The Next Innovation in Immersive [Actuality] Media Isn't Technology—It's Storytelling

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Abstract
This paper explores the *raison d'être* of documentarians and journalists—that of creating emotional connections by transporting audiences "into the story." Enabling technologies for delivering such experiences have become faster, cheaper, smarter, and mobile. Collectively referred to as "immersive media," such technologies have become *de rigueur* in actuality storytelling. Initially promoted as "empathy machines" capable of fostering emotional engagement, problems in rationalizing journalistic-style with immersive media's "designing technology" proved frustrating. What is presented here is a view of immersive media's "narrative technology" as a new storytelling ecology evolving with the aesthetics of immersion and (hopeful) content engagement that induces a state of narrative transportation, or "flow," in which user/participants are both immersed in and actively engaged with the storytelling.

Keywords: documentary, journalism, designing technology, narrative technology, immersivity, agency, empathy, narrative transportation

Introduction

Everyday human communication revolves around stories. Our natural affinity toward story also reveals clues about our evolutionary history and the roots of emotion and empathy in the human mind as well as how the emotional and cognitive effects of storytelling influence our beliefs and real-world decisions (Hsu, 2008). Storytelling is also what we do as humans to make sense of the world. In his book, *Tell Me A Story: Narrative and Intelligence* (1995), computer scientist and cognitive psychologist Roger Schank conjectures that we "need" to tell others the stories that describe our experiences, in part, because the process of creating the story also creates the memory structure of our experiences that will be with us for the rest of our lives. "We interpret reality through our stories and open our realities up to others when we tell our stories" (Schank, 1995, p. 44).

Almost since the beginning of mediated storytelling, the dominant paradigm of journalism has been one of "writing the history of the present," through "telling the stories of the real" (Roeh, 1989). Within the documentary tradition, there emerged two different perspectives. One, championed by the "forefather" of American documentary, Robert Flaherty, was "… to make the unfamiliar, familiar; to discover and reveal… what was distant and past" (McLane, 2012, p. 87). The other perspective was articulated by John Grierson—a contemporary of Flaherty and considered the progenitor of British and Canadian documentary—who believed documentary should "… find new meanings and excitements in the familiar through applying the *creative treatment of actuality*… to the close-to-home work a day modern world" (McLane, 2012, p. 87, emphasis added). Yet, the common goal of both journalism and documentary is for the story to be immersive, to have audiences "lean in" and experience the story (*i.e.*, engagement). For many actuality storytellers this is their *raison d'être*, to create an emotional connection between the audience and the subject that will, hopefully, stimulate insights and encourage or influence action.

Today, documentary—in its "creative treatment of actuality" (Grierson in Forsyth, 1966, p. 13)—and journalism—in its "rhetoric of objectivity" and belief in the "transparency of language" that renders actuality "as it is" (Roeh, et al., 1980)—are both being radically challenged in large part by the rapid growth in digital technologies; especially the internet, and mobile media (Pavlik & Bridges, 2013). Emerging as the *zeitgeist* of a new Century of mediated interaction, augmented reality (AR), virtual reality (VR), 360º video, extended reality (XR), and 3D volumetric capture (collectively, "immersive media") have emerged as technologies promising better interactivity and engagement (Llobera, Blom & Slater, 2013) capable of inducing a greater sense of "presence" than more traditional modes of actuality storytelling (Sundar, Kang, & Oprean, 2017) and inducing an higher level of "empathy" (Milk, 2015) by connecting the user/participant with those inhabiting the "storyworld" (Ryan & Thon, 2014).

Thus, immersive media has rapidly become *de rigueur* in documentary and journalistic storytelling, holding forth the promise of connecting people in a visceral way across time, geography, language, and culture. However, as we move expectantly into a world of immersive media technologies, fundamental questions arises. If storytelling is understood to be, as Schank (1995) contends, an expression of personal and socio-cultural reality, how will immersive media transform actuality storytelling?

Likewise, does the role dynamic and relationship between the storyteller and the user/participant *vis-á-vis* the subject also change? Do issues of agency, narrative authority, and verisimilitude face transformational influences from immersive media technologies with implications for creating new messages and cultural approaches in actuality storytelling? Typically, the relationship between "the audience" and the "mediated experience" is often framed with references to actuality storytelling practices derived from either European observational cinema and its legacy of "referent" and "index" (Barthes, 1981), or the belief at the heart of American direct cinema that any documentary—and journalism, for that matter—could or should be "objective." The more contemporary relationship between journalism, documentary, and immersive media technologies, however, offers the potential for a far more extensive and transformative (re)interpretation of the fundamental aspects of actuality media storytelling. Perhaps it is, as Joshua Meyrowitz observed in his seminal work, *No Sense of Place* (1985), "once invented and used, media affect us by shaping the type of interactions that take place through them… the environments we shape can, in turn, work to reshape us" (p. 329).

This paper seeks to identify and investigate this evolving storytelling ecology ("narrative technology") that is trying to keep pace with the technological innovations ("designing technology") in immersive media; as a technology, a medium, and a mode of expression. From the perspective of documentary and journalistic actuality storytelling, what seems to be emerging is a new immersive *narrativity*[1] and an evolving *narratology*[2] of engagement for telling compelling actuality stories. Therefore, what is presented here is an attempt at merging the aesthetics of storytelling with the technological forces of immersive "storyworld" building by balancing the dilemma of user/participant *agency*[3] with narrative authority (or *structure*[4]) by fostering "narrative transportation" (Green, Brock & Kaufman, 2004), or a state of "flow" (Douglas & Hargadon, 2000). The ultimate goal by which is the user/participant being both immersed in and actively engaged with the storyworld while remaining in the "flow" of the story's verisimilitude.

The "Designing Technology"

Present-day documentative impulses in actuality storytelling have heretofore drawn their inspiration less from the "…post-structuralist models of discourse than from the working procedures of [cause and effect] documentation and validation practiced by

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[1] ***Narrativity*** is the processes by which a story is constructed and presented (or "told"), typically with a distinguishable narrative voice, setting, plot development, and chronology of events, among other attributes.

[2] ***Narratology*** is the logic, principles, and practices of narrative representation that operate within a story and affect perception as well as our ability to produce and process narratives in a multitude of forms, media, contexts, and communicative practices.

[3] ***Agency*** is the capacity of individuals to act independently and make their own free choices. This is typically juxtaposed with Structure (see below). Applied to VR, agency is the sense of immersion or "embodiment" with the freedom to explore and the affordance to interact with the storyworld.

[4] ***Structure*** is the recurrent patterned arrangements which influence or limit choices and opportunities available within a social milieu; in this case, VR. the extent to which a person's virtual interactions in VR can be balanced between story structure and individual agency, is influenced and constrained by both the technological interface affording entry into the storyworld and the sophistication of the 360° video or rendered VR environment.

ethnographic film-makers. And as far as the influence of film history goes, the figure of Dziga Vertov [inspired by Soviet journalism to creatively metamorphose the newsreel into a new, more expressive documentary story form; *c.f.*, Hicks, 2007] now looms much larger than those of either Flaherty or Grierson" (Nichols, 1983, p. 18). The impact this has on the current standard-bearer of the technological advances in actuality immersive media has been difficult to define, let alone place within the evolutionary track of journalism's or documentary's various forms and modes of expression.

Common in journalism and documentary, the "entry-level" technology to immersive media, 360° video, has become ubiquitous with Google Cardboard and Facebook. This technology leverages usually static, dual-fisheye lenses on compact cameras (*e.g.*, Richo Theta Z1, Samsung Gear 360, Insta360 One X), or professional multi-lens rigs capable of shooting 3D 360° videos (*e.g.*, Lytro Immerge, GoPro Odyssey, Insta360 Titan). This technology is often conflated within the general public's understanding of what "virtual reality" is given the market hype. In fact, as platforms of immersive media, 360° video and VR are fundamentally different in how they render for the user/participant the immersive storyworld.

Be that as it may, ever since Jaron Lanier, co-founder of VPL Research, first popularized the term "virtual reality" in the 1980's, it has emerged as a kind of *portmanteau* containing many nuanced definitions—each equally valid. From an engineering perspective, rendered VR (or "virtual environments", *c.f.*, Zaru & Alamgeer, 2018), exemplify the popular representation of the future of immersive media (Figure 1). As such, it comprises a very sophisticated integration of a number of computer-based "designing technologies" ranging from specialized input devices (*e.g.*, wands, data gloves & other wearable hapatics), output devices (*e.g.*, video screens, head mounted displays [HMDs], smart phones & visors), and modeling languages (*e.g.*, *Unity 3D*, *Unreality Engine*, *Blender*, etc.) as well as motion sensors and effectors that allow users to have a pseudo-experience within an immersive, simulated environment.

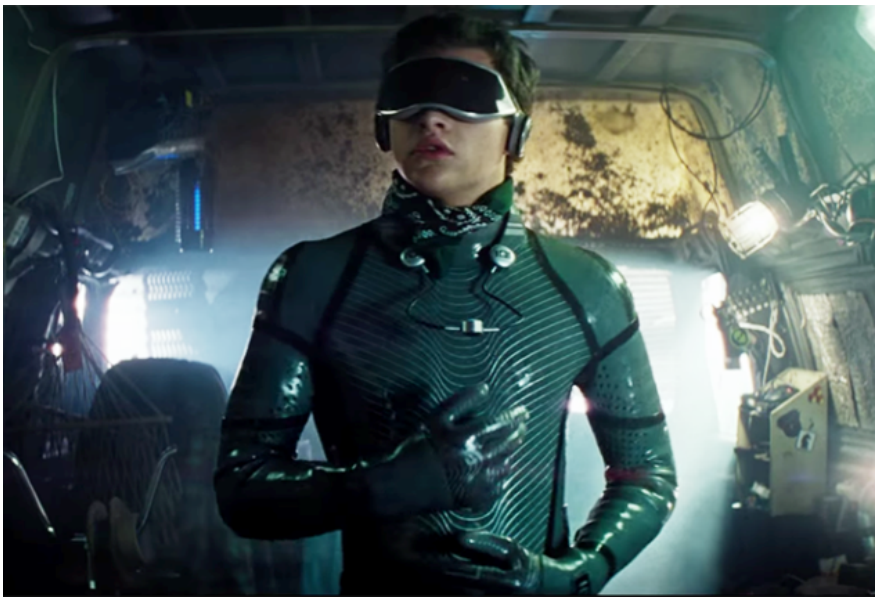

Figure 1: Wade Watts (Tye Sheridan) in a haptic suit in *Ready Player One* (Photo, Warner Brothers, 2018).

Today, VR has been describe as a "meta-medium" encompassing visuals, sounds and other sensations that replicate a real environment or create rendered immersive environments that include 360º video, stereoscopic video, computer-generated imagery, videogames, and avatars in collaborative workspaces (Grabowski, 2017). In his book, *Dawn of the New Everything* (2017), Lanier presents no less than 52 definitions of VR! Many of his definitions are idiosyncratic to the narrative of his book and serve an illustrative purpose, but several stand out (Lanier, 2017):

> Twelfth VR Definition: VR is the technology of noticing experience itself (p. 55).
>
> Thirty-third VR Definition: The ultimate media technology, meaning that it is perpetually premature (p. 204).
>
> Forty-third VR Definition: A new art form that must escape the clutches of gaming, cinema, traditional software, New Economy power structures, and maybe even the ideals of its pioneers (p. 237).

It is evident that, as the "ultimate media technology… that is perpetually premature" (Lanier, 2017, p. 204), the "narrative technology" of immersive media has been "running to stand still" as the "designing technology" has rapidly improved, expanded, and become more capable and sophisticated. As such, VR "…may hold the most potential of any medium that has come before it. However, it will still be subject to all the trial, error, experimentation, and eventual transcendence that its predecessors were… [Still the] most evident path for the emergence of a storytelling language in [VR] will be found on the trail blazed by the early creators in the field" (Bucher, 2018, p. 196). Among these early trail blazing ventures were short trial-&-error creations using then available technologies to produce short, somewhat voyeuristic, Lumière-style 360º videos that merely accompanied more traditional journalism storytelling as a way of providing "environmental context" (Hiltner, 2016). As a low-cost solution to "take VR to the masses, these early experiments in making the VR experience more accessible, through the form of 360-degree films, have shaped the development of these technologies in journalism more generally" (Jones, 2017, p. 173).

The "Narrative Technology"

Science-fiction writer Stanley Weinbaum's, *Pygmalion's Spectacles* (1935), contains arguably the first description of the defining characteristics of VR long before the technology to realize it could have been imagined. In Weinbaum's story, the main character, meets an elfin professor who invented a pair of goggles which enables the wearer to experience "...a movie that gives one sight and sound… taste, smell, even touch... you are in the story… and instead of being on a screen, the story is all about you, and you are in it" (Weinbaum, 2007). As VR rushes to catch-up with this description, subsequent definitions tend to be technology-centric. Understandable, "the immersive nature of media [leads] us to try to understand the conceptual nature of a technology whose features and way of interacting with users require definitions, standards, and approaches" (Rubio-Tamayo, Barrio, & García, 2017, p. 3).

Attempts at building rendered VR narratives adapting journalism's existing narratology (*e.g.*, the *machinima* "docu-game" *Gone Gitmo* built in *Second Life*; see De la Peña & Wiel, 2008), or immersive 360º video experiences employing *cinéma vérité* story tropes familiar to documentaries (Figure 2) were "game changers." However, they were also initially hampered by the nascent—but rapidly evolving—

technologies. Storytellers struggled with developing alternatives to traditional journalistic &/or cinematic "narrative technology" (*i.e.*, the associated aesthetics and techniques of storytelling; in other words, dramaturgy, clarity, cadence, tone, point of view, and *mise-en-scène* that comprise the story) as well as the constraints of still emerging channels of distribution &/or exhibition. Yet to be fully realized are some of the narratological components of the "narrative technology" involving schema (a person's background knowledge for understanding the storyworld) and disciplines such as "…interaction design, human-computer interaction, user experience and interface, and even affective computing… [The] design of interactive systems has also been applied to natural user interfaces in immersive environments… [including] body language and gestures" as well as cognitive factors and ethical issues (Rubio-Tamayo, Barrio, & García, 2017, p. 2). If these aspects of "narrative technology" can be successfully applied, then immersive media's promise as potential "empathy machines" capable of triggering a sense of connection between user/participant(s) and the people or events presented (Milk, 2015), combined with the rapid advances in the "designing technology," might eventually be capable of realizing the "Holy Grail" of a more engaging type of actuality storytelling.

Figure 2: *Clouds Over Sidra* (Arora & Milk 2015) a virtual reality film about the Syrian refugee crisis.

In the face of such optimism, criticisms were quick to emerge. Early claims contend that current iterations of immersive media promoted *Immersion* (with a capital "I") at the expense of inclusion (audience/subject engagement). Likewise, immersive media was perceived as prioritizing the "view (the "spectacle" of the "designing technology"), or even fostering an "Othering gaze" (thus, decreasing empathy and attachment for passive viewers; *c.f.*, Hall, *et al.*, 2013). This was seen as coming at the expense of the "voice"— the "narrative technology" that helps the storyteller connect with their audience. For many first time users/participants in an immersive journalistic or documentary storyworld, they are momentarily fascinated by the virtual experience, especially if they are using HMDs. Unfortunately, after the "wow factor" wears off, the experience may have triggered an initial emotional response but ultimately failed to stimulate empathy or elicit any lasting emotional connection (attachment). The spectacle of immersion's "designing technology" puts the subject on display, with a concomitant diminution of the authorial voice previously inherent in "narrative technology." The storyteller's voice thus silenced results in

user/participant disengagement from the actual story being told (Bello, 2016). Sometimes, "[breakthroughs] in narrative technology tend to shift our attention away from whose telling the story [and the story being told, and] towards *how* the story is being told" (Bello, 2016, emphasis added). In other words, the novelty of immersive media's "designing technology" may overshadow the intended message rendering the storyteller's "voice" ("narrative technology") ineffective—form without content (Slater, 2003).

Meanwhile, a user/participant may have agency in certain immersive storyworlds, but it is without the necessary narrative transportation to engage them in the verisimilitude of the story. This is evident even in well produced 360° immersive video in which the user/participant is "rooted" in the center of an egoistic virtual world (that revolves around them) with agency to look (but not necessarily move or engage) within the structured scene while the subject must be "presented" or "discovered" in the space as they tell their story even as the "auteur" of the work is completely erased (*e.g.*, *The Displaced;* Ismail & Solomon, 2015). In early rendered VR actuality environments where the "designing technology" is impossible to ignore, "real human" agency in a non-gamified actuality (using the actual scenario and audio from real events in a simulated scene; see Figure 3) is limited to a mostly helpless (voyeuristic?) type of empathy lacking "affordance" (perception and information detection that drives action; see, Gibson, 2015) and decreased "attachment" (Alessi & Huang, 1998) for "virtual humans" even though it is known the "referent" (the virtual) is recreated from the actual "index" (the reality).

Figure 3: *Hunger in LA* (De la Peña, 2012) is a rendered *machinima* VR storyworld with user/participant immersion and agency, but no affordance.

To be fair, immersive journalism and documentary is still an emerging field of actuality storytelling utilizing a "designing technology" that is "perpetually premature" (Lanier, 2017, p. 204) and is constantly straining the creative reach of the "narrative technology." Today's immersive media creators are still working their way through this new media ecology. Thus, early difficulties with rationalizing traditional actuality narrative structures with the presence afforded by the "designing technology" of immersive media storyworlds proved frustrating for the storytellers. It became difficult to see how "cause and effect" storytelling envisioned by many journalists and documentarians could unfold if participants could affect how they experience the story, and thus develop differing perceptions of the "realities" or "truths" being

presented. Finding the balance between agency and narrative authority was made all the more difficult when trying to provide a sense of presence, stimulate empathy, and foster attachment for lasting effect, all the while limiting affordance in order to control the story. The task seemed nearly insurmountable with present "narrative technology."

Immersivity & Presence

One definition of "immersivity" describes it as "…the degree to which a VR system stimulates the [human] sensory system without interference from [the] external environment" (Marini, *et al.*, 2012, p. 234). As an aspect of the "designing technology" of immersive media, according to Slater (2003), "immersion" can be objectively assessed and simply represents "what the technology delivers" (p. 1). Typically, immersivity is accomplished through the use of VR installations in large enclosures where user/participants are completely surrounded by the virtual environment, or now more commonly, through the use of head-mounted displays (HMDs). Closely affiliated with the notion of immersivity is the idea of "presence," often used (incorrectly) as interchangeable terms. Not to put too fine of a point on it, presence "…is the [human] response to a given level of immersion" (Slater, 2003, p. 4), and represents the psychological impression of *being there* in the VR storyworld even though participants know they are not, yet still behave as if they were, and have similar thoughts and reactions as if they were actually there (Slater, 2003). Both immersivity and the sense of presence can be enhanced as the fidelity of the realism in the VR experience increases (while simultaneously blocking potential dissonance from external stimuli). Interestingly enough, even though the efficacy of immersivity and presence increases with the fidelity of the realism—for example, in 360° video—it can also be diminished by lack of involvement or affordance in the 360° video storyworld. In rendered VR environments populated by reality based recreations and virtual humans, even with pre-programmed affordances to interact with, and full agency to move within the 3D storyworld, too high a level of visual fidelity can push the user/participant into the "uncanny valley" (a feeling of "eeriness" or cognitive dissonance when interacting with "life-like" virtual humans; see, Stein & Ohler, 2016) with a concomitant drop in feelings of attachment or empathy.

Agency & Affordance

As mentioned earlier, "VR" has been used as a popular term to represent immersive media; both 360° video experiences as well as rendered virtual storyworlds, but there is a profound difference between the two that affects storytelling. In 360° video, the user/participant is contained in a pre-recorded, actuality scene from the "real world" with a 360° field of view without much agency beyond the ability to "look around" the scene. User/participants are essentially "tourists" in the storyteller's world who guides the "tourist gaze" (Leotta & Ross, 2018) through situational content using "heuristic" elemental cues (light, sound, movement, etc.). Alternatively, in rendered VR storyworlds the user/participant essentially operates as an embedded character in the created environment, but with greater agency and the potential for greater (preprogrammed) affordance than technologically available in 360° video experiences.

Immersive media storytelling is complicated and multi-layered. Being both technology and storytelling (even more so than previous media), existing

simultaneously as "artifact" and as "process" that cannot be easily separated, they are relational objects that invite, coax, even demand the user/participant to immerse themselves in the storyworld and engage with the story. As such, the narrative form in immersive actuality is as important as the technical affordance offered to the user/participant. Without a clear narrative, "content fails to ignite and elicit lasting emotion" (Dolan & Perets, 2015). According to Dolan and Perets (2015) the affordance of immersivity and the potential of interactivity embedded in the relational storytelling environment of immersive journalism or documentary can take four narrative forms based on the types of user/participant experiences desired within the VR storyworld. They see this as presenting "untapped storytelling models that are encapsulated by the metaphysical qualities of existence and influence" (Dolan & Perets, 2015).

As illustrated (Figure 4), the user/participant can exist as either an "observer" or "participant" defining their existence in the storyworld. The second defining characteristic, being "active" or "passive," indicates the level of agency and affordance the user/participant can exert within the storyworld. Both *Observant Passive* and *Participant Active* are known storytelling forms. Within immersive media, *Observant Passive* is typical of most 360° videos where the storyteller retains near complete control of the action and information presented (though, erased from view) while the "viewer" is a disembodied tourist within the storyworld, but with limited agency. *Participant Active* represents an embodied character in the interactive storyworld with near complete influence over their own story (think, VR video game), they have agency and affordance while the storyworld acknowledges and addresses their existence; however, their interactions are bound by the "structured rules" and underlying narrative—Ustwo Games' *Land's End* (2015) is a good example.

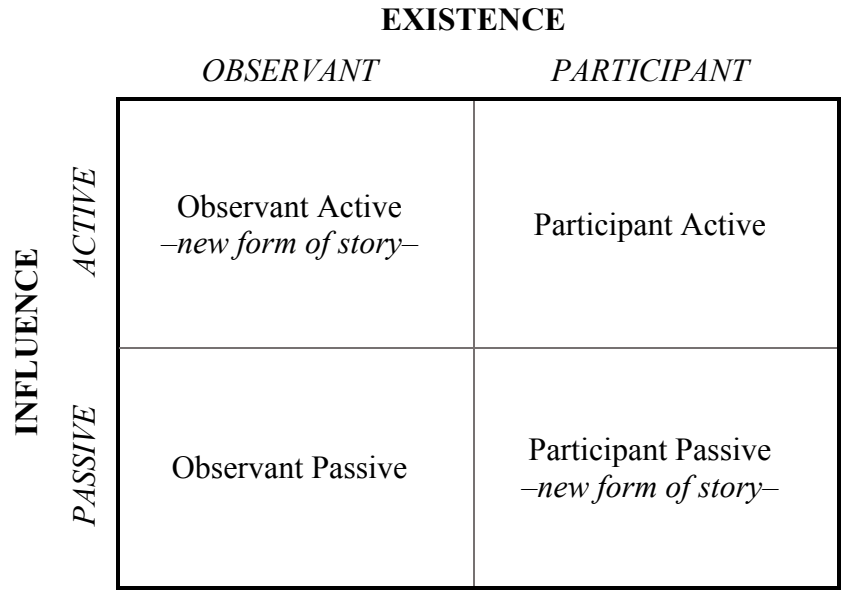

Figure 4: *Observant vs. Participant*: Defined by existence within the virtual storyworld. *Active vs. Passive*: Defined by interactive influence with the story (Dolan & Perets, 2015).

Dolan and Perets (2015) point out that *Observant Active* and *Participant Passive* are relatively new story-forms particularly suited for immersive media. In *Observant Active* the user/participant has no embodiment in the storyworld, but possess

omnipotent decision making powers that contribute to, and dictate, narrative outcome. Agency and affordance are limited by predetermined choices programmed into interactions in a sort of "choose your own adventure" narrative. In this story-form, the "storyteller intrudes on the [user/participant] through freeze frames, narration, subtitles, and annotations" (Dolan & Perets, 2015). A good example of this would be Yoni Bloch's interactive music video, *Pretend to be Happy* (2011). The *Participant Passive* story-form has the user/participant embodied in the storyworld as a character but the story asks nothing of the character; the user/participant is a voyeur, can be acted upon, but is merely a recipient of information or observer of action without agency or affordance. This is somewhat akin to what is now being called *Cinematic VR*[5]. An example of this story-form can be seen in the seven-part episodic feature film *7 Miracles* (2018), directed by Rodrigo Cerqueira and Marco Spagnoli, and released by Vive Studios.

As an overlay to the four story-forms outlined by Dolan and Perets (2015), Jones (2017), identified three narrative forms within the context of her study of immersive 360° journalism. From Jones' perspective, immersive journalism tries to elicit a connection and work against indifference by relying not on presentation, but on experience (De la Peña, et al., 2010). The first story-form is *Social 360*, represented by short 360° news vignettes frequently propagated online to address a fragmented audience and offering content through social media channels. *Reporter-led Narratives* are high-quality, short and simple with a clear and concise purpose and typically viewed through apps developed by established news organizations. *Character-led Narratives* are longer-form immersive journalism with the focus on one to three characters telling the story, typically through direct address. This story-form breaks with traditional journalistic norms—including autonomy, truth-telling, objectivity, and the minimization of harm (Mabrook & Singer, 2019)—"in favor of highly subjective storytelling explicitly designed to elicit an emotional response" (Mabrook & Singer, 2019, p. 2103). As identified by Jones in the conclusion to her study, "[there] is a fundamental shift in the production and viewing of immersive journalism [and one could also conjecture, documentary] in the framing of the story. The viewing experience is determined by the audience and which way they decide to look or focus their attention. However, without interactivity in the narrative… the narrative is still led by the [storyteller] and the framing can be construed accordingly" (2017, p. 182).

Narrative Transport & Empathy

The concept of narrative transportation, "…an experience of cognitive, emotional, and imagery involvement in a narrative" (Green, Brock, & Kaufman, 2004, p. 311) are assumed to take place regardless of the modality of the narrative experience. Most people find their transportation (immersion) into a good narrative pleasurable, cathartic and even transformational—being "lost" in a good story (Gerrig, 1993) is a common refrain. Douglas and Hargadon (2000) conjecture that the pleasures we enjoy from narrative transportation are the direct result of the schemas (fundamental

[5] ***Cinematic VR*** is defined as, "360° video filmed using a panoramic video camera system and played back as an equirectangular video file which allows the user to look around the scene as it unfolds. Depending on the camera system the scenes can be either monoscopic (flat) or stereoscopic (3D)" (Jaunt Team, 2018). Scenes are photo-realistic, with ambisonic (spatially directional) sound-tracks, but typically non-interactive with the user/participant a disembodied presence (witness) to the story as it unfolds.

building blocks of comprehension built through repeated encounters with media genres) employed by the storyteller that are easily recognized and help the user/participant in an immersive media experience understand the narrative technology embedded in the storyworld. "The pleasures of *immersion* stem from our being completely absorbed within the ebb and flow of a familiar narrative schema. The pleasures of *engagement* tend to come from our ability to recognize a work's overturning or conjoining conflicting schemas… [and] to call upon a range of schemas… and whatever guesses we might venture in [order to discern] the direction [of] authorial intention" (Douglas & Hargadon, 2000, p. 154, original emphasis). Immersion and engagement are not mutually exclusive; in fact, if users/participants are not immersed, they cannot be engaged. Most immersive actuality storytelling relies on both, as such, they offer the user/participant the opportunity to enjoy what psychologist Mihaly Czikszentmihalyi calls "flow" (1990). To realize a "flow-state," the immersive and engaging experience must be self-motivating and is characterized by focused concentration, merging of action and awareness, loss of self-consciousness, as sense of controlling one's actions, a distortion of the temporal experience, and the engaged activity is intrinsically rewarding (Czikszentmihalyi, 1990). Narrative transportation or "flow," in interactive actuality storytelling sees the feeling of "being taken into a narrative word [as] a key aspect of [the mediated] experience… [and] the benefits that might come from [the experience] (enjoyment through connection and transformation)" (Green, Brock, & Kaufman, 2004, p. 324).

Frequently associated with concepts embedded in narrative transportation or "flow," the idea that immersive actuality media can stimulate empathy has been a common claim (Milk, 2015), and has also been rebuked as unlikely (Hassan, 2019). However, as social psychologists Kauffman and Libby (2012) contend, there are psychological states and features of narratives that can induce in individuals, without instruction, "the desire to engage in *perspective-taking* and how the merger between self and other that occurs… produces changes in self-judgments, attitudes, and behavior that align with the character's" (p. 1, emphasis added). By experiencing narrative transportation (flow), the immersive media user/participant could experience empathy with the characters in the storyworld through the psychological process of perspective-taking in the experiential narrative. As such, Kaufman and Libby argue that "perspective-taking involves a reliance on one's conceptual knowledge of the self to reason how another person might be responding to or experiencing a particular situation or event... [by] first anchoring on one's own perceptions or judgments and adjusting away from the self to surmise the other's experience" (2012, p.2). Thus, perspective-taking has the power to lower prejudice and discriminatory behavior toward marginalized groups. By extension, immersive media stories could likewise reduce stereotyping by creating space for the audience to imagine interacting with and taking the perspective of people different from themselves—thus, developing empathy for the Other. Obviously, more research in the area of narrative transportation and empathy within immersive actuality environments needs to take place to move the field beyond present hyperbole.

Conclusion

Immersive actuality storytelling through 360°video and rendered VR push the user/participant into a symbiotic relationship with the storyworld and the narrative contained therein. Hopefully, this happens through immersion, fostering a feeling of

presence (if not embodiment), a semblance of agency and affordance that does not compromise the narrative's verisimilitude or choke the storyteller's voice, all while fostering psychological perspective-taking (empathy) and commitment (engagement) with the content. As a "new art form that must escape the clutches of gaming, cinema, traditional software, New Economy power structures, and maybe even the ideals of its pioneers" (Lanier, 2017, p. 237), immersive media are also emerging media. As Dolan and Perets conclude in their review of immersive storytelling form, "Virtual reality's inherent grandeur is invention in story; a digression of theatre, not onscreen, but within screen" (2015).

Immersive actuality storytelling is also closely tied to the designing technology "…of noticing experience itself" (Lanier, 2017, p. 55). The takeaway from this review is that storytellers essentially need to first define the user/participant relationship to the story content, then focus on the fundamental ethics and dramatic arc of the story they wish to tell. These creative choices structure the "narrative technology" (and schemas) that ultimately provide intrinsic meaning to the actuality content (verisimilitude), which can be inferred by the user/participants through the chosen level of agency and affordance the "designing technology" provides &/or allows within the storyworld.

Janet Murray, author of *Hamlet on the Holodeck* (2017), believes that all the shortcomings experienced while inventing new storytelling forms and trying to evolve new genre schemas were necessary for fostering further exploration and refinement, fueling ideation, and the subsequent creation of new content that allows storytellers to continually (re)invent the narrative technology. "Expanding human expressivity into new formats and genres is culturally valuable but difficult work... The technical adventurism and grubby glamour of working in emerging technologies can make it hard to figure out what is good or bad from what is just new" (Murray, 2016). To begin to do this, the immersive actuality storytellers must continue the task of inventing and exploring immersive and interactive story-forms to meet the long-term communicative needs of the networked society while also embarking on the long, patient, slow work of building institutional infrastructures, developing audiences and making a culture. As so eloquently stated by Stephen Apkon (2013), "[One] thing will never change, no matter what kind of new technology emerges in the coming century: we are story animals" (p. 248).

References

Alessi, N. & Huang, M. (1998). The potential relevance of attachment theory in assessing relatedness with virtual humans. In G. Riva, B.K. Wiederhold, & E. Molinari (Eds.), *Virtual environments in clinical psychology and neuroscience*, Amsterdam: Ios Press. Retrieved 1 November 2019 from https://www.researchgate.net/profile/Milton_Huang/publication/12947820_The_potential_relevance_of_attachment_ theory_in_assessing_relatedness_with_virtual_humans/links/56174e5508 ae1a8880036af3.pdf.

Apkon, S. (2013). *The age of the image: Redefining literacy in a world of screens*. New York: Farrer, Straus & Giroux

Arora, G. & Milk, C. (2015). Clouds over Sidra [360-video]. *Within*. Retrieved 3 September 2019 from https://www.with.in/watch/clouds-over-sidra/.

Barthes, R. (1981). *Camera lucida: Reflections on photography*. London: Vintage Classics.

Bello, B. (2016, June). Of VR and verité: Reality under construction [Commentary]. *The Journal of Digital Media Arts and Practice*. Retrieved 6 February 2019 from http://www.idmaajournal.org/2016/06/of-vr-and-verite-reality-under-construction/.

Bucher, J. (2018). *Storytelling for virtual reality: Methods and principles for crafting immersive narratives*. New York & London: Routledge.

Cerqueira, R. & Spagnoli, M. (2018). *7 Miracles* [vr eposidic series]. Retrieved 23 November, 2019 from https://www.7miracles.viveport.com.

Czikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New Yourk: Harper.

De la Peña, N. (2012). *Hunger in LA* [VR video]. Retrieved 24 October 2019 from https://www.youtube.com/watch?v=wbsDeaqXEkk.

De la Peña, N., Weil, P., Llobera, J., Giannopoulos, E., Pomés, A., Spanlang, B., Friedman, D., Sanchez-Vives, M., & Slater, M. (2010). Immersive journalism: Immersive virtual reality for the first-person experience of news. *Presence: Teleoperators and Virtual Environments*, 19 (4), 291–301. Retrieved from DOI: 10.1162/PRES_a_00005.

De la Peña, N. & Weil, P. (2008). *Full Gone Gitmo tour (lowres)* [video]. Retrieved 1 October 2019 from https://www.youtube.com/watch?v=DXz-UqRQKIo.

Dolan, D., & Perets, M. (2015, December 20). Redefining the Axiom of Story: The VR and 360 Video Complex. Medium. Retrieved 1 November 2019 from https://medium.com/@devon.michael/redefining-the-axiom-of-story-the-vr-and-360-video-complex-bee3c20d69df.

Douglas, Y. & Hargadon, A. (2000). The pleasure principle: immersion, engagement, flow. In *Proceedings of the eleventh ACM on Hypertext and hypermedia* (HYPERTEXT '00), 153-160, New York: Association for Computing Machinery. Retrieved from DOI=http://dx.doi.org/10.1145/336296.336354.

Forsyth, H. (Ed.) (1966). *Grierson on documentary*. Los Angles: CA: University of California Press.

Gerrig, R.J. (1993). *Experiencing narrative worlds: On the psychological activities of reading*. New Haven, CT: Yale University Press.

Gibson, J.J. (2015). *The Ecological Approach to Visual Perception* (Classic Edition). New York & London: Psychology Press.

Grabowski, M. (2017, September). Perceptions and poetics of VR documentaries [video]. ZDOK, *Zürich Documentary Film Conference*. Retrieved 2 March 2018 from https://blog.zhdk.ch/zdok/2017/perception-and-poetics-of-vr-documentaries/.

Green, M.C., Brock, T.C., & Kaufman, G.F. (2004). Understanding Media Enjoyment: The Role of Transportation Into Narrative Worlds. *Communication Theory*, 14(4), 311-327. Retrieved from https://doi.org/10.1111/j.1468-2885.2004.tb00317.x.

Hall, S., Evans, J., & Nixon, S. (Eds.) (2013). *Representation: Cultural representations and signifying practices* (2nd Ed.). London: Sage Publishing.

Hassan, R. (2019). Digitality, virtual reality and the 'empathy machine'. *Digital Journalism*. Retrieved from https://doi.org/10.1080/21670811.2018.1517604.

Hicks, J. (2007). *Dziga Vertov: Defining documentary film*. London & New York: I.B. Tauris & Co., Ltd.

Hiltner, S. (2016, August 24). Bear traps and empathy engines: Virtual reality at The New York Times. *The New York Times, Insider Events*. Retrieved 29 January 2019 from https://www.nytimes.com/2016/08/24/insider/events/virtual-reality-at-the-new-york-times.html?partner=bloomberg.

Hsu, J. (2008, August). The secrets of storytelling: Why we love a good yarn. *Scientific American*. Retrieved 27 May 2018 from http://www.scientificamerican.com/article.cfm?id=the-secrets-of-storytelling.

Ismail, I. & Solomon, B. (2015). The displaced [360-video]. *The New York Times*. Retrieved 22 October 2019 from https://www.youtube.com/watch?v=ecavbpCuvkI.

Jaekel, B. (2015, November 12). NY Times VR play is publisher's most successful app launch. *Mobile Marketer*. Retrieved 29 January 2019 from https://www.mobile marketer.com/ex/mobilemarketer/cms/news/video/21676.html.

Jaunt Team (2018). *The cinematic VR field guide*. Retrieved 23 November 2019 from https://creator.oculus.com/learn/cinematic-vr-field-guide/.

Jones, S. (2017). Disrupting the narrative: Immersive journalism in virtual reality. *Journal of Media Practice*, 18 (2-3), 171-185. Retrieved from https://doi.org/10.1080/14682753.2017.1374677.

Lanier, J. (2017). *Dawn of the new everything: A journey through virtual reality*. London: The Bodley Head.

Llobera, J., Blom, K. & Slater, M. (2013). Telling stories within immersive virtual environments. *Leonardo*, 46(5), 471-476. Retrieved from https://www.jstore.org/stable/43834079.

Leotta, A. & Ross, M. (2018).Touring the "World Picture": Virtual reality and the tourist gaze. *Studies in Documentary Film*, 12 (2), 150-162. Retrieved from https://doi.org/10.1080/17503280.2018.1503859.

Mabrook, R., & Singer, J. (2019). Virtual reality, 360° video, and journalism studies: Conceptual approaches to immersive technologies. *Journalism Studies*, 20 (14), 2096-2112. Retrieved from https://doi.org/10.1080/1461670X.2019.1568203.

Marini, D., Folgieri, R., Gadia, D., & Rizzi, A. (2012). Virtual reality as a communication process. *Virtual Reality*, (16), 233-241. Retrieved from DOI 10.1007/s10055-011-0200-3.

McLane, B. (2012). *A new history of documentary film* (2nd Ed.). New York & London: Continuum.

Meyrowitz, J. (1985). *No sense of place: The impact of electronic media on social behavior*. New York, Oxford: Oxford University Press.

Milk, C. (2015, March). How virtual reality can create the ultimate empathy machine [Video]. *TED2015*. Retrieved 3 September 2019 from https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine ?language=en.

Murray, J. (2017). *Hamlet on the holodeck: The future of narrative in cyberspace* (updated edition). Boston, MA: MIT Press.

Murray, J. (2016, October 6). Not a film and not an empathy machine. *Immersive News*. Retrieved 1 November 2019 from https://immerse.news/not-a-film-and-not-an-empathy-machine-48b63b0eda93.

Nichols, B. (1983). The voice of documentary. *Film Quarterly*, 36(3), 17-30.

Pavlik, J. & Bridges, F. (2013, January). The emergence of augmented reality (AR) as a storytelling medium in journalism. *Journalism & Communication Monographs*, 15(1), 4-59. Retrieved from https://doi.org/10.1177/1522637912470819.

Roeh, I. (1989). Journalism as storytelling, coverage as narrative. *The American Behavioral Scientist* (1986-1994), 33(2), 162-168. Retrieved from

https://journals.sagepub.com/doi/abs/10.1177/0002764289033002007?journalCode=abs b.

Roeh, I., Kats, E., Cohen, A.A., & Zelizer, B. (1980). *Almost midnight: Reforming the late night news*. Beverly Hills, CA: Sage.

Rubio-Tamayo, J., Barrio, M., & García, F. (2017). Immersive environments and virtual reality: Systematic review and advances in communication, interaction and simulation. *Multimodal Technologies and Interaction*, 7 (21), 2-20. Retrieved from doi:10.3390/mti1040021.

Ryan, M. & Thon, J. (Eds.). (2014). *Storyworlds across media: Toward a media-conscious narratology*. Lincoln, NE & London: University of Nebraska Press.

Schank, R. (1995). *Tell me a story: Narrative and intelligence*. Evanston, IL: Northwest University Press.

Slater, M. (2003). *A note on presence terminology*. Retrieved 23 January 2019 from https:// www.researchgate.net/publication/242608507_A_Note_on_Presence_Terminology.

Stein, J., & Phler, P. (2016). Venturing into the uncanny valley of mind—The influence of mind attribution on the acceptance of human-like characters in a virtual reality setting. *Cognition*, 106, 43-50. Retrieved from http://dx.doi.org/10.1016/j.cognition.2016.12.010

Sundar, S.S., Kang, J., & Oprean, D. (2017). Being there in the midst of the story: How immersive journalism affects our perceptions and cognitions. *Cyberpsychology, Behavior, and Social Networking*, 20(11), 672-682. Retrieved from DOI:10.1089/cyber.2017.0271.

Ustwo Games (2015). *Land's End* [VR game]. Retrieved 1 November 2019 from https://www.ustwo.com/work/lands-end.

Warner Brothers (2018). *Ready player one: See the future* [video]. Retrieved 30 October 2019 from https://www.youtube.com/watch?v=iLZSB-5Dyf8&feature=youtu.be.

Weinbaum, S. (2007). *Pygmalion's Spectacles* [org. 1935]. Project Gutenberg, EBook #22893. Retrieved 30 October 2019 from https://www.gutenberg.org/files/22893/22893-h/22893-h.htm.

Zaru, A.J. & Alamgeer, M. (2018). An overview of virtual reality. *IOSR Journal of Computer Engineering*, 20(2), 30-35. Retrieved from DOI: 10.9790/0661-2002013055.

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