values were put out in 0° to 90° and 180°, as well as 0° to -90° and -180° by the app. Figure 5 shows the graph of an even 360°- clockwise rotation within 10 seconds. The z-axis shows a leap from 180° to -180° at 5 seconds. This leap is due to the form of

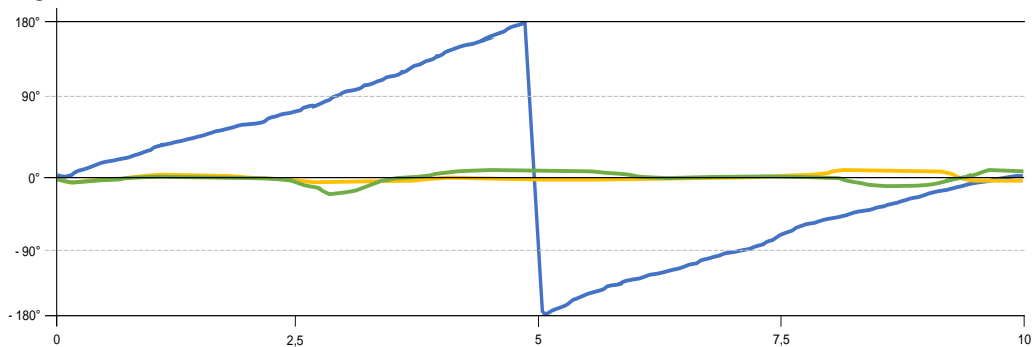


representation, which is outlined above, and shows that graphs which lie on these two extreme values describe a high level of agreement of the respective selected image section.

*Figure 4.* Experimental Setup: VR Glasses with Coupled smartphone and Attitude-sensors



*Figure 5.* Visualization of a 360° Rotation around the Vertical Axis



The test participants were selected according to the previously defined target group and an evenly distributed gender ratio. For the trial, 40 subjects were divided into two groups, as the two selected 360° commercials were played out in reverse order on a pair of VR glasses while the head movements were being recorded in real-time with the use of rotation sensors. Since the actions of both spots exclusively occur at the z-axis level, the evaluation was limited to the analysis of these very data (Figures 6 and 7).

### **Reception Behavior in the 360° Advertising Spot by BMW**

The BMW commercial is comprised of a guided story in which progress and resolving are bound to the vehicles. Despite the recipients' free choice of the image section, the analysis of their head movements/viewing directions displays a similar pattern for all subjects (Figure 6).

Figure 6. Visualization of the Subjects' Head Movements during the Reception of the BMW Spot

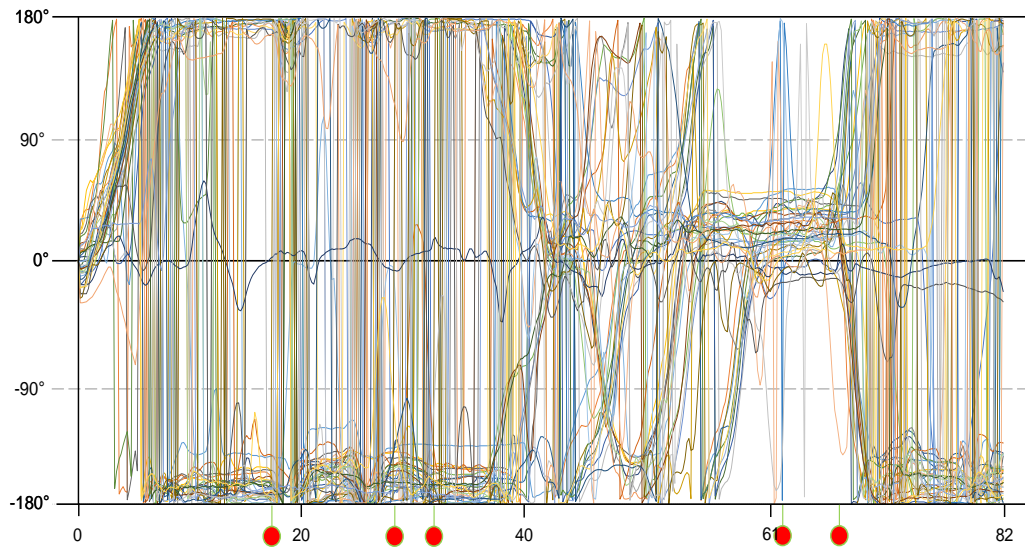
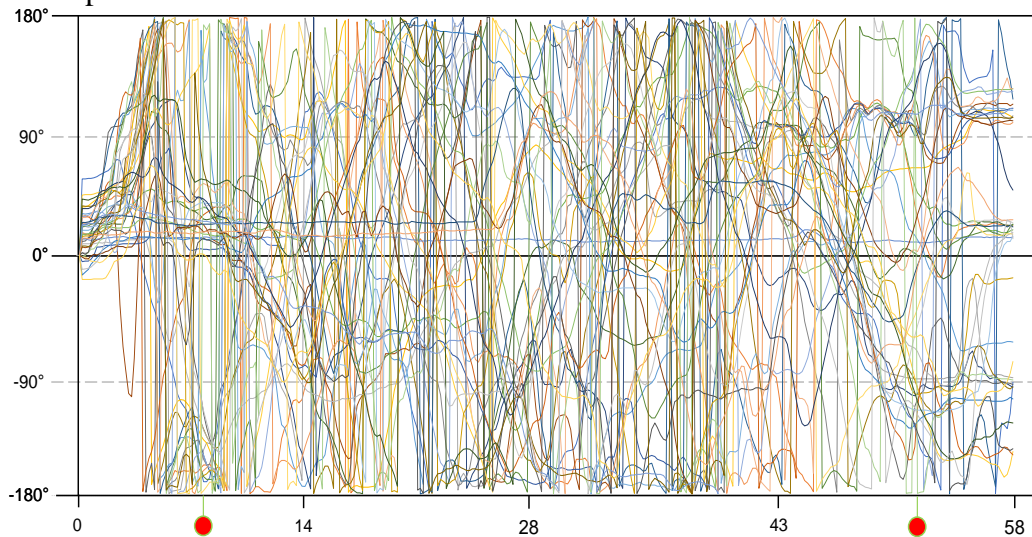


Figure 7. Visualization of the Subjects' Head Movements at the Reception of the VW Spot



First of all, the subjects follow the testimonial in a clockwise rotation of about  $190^\circ$ . The individual deviations are only a few degrees above the vast majority of 40 subjects. As the video proceeds up to second 40, this line of sight is maintained by the subjects. Along with the end of the second formation, i.e. the third milestone, the viewing directions of the subjects diverge. This is due to the fact that the recipients follow different vehicles in the "cap game", passing by the viewer's position from all sides. At the start of the third formation (approximately 55 seconds), the recipients' attention is directed on to one central point again, in order to focus on one of the five vehicles which is, at the end of the spot, moving parallel and eventually coming to a halt.

Only one subject (see blue line in Figure 6) diverges from the sketched pattern by moving his head only a little bit around the starting position on the 0° line. As a reason for this, the ensuing survey identified a combination of non-existent knowledge about the reception opportunities, as well as a hitherto unknown immersion experience which leaves the person in astonishment in the situation in question. "

### **Reception Behavior in the 360° Advertising Spot by VW**

As already described in the spot analysis above, Volkswagen uses a different concept in the "Immer mittendrin" - spot in comparison to the selected BMW spot: the spectator is the center of the action, everything revolves around him and there are only few clues. Storytelling relies on the non-linear approach. A structured action recedes within the plot in order to "use" the whole space that is to be individually explored by the recipients. This concept is confirmed by the observed reception behavior of the test participants. As can be seen in Figure 7, the viewing directions of the subjects diverge after the first few seconds of the spot without an inter-individual pattern formation.

First of all, the vast majority of the respondents follow the performer, who detaches herself from a group and moves towards the camera in the starting line of sight. This uniform pattern is maintained until the first milestone (the first camera-cut) and only then runs apart inter-individually. This means that this actress serves as a clue in the first few seconds and attracts attention. But this pattern dissolves with the first cut and the increasing number of actors. The spot offers opportunities for exploration and discovery in all viewing directions, and the viewer's behavior corresponds. The second marked milestone (second camera cut at the final part) at the end of the spot is followed by a clearly recognizable pattern formation. Although it takes a few seconds for this pattern to form, three clear accumulations can be seen. These three collecting points at the end of the spot are formed only a few seconds after the camera switching to the logos. Here, a logo was placed on each of the spots where the four vehicles had previously been shown. Since there are only three collections of four logos/vehicles, it seems likely that the spectators only noticed three vehicles, which is an assumption being confirmed by a subsequent survey of the test persons.

All in all, the spot also reveals a pattern of reception that is characterized by the high inter-individual difference.

### **Reception Experience**

Following the reception of the two selected 360° advertising spots, we interviewed the respondents regarding their reception experience. Using the item "Repeat interest" we wanted to draw conclusions about how stimulating the subjects perceived the two 360° videos as a whole, while the items "fun" and "fear" deal with specific reception aspects: "Fun" highlights the entertaining character of advertising in the sense of an "infotainment" (Klöppel, 2008) while "fear" stands out against the particularity of the 360° space, in which users can also

"lose" themselves and which, due to the required sense orientation, may also lead to an overstraining on parts of the recipients.

Since the occurrence of "cyber-sickness" is described as a frequent concomitant phenomenon in connection to the usage of VR glasses, e.g. Lawson (2015) and it cannot be ruled out that such impairments affect the response of the above-mentioned items, we have finally questioned the participants' well-being.

In fact, some subjects felt dizzy (Figure 8). There is no connection between this occurrence and the variable "fear". Only one recipient combines a strong feeling of fear with the reception of one of the two spots. This is the subject who stood out with the comparatively motionless head posture during the reception of the video. The VW spot was the first to be viewed by the latter, and this can be interpreted as a reason for fear being perceived here and no longer in the BMW spot that was subsequently consumed: The fear-indicating "surprise moment" of the immersive media experience during the reception of the VW spot was already known in the second video.

Figure 8. Survey Result Regarding the Reception Experience (Blue: BMW; Grey: VW)

Repetition	<i>I would like to repeat</i>		<i>I would rather repeat</i>		<i>I cannot decide</i>		<i>I would rather not repeat</i>		<i>I would not repeat</i>	
	15	3	16	15	3	6	6	12	0	4
Fun	<i>I had a lot of fun</i>		<i>I had rather fun</i>		<i>I cannot decide</i>		<i>I had rather no fun</i>		<i>I had no fun</i>	
	14	7	20	17	3	9	2	6	1	1
Fear	<i>I was not afraid</i>		<i>I was rather not afraid</i>		<i>I cannot decide</i>		<i>I was rather afraid</i>		<i>I was afraid</i>	
	34	35	5	4	0	0	0	0	0	1
Dizziness	<i>I was fine</i>		<i>I was rather fine</i>		<i>I cannot decide</i>		<i>I felt rather bad</i>		<i>I felt bad</i>	
	16	20	15	12	3	1	6	6	0	0

As far as the item "fun" is concerned, the clearly divergent ratings for the BMW and VW spot become apparent. Since the vast majority of respondents first came into contact with immersive media technology (360° video on VR glasses) in the context of the underlying study, we interpret the differences with regards to the fun experience in the manner that an orientation in space, as conveyed by the linear concept of storytelling in the BMW-Spot, is positively appreciated. Especially by participants without sufficient experience within this media format, whereas a non-linear concept, which may have a different demand for consciousness and is still lacking patterns (Herbst, 2008), performs comparatively worse.

## Summary and Outlook

The 360 degree video format "is able to involve the viewer in the narrative through various technical aspects. These measures, when used in combination with specific narrative elements, can incite a greater response from viewers compared to traditional video format" (Elmezeny et al., 2018, p. 10). Considering advertisements, it is important that the emotions and experiences conveyed by a story radiate onto the product and the brand. The more relevant the message, the more relevant it is to the recipient and the more precisely the communication can be tailored. In this matter, 360° videos offer specific opportunities due to the possibility of the individual's exploitation of a space of action which can be tied in with personal interests and previous experience more closely. On the other hand, the free selection of the image section makes it difficult to guide the user in the sense of an intended story (Pope, Dawes, Schweiger & Sheikh, 2017).

In the present study, we selected two 360° advertising spots from the automotive industry with linear and non-linear storylines, recorded the reception behavior of the head movements of participants and finally asked for the experiences of reception. The result shows that storytelling in 360° videos is possible; that users follow a linear storyline during the reception and inter-individually follow clues and lastly, that an individual exploration of space is mostly omitted. In a non-linear design, on the other hand, the opportunities of exploration created within the medium break through and necessitate an individualized spatial development. Other than guided access, this places different demands upon the recipients and, especially so for users with little or no experience in the reception of immersive media technologies (here: 360° video through VR glasses), can probably lead to an overstraining and thus have a negative effect on the overall reception experience. Future follow-up studies must demonstrate whether the observed effect levels out with an increasing user experience.

## Bibliography

- Díaz-Kommonen, L., Vosmeer, M., Lee, J. H., Pham, S., Bassbouss, L., & Mancianti, A. (2018). 360°-Video Storytelling and Virtual Reality Workshop. *Proceedings of the 2018 ACM International Conference on Interactive Experiences for TV and Online Video (TVX; 2018)* (pp. 253-254). New; York: ACM.
- Dörner, R., & Steinicke, F. (2013). Wahrnehmungsaspekte von VR. In R. Dörner, W. Broll, P. Grimm & B. Jung, Bernhard (Hrsg.). *Virtual und Augmented Reality (VR/AR). Grundlagen und Methoden der Virtuellen und Augmentierten Realität* (S. 33-64). Berlin, Heidelberg: Springer.
- Elmezeny, A., Edenhofer, N., & Wimmer, J. (2018) Immersive Storytelling in 360 Degree Videos: An Analysis of Interplay Between Narrative and Technical Immersion. *Journal For Virtual Worlds Research*, 11(1), 1-13.
- Götze, J. (2016). *BMW plustert den 2er auf. Reihen-Sechszylinder mit 370 PS, Sechsgang-Handschriftung und Heckantrieb – so steht der heiß erwartete BMW M2 ab April 2016 beim Händler (BMW puffs up the 2 Series. Series six-cylinder with 370 hp, six-*

- speed manual transmission and rear-wheel drive - so is the highly anticipated BMW M2 from April 2016 at the dealer). Retrieved from <https://bit.ly/2KPLvvL>.
- Gocht, P. (2016). *6 Tipps für das Storytelling bei 360°-Filmen (6 Storytelling Tips for 360° Movies)*. Retrieved from <https://bit.ly/2zF7rVT>.
- Hebbel-Seeger, A. (2017). Innovative Videoformate im Sport. Markenkommunikation mit 360-Grad und VR (Innovative video formats in sports. Brand communication with 360 degrees and VR). In J. Förster, A. Hebbel-Seeger, T. Horky & H.-J. Schulke (Eds.), *Sport und Stadtentwicklung (Sports and Urban Development)*. (S. 316-346). Aachen: Meyer & Meyer.
- Hebbel-Seeger, A. (2018). 360°-Video in Trainings- und Lernprozessen (360° video in training and learning processes). In U. Dittler & C. Kreidl (Eds.), *Hochschule der Zukunft - Zukunft der Hochschule (University of the Future - Future of the University)*. (S. 269-296). Heidelberg: Springer.
- Herbst, D. G. (2008). *Storytelling*. Konstanz: UVK.
- Herbst, D. G., & Musiolik, T. H. (2016). *Digital Storytelling. Spannende Geschichten für interne Kommunikation, Werbung und PR (Digital storytelling. Exciting stories for internal communication, advertising and PR)*. Konstanz & München: UVK.
- Klöppel, M. (2008). *Infotainment. Zwischen Bildungsanspruch und Publikumserwartung. Wie unterhaltsam darf Information sein? (Infotainment. Between educational claim and audience rating. How entertaining may information be?)*. Marburg: Tectum.
- Lawson, B.D. (2015). Motion Sickness Symptomatology and Origins. In K. S. Hale & K. N. Stanney (Eds.), *Handbook of Virtual Environments: Design, Implementation, and Application* (pp. 531-599). Boca Raton: CRC Press.
- Lescop, L. (2017). Narrative Grammar in 360. In W. Broll (Eds.), *Adjunct Proceedings of 2017 IEEE International Symposium on Mixed and Augmented Reality (ISMAR-Adjunct)* (pp. 254-257). New York: IEEE.
- Miller, C. H. (2013). *Digital storytelling: A creator's guide to interactive entertainment*. Burlington: Focal Press.
- Pope, V. C., Dawes, R., Schweiger, F., & Sheikh, A. (2017). The Geometry of Storytelling: Theatrical Use of Space for 360-degree Videos and Virtual Reality. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI 2017)* (pp. 4468-4478). New York: ACM.
- Schobelt, F. (2016). *Grabarz & Partner: VW Up: "Immer mittendrin" im 360-Grad-Video (Grabarz & Partner: VW Up: "Always right in the middle" in the 360-degree video)*. Retrieved from <https://bit.ly/2KNXs53>.
- Scholz, H. (2016). *Akzeptanz von Virtual Reality: Deutschland auf dem letzten Platz (Acceptance of Virtual Reality: Germany in last place)*. Retrieved from <https://bit.ly/2BOTYMR>.
- Singer, M. J., & Witmer, B. G. (1998). Measuring Presence in Virtual Environments: A Presence Questionnaire. *Presence: Teleoperators and Virtual Environments*, 7(3), 225-240.
- Slater, M., & Wilbur, S. (1997). A Framework for Immersive Virtual Environments (FIVE): Speculations on the Role of Presence in Virtual Environments. *Presence: Teleoperators and Virtual Environments*, 6(6), 603-616.
- Theobald, T. (2016). *BMW-M2-Launchkampagne. Fünf Sportwagen, ein Supermodel und das rasanteste Hüchenspiel der Welt (BMW M2 launch campaign. Five sports cars, a supermodel and the fastest shell game in the world)*. Retrieved from <https://bit.ly/2QuI6rw>.
- Volkswagen Media Services. (2016). *Die junge Zielgruppe im Visier: Volkswagen startet Digital-Kampagne des neuen up! (Targeting the young target group: Volkswagen launches digital campaign of the new up!)*. Retrieved from <https://bit.ly/2RAR9EN>.

Vosmeer, M., & Schouten, B. (2014). Interactive cinema: Engagement and interaction. In A. Mitchell, C. Fernández-Vera & D. Thue (Eds.), *Interactive Digital Storytelling* (pp. 140-147). Bern: Springer.

