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Introduction

In 2016, Facebook, Sony, and HTC released new Virtual Reality (VR) hardware. In combination with other VR devices such as Google's Project Cardboard and locomotion simulators (e.g. Virtuix Omni), Oculus rift, PlayStation VR, and Vive aim to push VR gaming into the mass market. A similar development appears to be happening in the Augmented Reality (AR) sector, with evermore hardware and applications available. Clearly, the entertainment industry is getting increasingly interested in harnessing current technological advancements for their immersive capabilities and intense impact on the human body.

Debates on VR and its potentials for digital games often revolve around the concepts of fictionality and narrativity.[1] The premise of this paper is to scrutinise these theoretical frameworks and, more specifically, call for a refinement in terminology. Are VR worlds[2] indeed fictional worlds that are inhabited by fictional characters? If so, do they tell stories or is there another, perhaps more suitable, way to describe world-making in VR systems?

We understand virtuality, broadly conceived, as the condition of an entity to produce the appearance, actions, and atmospheres of any other entity but without actually *being* that entity. From a design perspective, virtuality implies a crafting of potentials. Not least due to their underlying digital code,

virtual objects, machines, and environments open up an array of possible options waiting to be actualised. However, this array of options is transformed through interaction with hardware components, bodies, and other things. When a possible option becomes enacted or expressed, the virtual materialises; it takes on a specific form that shapes its use and experience.[3] Hence, following game designers Katie Salen and Eric Zimmerman, we take VR worlds to be 'space[s] of possibility' that provide a playground for several modes of representation, enaction, and experience.[4]

Certainly, VR worlds can involve great stories. However, this does not imply that they are narratives.[5] Here, we touch upon the second key term for our argument: while commonly associated with narrativity, as we will outline further below, we advocate for a broader understanding of fictionality to include *any* self-contained, possible world[6] that is characterised by its own rules, conventions, and structures contributing to its immersive potential. Thus, we claim that VR worlds can be fictional, but this fictionality differs significantly from that of traditional narrative media. Accordingly, we want to introduce the term *virtual fictionality* to differentiate between the fictional world of a VR experience and the fictionality of a novel, motion picture, or video game. Unlike its narrative counterpart, virtual fictionality designates a world-making strategy that builds on actual physical agency and, hence, heavily relies on the performative mode. It is the combination of potentiality, enaction, and physical experience that makes VR systems unlike any other.

The problem of narrativism and the boundaries of narrativity

The term 'narrativity' has risen within the postclassical paradigm of narratology and refers to an essential quality or potential that classifies phenomena as narrative.[7] Gerald Prince, for instance, differentiates between 'narrativehood' and 'narrativeness'.[8] While the former refers to the extensional dimension of narrative entities (i.e. elements of narrative), the latter points to their intensional one (i.e. qualities of narrative).[9] Of course, this is not an axiomatic definition but a heuristically valuable distinction in that it reveals the error of posing narrativist questions in the first place.[10] Although gameplay perspectives have gained in importance,[11] there is a tendency, particularly in media and cultural studies, to interpret digital media ecologies as narratives. On the one hand, this development is the result of the general

expansion in narratological approaches connected to the so-called 'narrative turn'.[12] On the other, it also highlights the importance of narration as one of the most powerful cultural practices and cognitive strategies for making sense of the world.[13]

By examining non-narrative entities through the lens of narrativity with increasing frequency, however, suddenly everything appears to be a story. Espen Aarseth called this phenomenon 'narrativism'.[14] Narrativistic approaches often overlook the essential qualities of non-narrative media, and tend to lose definition.[15] Accordingly, as one of its most problematic points Aarseth criticises the 'overgeneralization' of narrativism and draws attention to the fact that narratives are not the 'primary, perhaps only, mode of understanding our cognitive perspective on the world'.[16] In the context of computer game studies, Markku Eskelinen already suggested other modes of perception or construction of meaning besides narration. Among them is the dramatic or ludic one, which Eskelinen coined the 'gaming situation'.[17]

From our point of view, narrativism is an inductive fallacy. Following scholars such as Oliver Laas, we would like to emphasise that applying narrative as a cognitive schema does not imply narrativity to be an intrinsic quality of the object in question: 'Even if game sessions *produce* narrative sequences, *producing* narrative and *being* narrative are different things.'[18] An example: you can finely craft a coherenly structured account of your workday and the result might indeed be interpreted as a narrative phenomenon. However, this does not imply that your workday itself *is* a narrative. Rather, it comes into being through your active engagement with your environment, moment by moment. You might experience this unfolding of your workday as fragmented, messy, and incoherent. Narration helps us transform this messiness and complexity into fictional coherence and simplicity. Since narrativisation is such a crucial sense-making strategy, it is frequently used in documentary films, reality TV shows, news articles, advertisements, and even scholarly papers. Yet, that does not make the world a story.[19] The same holds true for VR worlds. The fact that you can retrospectively construct a narrative out of your performance and interaction with others does not mean the world emerging in front of you is necessarily a narrative phenomenon. The point is that nearly everything can be narrated retrospectively – not least due to record functions, playback buttons, and sorting algorithms. What is at stake in the examples mentioned, then, is not an *inherent* but rather an *ascribed narrativity*.[20] Taking a closer look at VR worlds, the question that arises is to what extent it can be beneficial to consider these phenomena in terms of

their inherent or ascribed narrativity. To prevent misunderstandings, we do not want to deny the heuristic value of narratology for the analysis of digital media. Instead, our aim is to underline the necessity of recognising its limitations and, thus, increasing its analytical benefits.

Consequently, we should not start our analysis by presuming the narrativity of a particular object as a pre-existing given but by interrogating what narrativity means extensionally and intensionally. Pleading against narrativism means scrutinising narration as our default theoretical framework and carefully examining whether or not a media experience is, indeed, inherently narrative and what function a particular agent or element therein might serve other than that of a narrative one.

Fictionality and narrativity

Since narration always produces a certain storyworld, asking for the extension and intension of narratives brings another quality of media objects to the fore: fictionality. One of the most influential scholars in (traditional) game studies, Roger Caillois, uses the concept of fiction to describe the As If-mode of games in contrast to their rule-systems.[21] Theorising a game's fictionality in this manner tends to construct it in opposition to notions of truth and reality. By contrast, literary theorists primarily focus on the aspects of fiction that concern the representational mode of an object. A result of this is the distinction between fictional and factual (or non-fictional) representation.[22] Due to their various meanings throughout different languages, however, the terms connected to the theory of fiction become rather fuzzy. In German (and according to Frank Zipfel)[23] 'fictionality' is limited to the notion of representation while 'fictivity' refers to what is represented. The (multimedia) text itself then is fictional while the world and its characters are fictive, whereas in English both the characters and the worlds they inhabit are fictional. Originally denoting the nature of a novel, words like 'fictitious' are hardly found in literary studies and narratology.

From our viewpoint, the increasing usage and importance of the terms 'fictional' and 'fictionality' in contemporary literary and media studies signal a general shift in cultural studies – a shift that affects the humanities on a global scale due to the role of English as the lingua franca in the majority of scholarship.[24] A closer look at the current practices in the humanities as well as the media industry suggests that it is nearly impossible to think of

fictionality without narrativity.[25] Therefore, it appears problematic to apply fictionality to the study of non-narrative phenomena such as VR worlds without any further modification. On that note, we propose that not only is fictionality limited to the notion of narrativity, but we are also in need of a broader understanding of the concept in media studies. As a result, we suggest to view fictionality as the quality, or worldliness, of *any* artificially produced, self-contained possible world along with its particular rules, modes, and architectures creating opportunities of (inter-)action for their temporary inhabitants.[26] In that sense, VR documentaries could also be regarded as producing possible worlds, yet characterised by a particular relationship to the 'actual world'.[27]

How real is virtuality?

Marie-Laure Ryan defines VR as 'an immersive, interactive experience generated by computer'.[28] What we find problematic about such broad definitions is that they are strongly influenced by the media industry itself. In the face of economically informed notions and terminologies, it becomes even more evident how important it is for our scholarly endeavour to tease out more carefully the key terms of our study. Utilising 'the mirror' as a metaphor for the gap between the real and the virtual image Jacques Lacan establishes a dichotomy similar to the differentiation between reality and fictionality mentioned above.[29] Following this 'pre-digital' notion of virtuality, the real is characterised by having a concrete physical form while the virtual, on the contrary, by its lack thereof (similar to the ontological understanding of the actual world and its relationship to possible worlds).[30] The manipulation of an image requires acting in a real space, *in front of* the mirror. Bringing New (digital) Media into focus, the metaphor of the mirror gradually loses its epistemological power. When users of free-roam VR systems put on the headmounted display (HMD), their relationship to the screen changes dramatically: they physically step into the virtual world; they are *inside* the mirror. The virtual object, in this sense, can behave, act, and be acted upon similar to the real one it is mirroring – it works, from an aesthetic standpoint, in the same way the (mirrored) real one does. From an ontological perspective, however, it is of an indeterminate status.[31]

The impression that is likely to emerge is that of immediacy and immersion until the point when reality and virtuality might even appear indistinguishable.[32] We could describe this phenomenon as a virtual simulation of the real. Applying Frasca's definition of simulation,[33] a VR world is designed around a 'similarity relation' to translate as many behavioural aspects as possible from real world complexity into simpler models by means of dynamic imitation and reduction.[34] In the context of computer games, Jan-Noël Thon has adopted Frasca's concept to define the components (or venues) of a fictional world that players can manipulate through the interface as simulations.[35] If we look at VR environments, this interface does not only encompass the screen or other portable devices needed for play but the human body itself. The human body – and this is an important point – becomes an interface in such environments. Similar to regular computer games, an in-game action requires a physical movement of some form to progress further in the fictional world, i.e. to push buttons on a controller. As the following case study will exemplify, however, constant physical movements through virtual environments simulate real actions or actions that could be real in a particular fictional world.

Various contemporary definitions of virtuality[36] reflect the fact that this concept often implies potentiality. Following Salen and Zimmermann, we can conceptualise VR environments as 'spaces of possibility' that are dependent on an acting subject.[37] Accordingly, agency becomes an important factor in VR worlds: an agent is required as 'the condition of activity'.[38] This agency encompasses the user's ability to manipulate the space s/he is performing in. The user acts within an environment and, by doing so, can influence what is happening within the virtual world. In contrast to fictional worlds of narratives, the user's actions affect the virtual world substantially. As a result, we can conclude that not only is the manipulation of the virtual image (1) dependent on physical, or non-virtual, counterparts but (2) also involves learning how to handle the particular game mechanics by using one's own physical skills and embodied knowledge.

To grasp the particular interplay between the corporeal agency of the user and the screen as well as its perceptive effects, 'atmosphere' is a term worth considering. While qualified by distinct characteristics, atmospheres appear to be of an indeterminate ontological status. According to the German philosopher Gernot Böhme, they are products of aesthetic work and manifest themselves in subjective embodied experience.[39] In other words, atmospheres are features of tempo-spatial constellations in which the specific

subject-object-relation affects us in a particular way. Since an atmospheric space always points to its own spherical presence, our perception of any given situation is crucial to the way we make sense of the world. If we immerse ourselves through performance in an environment designed in close approximation to our lifeworld, atmospheres of the real might very well convince us to suspend our disbelief. In our context, a VR experience, then, is aesthetically produced by users of digital technology moving through a space of action characterised by atmospheres of reality. Therefore, the user, or rather, *configurator* and his or her affective performance are at the heart of our concept of virtual fictionality which we will outline below.

The concept of virtual fictionality

Even though the image resolution still requires development and the graphics often show glitches, VR systems offer a different type of gaming architecture. In the following, we would like to point out key aspects that are specific to VR worlds.

One of the most striking features of VR technology is probably that it changes the relation between the user and the screen dramatically. While ego-perspective and 360° camera tilting is nothing new to the game industry, a VR HMD allows the user's gaze to *visually enter the game environment*. The resulting impression is that of *being present in* rather than *looking at* the virtual world.[40] With the help of motion capture technology and wireless devices, not only head but also full-body movements can become crucial aspects in navigating the space and controlling the game. This *active appropriation* positions the user at the very centre of the VR world, amplifying the sense of *physical presence*. This point is also of special importance for the world itself: together with its specific rule-governed game mechanics and hardware components, the VR environment turns into a 'space of possibility' that enables the user – whom we will now call *configurator* – to physically act in and upon it and, thus, operates in *a performative mode*.

Though still relying on well-known ludic and representational elements, the focus lies on the configurator's *performance* in, *interaction* with, and *modification* of the world. The distinctive worldliness of VR systems, thus, stems from a unique type of *physical agency* enabled by the technology's affordances. This is typical for digital media, which generally strive to *increase the role of the user* in contrast to traditional mass media. Since VR technology offers a

dense variety of sensory stimuli we can follow Oliver Grau's conceptualisation of immersion to consider the configurator's perception as likely to fuse with the image media. Grau characterises this process as 'diminishing critical distance to what is shown and *increasing emotional involvement* in what is happening'.[41] Hence, VR immersion differs from intellectual stimulation or emotional transportation readers or viewers might experience when immersing themselves into a narrative.[42] By hermetically sealing off the configurator from almost any external input, the VR system itself creates a tempo-spatial 'telepresence'[43] that supports the instalment of an *alternative reality*.[44] Numerous YouTube videos illustrate the ways in which the performative elements and affective stimuli of these worlds trigger physiological and emotional responses such as sweaty hands, dizziness, increased heartbeat, screaming, or attempts to hide or flee.[45] As a result, the virtual architecture lends itself to an immersive rather than a narrative experience that is designed to suspend disbelief.

Fig. 1: Reactions to playing Alone in the Rift (2013) by Mashable.

To conclude, as new strategy of world-making, we still regard VR worlds as fictional. However, their fictionality is closely intertwined with their *half-real* environment and, thus, operates on its own rules, strategies, and infrastructures.[46] Narrative fictionality, on the one hand, designates the worldliness of a space that is represented through *modes of showing and telling*, provides the recipient with an *illusion of tempo-spatial exploration*, and lends itself to a narrative interpretation. Virtual fictionality, on the other, refers to the

worldliness of a space that is created through physical agency and, hence, heavily relies on the *performative mode*.

Finally, we think of virtual fictionality as a condition of technologically mediated possible worlds that are defined by specific agent-centered traits. The perception as well as the agency of the configurator are constitutive elements of such worlds. S/he can act in and upon a 'space of possibilty' and in doing so experiences a world that *feels* real. In this sense, virtual fictionality is a responsive environment that creates a telepresence characteristic for virtual worlds.

You are the game: A case study of *Zero Latency*

As one of the first VR gaming venues, Melbourne-based *Zero Latency – The Dark Ride*[47] serves as an example to illustrate the specific traits of virtual fictionality outlined above.

Fig. 2: Trailer of Zero Latency.

Developed in reaction to the Oculus Kickstarter launch at the end of 2012, the aim of the same-titled company was to build a tracking system that would allow players to physically step into the game world.[48] Following the tradition of a zombie shooter, *Zero Latency* is a multiplayer free-roam system that combines current VR technology with full-body tracking and common shooter game elements. Similar to screen-based multiplayer shooters, the

mission is simple: 'to turn on a set of generators and then escape safely from the zombie infested compound'.[49] By analysing the specific practice of playing *Zero Latency* in combination with its design and technological affordances, we seek to unpack the special appeal of transferring this setting into a virtual environment.

In groups of six, configurators are equipped with wireless computer-packs, VR HMDs, headphones, and plastic guns. While physically moving through the 400-square metre sized warehouse for about 45 minutes a session, the specifically developed motion capture technology tracks their physical location. Instantly, the in-game location is generated accordingly and the avatar accurately responds to the configurator's actions. By stepping into designated areas or markers, they can activate doors and lifts to be relocated in the virtual world and enter another level or section of the game. This mechanism allows walking back and forth within the warehouse while covering a new virtual space at the same time.

Physically performing the game with their entire bodies, the configurators' tempo-spatial explorations directly progress the virtual fictionality: strategically, they make their way through the war-torn city with burning cars and destroyed buildings while the world and its components correspond to their actions. In order to aim, configurators will need to hold the plastic gun up into the direction they want to shoot. Running, jumping, hiding, and aiming exemplify physically demanding tasks that require skill and embodied knowledge. While the configurators are also *able to communicate* with one another via headsets to fight the increasing number of zombies and terrorist attacks together, individual statistics of successful kills in relation to ammunition fired, kills, deaths, and headshots are provided to them after the game is finished. Introducing such competitive elements additionally supports the focus on the configurators' *actual physical performance*.

Alongside its performative agency, one of the most striking characteristics of *Zero Latency* is that it stimulates the configurator's sensory perception and produces extreme behavioural reactions in the process (such as people trying to hide beneath virtual objects or jump back when being attacked by a zombie). The synchronisation of movements and audio-visual feedback creates an illusion of presence. The gaze and actions become one with that of an avatar in the virtual world. Moreover, haptic features such as wind machines are used to increase the sense of immersion. Even though the ontological status of the virtual might appear ambivalent, the physical and emotional (re-)actions are real: they have consequences in the virtual world as well as its

corresponding environment. The game, thus, needs to be set in a controlled and safe setting. For that reason, the developers have installed proximity sensors to prevent configurators from walking into physical walls and introduced a full-time game master who functions as a voice-of-god providing information on what to do next, and the option to pause the game if necessary.

In an interview with the Australian television show *Good Game*, the developers of *Zero Latency* elaborate on the challenges they encountered when trying to create the system. Tim Ruse explains, 'it's almost like you're building a theme park ride', highlighting the differences in the design process to regular computer games. With questions such as 'How are we getting people in? How are we getting them out? How do we keep them safe and how do we keep them entertained?',[50] *Zero Latency* not only varies from traditional game designs, it also points to the aspects that are of most significance to what would be better described as an experience.

In summary, *Zero Latency* positions the configurator at the centre of the world, physically inhabiting and appropriating the virtual (and actual) space while controlling the game with one's entire body. The focus clearly lies on the performance of each configurator and interaction with the teammates. Assuming *performative agency* within this world, however, is physically demanding. Moreover, the immersive potential produced by hermetically sealing off the senses raises tension to the point where configurators might merge in the thrilling atmospheres of the virtual surroundings and, thus, start acting more methodical and cautious than in a screen-based shooter. This aspect highlights the intensity of affective stimulation and tempo-spatial telepresence, leading to an increased emotional involvement. Having a group of people walking 'blindly' through a warehouse space, experiencing intense emotional and physiological responses, naturally, also becomes a matter of safety concerns.[51]

Exit reality: Concluding remarks

Drawing on our analysis of the VR world produced in *Zero Latency* and the ways it enables the configurator to experience the tempo-spatial dimension and modify it accordingly, we wish to support our claim that the worldliness of virtual systems empowers players to harness space in new ways. In the

shape of a first-person multiplayer shooter, *Zero Latency* barely relies on narrative elements or interpretations to construct its worldliness.[52] We do not encounter character development, a background story, cut-scenes, or any other types of embedded narrative characteristics.[53] We only have a mission aim: survive the zombie apocalypse. This is fairly similar to screen-based shooters. Although playing a slightly bigger role, ludic components do not appear to be at the core of the virtual world either. Choosing between different types of firearms and strategically making your way through the world without getting killed are common features of regular shooters as well. What is really at stake here, then, is the specific type of agency the configurators are provided with. Similar to an arcade, they perform a series of actions using their body movements, they interact with one another as well as virtual objects; they explore and inhabit the space in a confined but still unusually liberating way. This refers to the fact that not only is the individual agency increased in the virtual world, but a 'collective agency' emerges that does not exist in traditional fictional worlds produced by narratives.[54] These types of agencies have far-reaching implications for the game design: since people are moving through a half-real space, controlling the game mechanics with their bodies, their actions are virtually effective just as much as they have real consequences. The design problem then becomes that of creating a system that controls people's movements in a way that they stay safe when blindly walking through an actual location.

The metaphor of a theme park appears to be a well-suited framework for thinking of the worldliness created by virtual fictionality. Due to the immersive set-up, the configurators are invited to fully engage with the components of the world. Aiming at establishing a seamless alternate reality evokes an intense embodied experience in the process. Just like walking through a haunted house, neither the narrative, nor the ludic, but the *affective* dimension is at the heart of this experience. All of the elements of the virtual architecture work together to create an affective intensity that ultimately supports the suspension of disbelief. As a result, the brain is tricked: people jump back when being attacked by zombies, they try to hide beneath virtual tables and get dizzy when having to walk across a narrow bridge.[55] The intense effect of VR worlds on the configurator's perception is connected with – to call this back in mind – the changed role they play in such worlds. They are agents in an action-theoretical sense, they are the configurators of events. In fictional worlds created by narrations, this part can only be filled out by the author. Thus, it becomes clear that it is of limited use to combine narrativity and

virtuality here. With more complex examples in mind, such as the VR theme park *The Void* which opened its gates in Utah in the summer of 2016, it becomes crucial to step away from narrativity as the only theoretical framework because it might risk missing the point.[56] On that note, the concept suggested in this paper is less a concluded theory than a plea for an integral and interdisciplinary approach to empirically study the media practices and effects of VR worlds and their inhabitants.

Authors

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Notes

[1] Cf. Nellhaus 2015, Wee & Tan 2002.

[2] Following Marie-Laurie Ryan's conceptualisation of computer games as 'possible worlds' and Henry Jenkins' notion of environmental storytelling and narrative architecture, we use the term 'VR world' to denote the fictional space occurring in a 'VR environment' (Ryan 1991; Jenkins 2004). VR environment, in turn, refers to the technological apparatus as well as the physical and virtual architecture needed to produce the VR world and its options for user (inter-)actions. This understanding is similar to David J. Chalmers notion of virtual worlds, who describes them as 'an interactive computer-generated environment, of the sort that we (seem to) inhabit when using virtual reality' (Chalmers 2017, p. 314). Moreover, 'VR system' will serve as an umbrella term to encompass both, the environment as well as the respective world. As we will outline in greater detail in the section on virtual fictionality, the user of this technology or inhabitant of these worlds can be called 'configurator' due to the unique agency provided.

[3] Cf. Dourish 2016, p. 43. While acknowledging the fact that there are competing conceptualisations and definitions of virtuality, in the context of VR and concepts often connected to VR including simulation, interaction, artificiality, immersion, telepresence, or communication we locate the term in the space unfolding between potentialities and actualities. Cf. Heim 1993, pp. 110-117.

[4] Salen & Zimmerman 2004, p. 67.

[5] Certainly, digital media and VR environments can contain narrativity. Nevertheless, the usage of narratological terminology in cultural studies often leads to overly broad conceptions and misinterpretations.

[6] In our understanding, possible worlds are built around at least one 'actual world'. This actual world is the centre of that universe and connects all worlds with each other by logical rules. But what is an actual world? From an ontological standpoint, it might be defined as the given 'real' world. From a constructivist standpoint, it might be defined by its inhabitants declaring it their actual world (cf. Ryan 2012; Schroeder 1996). Hence, a possible world is something that is constructed from a particular point of view rooted in the actual world and determined by the qualities ascribed to it.

[7] Cf. Abbott 2011.

[8] Prince 2008, p. 20.

[9] The extensional dimension encompasses all elements or objects 'which [...] constitute narratives', whereas the intensional dimension does not refer to elements or objects but to qualities of narratives. Prince 2008, p. 20. Accordingly, Marie-Laure Ryan states that an 'extensional narrative world consists in a set of "compossible narrative agents" (i.e. agents created by the same text) together with the actions and properties ascribed to these agents. The intensional narrative world is the sum of all the meanings expressed by the text' (Ryan 2012).

[10] Narrativistic approaches tend to use very broad definitions of narrative concepts (character, plot, story world). This leads to an enormous range of objects that are considered to be narrative. This expansion in research topics also affects the intensional dimension and results in fuzzy understandings of the research objects themselves. Prince's differentiation offers (without providing particular definitions) valuable tools to analyse narrative entities and prevent narrativism. To illustrate this strategy of definition it is beneficial to look at narratological studies. Shlomith Rimmon-Kenan notes that 'the term narration suggests (1) a communication process in which the narrative as message is transmitted by addresser to addressee and (2) the verbal nature of the medium used to transmit the message' (Rimmon-Kenan 1983, p. 2). Narration, defined in this

way, means the 'act or process of production' and leads to conceptions of narrativity that are (intensionally) deeply connected to verbal (written and spoken) media, so that they are (extensionally) limited (Ibid., p. 3). This makes them inadequate for any form of narration that proceeds without using language (i.e. the paintings mentioned by Werner Wolf 2002).

[11] For a current example, cf. Johnson 2018.

[12] Shlomith Rimmon-Kenan is a prominent critic of the terminological erosion in narratology due to the 'narrative turn'. She pleas for a narrower perspective on narrative media and phenomena: 'By narrowing the scope of "narrative", I am trying to defend the term against being emptied of all semantic content: if everything is narrative, nothing is.' (Rimmon-Kenan 2006, p. 17)

[13] Cf. Albrecht Koschorke 2012, who elaborated extensively on the meaning of narratives in our everyday lives.

[14] Aarseth 2004.

[15] Non-narrative, in this sense, are media objects that do not integrate narrative elements as, for instance, plot, narrative characters, or narrative mode into their medial structure. Examples are social networks such as Facebook, digital games such as the *Candy Crush Saga* (since 2012) or newspapers.

[16] Aarseth 2004, p. 49.

[17] Eskelinen 2001. Markku Eskelinen also provides an overview of the problems in (digital) game studies caused by 'narrativism'. Cf. Eskelinen 2012, pp. 209-233.

[18] Laas 2014, p. 34 (emphasis added).

[19] On the contested role of storytelling in the context of documentary practices cf. Weidle 2016.

[20] Kai Matuszkiewicz differentiates between medial and personal narrations in/of digital games (Matuszkiewicz 2017). Werner Wolf differentiates between three degrees of narrativity: 1) a form of full narrativity that is typical for 'genuine narrative' media as novels or motion pictures; 2) narrativity as strong ability of particular media to include narration, i.e. paintings and 3) narrativity as weak ability of particular media to include narration, i.e. instrumental music (Wolf 2002, p. 96). The first type is what we call a 'medium inherent narrativity' while the other two are connected to the notion of ascribed narrativity.

[21] Caillois 2001. Examining the relationship between the rules of a game and its fictional world, Juul explains 'that the rules of a game are real and formally defined does not mean that the player's experience is also formally defined. However, the rules help create the player's informal experience. Though the fictional worlds of games are optional, subjective, and not real, they play a key role in video games. The player navigates these two levels, playing video games in the half-real zone between the fiction and the rules.' (Juul 2005, p. 202). As a ludologist he describes rules as an essential quality of games, while fiction is something like an add-on a game does not necessarily require (cf. ibid., p. 13).

[22] Cf. Martinez & Scheffel 2005, pp. 9-19.

[23] Zipfel 2001.

[24] This does not mean that all of the disciplines of the humanities are affected by this process in the same manner. In philosophy, for instance, there is no mandatory connection between fictionality and narrativity (cf. Heim 1993). Our following considerations are primaryly focused on (digital) media studies.

[25] A first glimpse at the research practices of contemporary literary and film scholars reveals these connotations. If we observe networks like H-Germanistik we will discover that most of the literature analysed by literary critics is narrative. Dramatic or lyric texts play a subordinated role. The same holds true for film studies where the major interest lies in the full-length motion picture rather than on other, less conventional, forms (cf. Weidle 2018).

[26] Other examples of fictional worlds or concepts related to this understanding of fictionality are the 'magic circle' generated by games (cf. Salen/Zimmerman 2004, pp. 94-99). For worldmaking in general cf. Goodman 1978.

[27] William Uricchio argues that documentary makers would focus on 'the task of *world-revealing*' (cf. 2017, p. 193, original emphasis). They create a particular relationship with the actual world by making direct statements about it (cf. Huck & Kiefer 2007, p. 108). Nevertheless, as Weidle argued elsewhere, documentaries strongly rely on fictionality and the aspect of world-building by rule-making becomes ever more pertinent in VR environments (cf. Weidle 2018).

[28] Ryan 2001, p. 12.

[29] Lacan 1978.

[30] The real, following Lacan, is something that cannot be expressed by the imaginary or the symbolic. It is something concrete, specific, something that can only be reduced to its own essence or existence.

[31] Cf. Nellhaus 2015. Australian philosopher David J. Chalmers would reject this bias, because – and connected to his thoughts on virtual digitalism – he considers virtual objects as *real* objects. Virtual objects are actualised through digital processes which, following Chalmers, are real processes. Thus, even virtual objects can be seen as real from an ontological standpoint (Chalmers 2017). While Chalmers observes the materiality and mediality of the digital, our focus lies on human activity, which is why our evaluation of the role of fictionality (or fictionalism) differs from his.

[32] A filmic example for the blurring between reality and virtuality is Christopher Nolan's *Inception* (2010). The protagonist Dom Cobb and his wife Mal travel through virtual dream worlds together. The problem that occurs, then, is that Mal does not want to return to reality. So, Dom decides to plant a thought in his wife's mind by telling her that she lives in a dream. Back in reality, Mal is convinced of still being in a dream and tries to escape by jumping off a building, resulting in her (unintentional) suicide. Mal has lost the ability to differentiate between the real and the virtual world. Another example could be drawn from the art world: British media artist Mark Farid planned an exhibition in which he would be leading the life of another person through VR for 28 days. His aim was to test whether or not he would be able to forget his own identity and believe this mediated reality as his own. So far, the exhibition could not be launched because of insufficient funding. See: http://www.seeing-i.co.uk/ (accessed on 30 June 2019).

[33] Frasca remarks, 'to simulate is to model a (source) system through a different system which maintains (for somebody) some of the behaviors of the original system' (Frasca 2003, p. 223).

[34] Lewis 2001.

[35] Thon 2007, p. 71.

[36] Marie-Laure Ryan distinguishes three popular strategies of defining virtuality: '[A]n optical one (the virtual as illusion), a scholastic one (the virtual as potentiality), and an informal technological one (the virtual as the computer-mediated)'(Ryan 2001, p. 13).

[37] Salen & Zimmerman 2004, p. 67.

[38] Hewson 2010, p. 12.

[39] Böhme 2007; cf. Bareither 2016, pp. 108-115.

[40] Stephan Günzel points out that the particularity of interactive digital games lies in the 'potential of the manipulation of the interactive image itself' (Günzel 2013, p. 360). VR environments take the manipulation of the image one step further.

[41] Grau 2003, p. 13 (emphasis added).

[42] Cf. Murray 1997, p. 97-125.

[43] Grau 2003, pp. 270-295.

[44] Ibid., p. 13.

[45] It remains to be seen whether these effects are indeed related to the particularities of VR technology or to its new and unfamiliar feel as was the case in the initial audience response to *The Arrival of a Train* (The Lumière Brothers, 1895).

[46] Cf. Juul 2005.

[47] https://www.zerolatencyvr.com/ (accessed on 30 June 2019).

[48] Cf. Time Ruse, director of *Zero Latency*, in an interview with the Australian TV show Good Game: https://www.youtube.com/watch?v=xo5RgmWbIWY, TC: 23:14-23:27 (accessed on 30 June 2019).

[49] https://virtualrealityreporter.com/zero-latency-virtual-reality-wireless-multiplayer-immersive-combat-game-gaming/ (accessed on 30 June 2019).

[50] https://www.youtube.com/watch?v=xo5RgmWbIWY, TC 25:52-58 (accessed on 30 June 2019).

[51] Discussions on visual discomfort, motion sickness, psychological implications, and health risks such as eye infections illustrate this aspect even further (cf. Crawley 2015).

[52] Of course, this does not mean that shooter games as a genre are non-narrative in general. The *Mass Effect* series (since 2007), for instance, relies heavily on narrative elements. The point is (and *Zero Latency* demonstrates that) shooters are compelling for VR environments because of their game mechanics and not because of their narrative potentials.

[53] A narrativist would argue against this observation, but from a narratological standpoint we want to invalidate such a position. Configurators of *Zero Latency* can narrativise their experience and we are sure that many of them do. But why and how does this work? 'On the screen a cowboy was standing in front of a low-cost version of the kind of TV Western set I spent much of my childhood watching' (Murray 1997, p. 54). In this description of the lightgun-shooter *Mad Dog McCree* (1990) Janet Murray obviously narrativised her gameplay experience, because her preknowledge of the Western genre had connected the described game session to other narrative experiences she had in similarly shaped fictional worlds. The same holds true for the zombie apocalypse genre as one of the most popular genres in contemporary transmedial worlds. Analysing such phenomena is an interesting topic for studies examining the current expressions of narration as a cultural technique in our digital media culture. However, this approach does not suffice in understanding how VR worldmaking works. In the context of game design, Marc LeBlanc differentiates between 'embedded' and 'emergent' narratives to underline the difference between being a narrative and the ability to narrativise (LeBlanc 1999). Henry Jenkins uses both types of narratives to build his theory of environmental storytelling and Gordon Calleja utilises the concept of emergent narratives as a theoretical ground for his concept of 'alterbiography' (Jenkins 2004; Calleja 2009). Finally, considerations such as that by Matuszkiewicz are based on this long-lasting and underestimated tradition of narratology in digital game studies (Matuszkiewicz 2017). Therfore, it is an additional aim of this essay to strengthen this tradition in order to improve how both forms of narration function in digital media and how they work together.

[54] Cf. Hewson 2010, pp. 12-13.

[55] One of the problems of the broadly discussed suggestive power of VR lies in the (assumed) relationship between ludic-virtual and real-physical violence (cf. Bareither 2016, pp. 39-63).

[56] However, the same also applies to readily accessible and increasingly affordable solutions such as Oculus Quest, which is lowering the threshold for engagement with VR environments at home.

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