Lock up your stories – here comes Virtual Reality

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Abstract: Virtual Reality(VR) is here to stay. Virtual Reality offers a unique personal experience that alters one's perception of the environment around them. While VR headsets have many mechanic limitations, the immersion is strong enough that the elusive goal of presence is reached. Fundamentally, it works well enough and will improve over time. What does this mean for animation? We have seen several professional attempts to create VR animated stories with varying degrees of success. It is clearly evident that the rules of cinematography, staging and editing are all changed. Cinematography is replaced with environmental design, camera placement becomes viewer controlled and any editing must be very gentle on the participant. Moreover, if animation is seen as a linear narrative, a controlled communication from story-teller to listener, what is gained by giving the listener more freedom? In the same way that early 3D computer animation placed pressure on the aesthetics of traditional animation, VR will exert a pressure on the design and structure of animation.

1. The personal experience of VR

The ability of VR to overwhelm one's cognitive spatial awareness is profound. Even though a user of VR knows that the experience is not real, the body's natural perceptions take over. The body responds as if the experience is genuine – the visceral experience over-rides the cognitive knowledge. Perhaps, over time, users will adapt to the illusion of VR, and regain some independence from the perceived experience. When stereo 3D cinema was first displayed to audiences, they too ducked, fell over, and were genuinely tricked by the illusions. Now, of course, stereo 3D cinema viewing is so passé. Viewers have regained their control over their suspension of disbelief, and now simply enjoy the enhanced viewing experience.

Fig. 1. visualphotos.com

But users of VR have not yet overcome the mechanics of the experience, and it is possible they never will. It is quite possible that VR will continue to overwhelm our senses, creating immersive worlds of illusion.

2. Involvement, immersion and presence

The term "presence" is discussed by a wide field of research, but generally refers to the sensation of "being there". Slater and Wilbur separate immersion and presence as:

– **Immersion:** an objective description of aspects of the system such as field of view and display resolution.
– **Presence:** a subjective phenomenon such as the sensation of being in a virtual environment.

Witmer and Singer [1] include the concept of involvement, "a psychological state experienced as a consequence of focusing one's attention on a coherent set of stimuli or related activities and events." In this way, involvement and immersion are closely related, and both are necessary to create the higher sense of presence. With VR, this greater involvement is generated by removing distraction and forcing focus into a single experience. Therefore, by creating an immersive and involved experience, the sense of presence is achieved.

With VR comes a certain level of technology, and the success of immersion comes when the individual can indicate that objects, events, entities, and environments are perceived as if the technology was not involved in the experience[2]. This is similar in some ways to the "suspension of disbelief" that a movie viewer will engage in. The viewer knows that the experience is not real, but willingly engages, letting many senses and emotions be guided by the experience. The exclusive presence [3] can be increased by reducing sensory input of the real world.

3. When is presence a good thing?

With VR hardware sales worldwide expected to hit 9.6 million in year 2016, and increase up to 64 million in 2020, [4] there is real incentive to integrate VR into screen productions. Interestingly, according to Touchstone Research, the leading VR area in the U.S. is travel and exploration (37%). Close behind is gaming at (33%), then shopping, (10%) and movies (4%) [5].

The explorative nature of VR is appropriate to explorative situations, such as travel and environment oriented games. VR also has the ability to place the user into unique simulations, taking full advantage of the power of presence. This has seen a rise of documentary VR, such as Clouds over Sidra [6] and drama, as in Injustice [7]. The overwhelming immersion and presence in the scene increases the sense of involvement and empathy.

4. VR and 360 degrees – where are you?

Unless the user is experiencing a computer generated game environment, most VR productions are 360 degree videos. The user is presented the view as captured by the camera. When the camera is placed in a natural, human-like position, the viewing experience has a natural feeling. The immersion makes sense to the body's senses, and physical disassociations such as balance are not affected. However, when the camera views is not human-like, this can create all sorts of orientation problems. If the view makes sense in other ways, e.g. flying on the back of a bird, a users' imagination can take this step and happily engage. However if there is no reason for the position of the view, disorientation can be increased to the point of causing imbalance and motion sickness. While this floating viewer phenomena can be improved by the use of visual devices, such as horizon lines and objects that are continually in view, the experience needs to make sense. In computer gaming the VR view is often the player's character, role-playing within the game environment. In many genres this makes perfect sense, such as flight sims, first person shooters, driving games, even third person games, as the camera is permanently fixed to the main character. If these associations are not used, then there is area risk that the use of VR becomes a gimmick – VR for the sake of VR. As witnessed with stereo 3D cinema, viewers soon tire of any gimmick that adds little meaningful substance to the experience.

With narrative led genres, the placement of the viewer is even more complicated and raises several key questions:

- Does the viewer have any impact on the timing, pace, or any aspect of the narrative?
- Does the viewer interact in any way with the environment?
- How does the viewer experience edits – to change shots, or change scenes?
- Does the viewer change locations, and who initiates this?

These questions also identify the difference between storygiving and storytelling.

5. Story-giving

I use this term story-giving to describe situations where the story is presented, but it is up to the player to experience. Many first person and third person computer games adopt this approach, allowing the player to discover the overall story and aim of the game. The player will experience this story at their own pace, and often in their own personal timeline order. While game narratives may often be linear, games usually provide some exploration and choice, even though the path to completion may be pre-determined. Some games are more open, with the narrative reduced to a background story only. Players then, create their own narrative through interactions with the environment and game characters.

6. Storytelling – from witness to unknowing participant

I use the term storytelling to describe the situation where the author has complete control over the delivery of the story. The viewer then becomes a recipient, experiencing the story in the way that the storyteller intends. This is true to the original tradition of the storyteller where the manner in which the story is told is as important as the story itself. When animation is viewed as a storytelling communication, the animator is the story-teller, with total control over how the story is told. This is indeed one of the charms of the medium of animation. All of the acting techniques and nuances of animation are employed to engage the viewer to experience the story intended by the creator. In this role, animation is storytelling more so than storygiving.

Eugene Chung of Penrose Studios, makers of The Rose and I, talks about how presence and storytelling are in conflict. In VR, successful presence means that the viewer is viscerally transported to another world – the engagement is with the entire "world". Tricks to focus attention on to the story, such as darkening backgrounds, has the effect of decreasing the sense of presence. With story-telling, the listener becomes focused on the story, and partially disengages with the physical surroundings. This is why physical interruptions, like people talking in the cinema, theatre are so aggravating, as they break this engagement with the story. "The deeper question that this conflict brings up is the question of Point of View – who are we supposed to be in the VR experience? [8]".

7. VR explorations

The **Immemoria** project [9] was a student's project at Massey University in late 2014. The project explored fundamental considerations of film making in VR. The viewer begins by following an eagle in a pre-determined 360 fly-through amongst snow capped ragged mountains. The eagle provides a successful visual anchor for the viewer. Following the fly-through, the camera, and therefore the viewer, undergo several edits, eventually placing the viewer on the ground, witnessing a hunter character retrieve prey.

These edits were not fully resolved, and while the viewer was still in the scene, the edit changes reminded the viewer they were also external to the story. This was a very successful world-building project, and provided many good insights into VR camera work.

Fig. 2. Immemoria, Massey University, 2014

Surge is a music video created by Arjan van Meerten and produced by Dutch studio House of Secrets [10]. The viewer is placed in a geometric world where vibrating cubes form themselves into various arrangements indicative of some sort of life-logic DNA back story. The work concludes with a parade of towering figures that degrade as they walk past the viewer. Like many music videos Surge present's ideas more so than a story. The viewer experiences one continuous view, while events change around them. The viewer does not interact, and rather than watching a story, the experience is more like witnessing an event.

Fig. 3. Surge

With **The Rose and I** [11] the viewer is able to move around the central, spherical world where the story takes place. The project was released originally for the mobile Gear VR with full surround 3D tracking, and then for the

Oculus at Sundance with limited, but still very effective, 3D tracking. The modelling style of the environment and characters is also very 3D toy-like, further enhancing the realness of the experience. When viewing, the experience is like watching a soccer-ball size real-life animated diorama,

with 3D printed and painted characters moving through the story. There is no interaction with the story, apart from altering the view, and so the context is very much as an audience, looking down on this cute, engaging little world.

Fig. 4. The Rose and I

Buggy Night, by Google Spotlight Stories [12], illustrates the use of a technique to control the gaze. Launched on the Motorola Moto X phone in 2014, then 2016 on YouTube, Buggy Night uses the orientation of the phone to point the torch light to illuminate the night time

cartoon swamp scene. The action only takes place once the light is shone. However, this narrow illumination of the light diminishes the experience of VR and presence. It operates more like a gaze-prompted story book.

Fig. 5. Buggy Night

Pearl, by Google Spotlight [12], is possibly the best current example of a "witnessed" linear VR story. It employs an endearing daughter-father story that takes place inside the family's hatch-back car. The viewer is either in the passenger seat, or is maybe part of car itself. The viewer can look 360 degrees, but the essential action takes place in one direction. This fixed location is very successful, as it binds the viewer to a place that makes sense. The viewer is not disembodied. The story includes many scene cuts, but none cause disorientation, as the location of the viewer

remains fixed. It is like watching a story from outside, but inside. Pearl successfully combines the outside-ness of the normal screen watching, with the inside-ness of VR. This

allows the viewer to actively engage with the story in a very traditional way, but is drawn much closer to the story because of VR.

Fig. 6. Pearl

With Google Spotlight's VR movie **Special Delivery** [12], the viewer is placed in the middle of a town square – actually more like a circle. When the viewer looks away from the main action, the main action is paused, and the viewer will see other short stories taking place, or vignettes, inside and about the houses. Once they look back to the place of the main action, the story will continue. Built initially as a 360 mobile app, some of the actions do not transfer ideally into VR. There is a point when the viewer cannot see the roof top, and so the view involuntarily dollies upwards, without the viewer in control. This break in viewer

Fig. 7. Special Delivery

control, while gently executed, is nonetheless out of context with the VR experience so far, and detracts from the overall immersion. The viewer is surprised by the unexpected movement – a case of "Who did that?" However, the overall approach of pausing the story based on viewer gaze caters to viewer exploration, and goes a long way to reduce the stress of missing out on the action.

The **Colosse** project, released March 2016 [13], also uses gaze driven mechanics to control the pacing and action. In addition to measuring the viewer's gaze to trigger events,

the developers intended to make use of gaze to affect where elements appeared. However this effect is not used in the main story progression, and is so subtle as to be unnoticeable. Colosse remains a linear story progression.

Fig. 8. Colosse

8. Conclusion

While storytelling does not immediately lend itself to the VR viewing model as readily as travel exploration or immersive game playing, narrative driven VR has a specific place in the development of the VR experience. While specific techniques are emerging that suit the storytelling context, there is as yet no recognized formula of how to assemble a narrative driven VR project. One key decision that determines the workflow is which mode of story experience to adopt; is it creator driven, or receiver driven? Does the viewer experience the story as determined by the creator of that story, or does the viewer "discover" the story as they experience the VR world they are in? In terms of tools, both models can make use of VR specific tools such as gaze awareness and viewer direction. Both models have issues with scene changing and editing.

When exploring narrative VR it is important to keep in mind what makes storytelling work. For this we have many models already, from picture story books to animations. If VR is employed too passively, it is simply just another type of screen – one that currently needs cumbersome equipment and eliminates sharing. If VR is employed with a deeper understanding, and a readiness to see narrative in a larger context, the enhanced viewer experience is quite profound, creating an immersive, unique and powerful experience.

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Biography

Gray Hodgkinson is an animator and academic from Massey University, Wellington, New Zealand. Gray has been developing and leading animation education for 17 years, 14 of those at Massey University, New Zealand, and has been instrumental in creating links between tertiary institutes and industry in New Zealand and internationally. Gray has presented papers on animation research and pedagogy at Melbourne, Germany, the U.K., Canada, Japan, Taiwan, South Korea and Singapore. In recent work, Gray has been exploring the inclusion of 3D virtual reality to animation. Animation and virtual reality share a common fundamental in that they both take place inside an artificially constructed world. This commonality provides a starting point to explore how narrative and direction is affected when virtual reality is employed.