

## Interactive VR film Storytelling in isolated space

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### **Abstract**

*There are many differences in narrative delivery between common movies and Virtual Reality(VR) films due to their differences in the appreciation structure. In VR films, scene changes by cuts have hindered the immersion of the audience instead of promoting narrative delivery. There are a range of experiments on narratives and immersion to solve this issue in VR films. Floating Tent applies hand gestures and immersive effects found in game elements and does not disturb narrative delivery by setting proper spaces and employing a direction technique to enable the melting of narratives into the characteristics of the spaces. There are time limits to offsound and mission performance, and devices fit for apocalyptic spatial expressions are made through a program. One of measures for the increasingly growing interactive storytelling in VR films is effective immersion. In narrative delivery, it is important to consider spatial setting and immersion to enable active intervention into events for immersion rather than passive audience only supposed to watch characters' acting.*

**Keywords:** *VR interactive storytelling, Isolation, Hand gesture, Jacques Lacan's Mirror Stage, Off screen.*

## 1. INTRODUCTION

Virtual Reality(VR) is close to a closed type unlike Augmented Reality(AR) that is open, given the structural aspects of VR devices. AR shows users real spaces by adding virtual layers to them, being an open type. VR needs to replace viewers' sensory organs completely with virtual ones by blocking all of the information coming from outside [1]. For these characteristics, VR devices can be categorized in the closed type. These characteristics of VR devices put viewers in a twofold dilemma about their presence. They face a contradictory situation of being present and also not present themselves. In VR, users usually use sensor-based hand gestures to increase their presence as hands are the most immediate and effective body parts in VR [2]. This study set out to investigate storytelling in a way of highlighting the closed nature of VR devices, examining a work to figure out how viewers would recognize a situation easily for spatial setting and higher immersion. The study would also introduce sensor approaches to hand uses based on the works. Funded by the Korea Creative Content Agency (KOCCA), *Floating Tent* is a VR film to embody an interactive narrative style. Trapped inside the closed and isolated space of a tent, viewers get to use many different tools to escape and realize what their presence is by moving between the tent and other spaces. The present study examined the narrative structure of the VR film for its immersion and the ways that the technologies adopted in the film developed.

A couple of conditions must be met for VR users to commit and immerse themselves to a narrative: first, where should viewers be moved to? Since VR space is where viewers stand on foot, they should be continuously reminded that they are present in the space [3]. There should be preparations to help viewers realize they belong to the VR space; second, there should be embodied space setting to correspond to the bodies of viewers. That is, it is important to figure out what characters should appear and draw viewers into stories. It is also necessary to set unique viewpoints (views) for the audiences since the value of experiencing VR film narratives will hold when VR films are feasible at the experiential level; and third, presence of viewers should be created, which means that they should be able to consider themselves as part of film experiences and even forget they are in a virtual world.

VR helps to focus on space and empathize easily for its closed nature. Increasing immersion helps to highlight the characteristics of very experiential media. VR devices are machines, but people can even feel the inner emotional state within a well-made narrative thanks to such devices. The effect will come alive only when VR films make the audiences enter the internalization process.

## **2. Checkpoints for Story Building in VR Films**

There are several elements to tell a story and increase effective immersion in VR films: establishment of placeness in VR films, relations between characters in the space, characters' consistent paths of action, scene changes, and story flow relations [4].

Certain events should define the nature of a place to establish its placeness. One should secure a legitimate reason for his or her presence at a place by letting a series of specific events stay in the memories of the audience continuously. In the end, VR spaces whose placeness has been secured will be remembered as places where the audience will get immersed in the narratives.

There should be legitimate reasons for why certain characters should be here to figure out relations between characters in VR spaces. Narratives can be delivered effectively when there is a clear distinction between whether the actors have penetrated into the space of the audience and whether the audience has penetrated into the space of actors.

In VR films, characters should choose things reasonable for the space according to the narratives. Otherwise, they will end up doing things completely unrelated to the space. The audience exists in the same space as the characters and is thus influenced by whether the characters do what is possible or impossible. Digging earth at a bank is, for instance, an irrational story development. Haggling over prices with merchants at the market is a very rational act. In the former case, the audience will expect the next situation and concentrate on the film. In the latter case, the audience will see rational causal relations and have lower immersion than the former case. It should also be set whether other character can intervene in the story. If there are no interventions, the characters and the audience will simply exist in the space with no changes and thus lose their concentration. Characters' consistent paths of action either comply with the uniqueness of space or do not comply with it. There is a need to set what kind of spatial relations characters will make with the audience in the story. Unlike common movies to present actors' roles and acting within a frame, spaces and places come before actors' acting in VR films. When relations among spaces, places, and characters become apparent, the basic structure of VR storytelling is complete. Actors have no need to cram their acting onto the audience by force. Since the audience co-occupies space with the actors, they can feel the actors' emotions and feelings indirectly. It will be desirable not to inject artificial emotions to promote the understanding of an event. If the location (place) where the audience stands is used often or not changed often, the location is where they identify with the stories and themes of VR films, which indicates that it is critical to set a place for the effective delivery of storytelling. In VR, scene changes should have close relations with the narrative in the flow relations of stories. If there are

many different places in the film, a plan should be made about their order to fit the delivery of the story [5].

A change between places should have connections with the story and happen in the movements and causal relations of characters. When it is difficult to move people, the cameras will move instead. The VR advertising film *Help* has spatial completeness in the relations of 'under the bridge→subway stairs→inside the subway→under the bridge again [6].

In VR films in this linear approach, there is a structural issue derived from the audience's only position as bystanders. In the VR film *Miyubi*, the gaze interactions of things help the audience understand the story [7]. When there are clear reasons that the audience should stay at one place in the film, choices of scene changes are limited. The story should see its ending at the place. When the locations of the audience are not clear in the film, places can change and move, which broadens the scope of choices for scene changes. The story will reach its ending as characters move around many different places, which is not much different from the delivery process of narrative grammar in common movies.

One should be careful with interactive stories, though. In such stories, it is difficult to move around places in a linear fashion. A relative approach should be made according to whether the audience participates in narrative delivery or not [8]. In *Floating Tent*, places are set to change the moment when the audience holds a thing to move to another space.

### 3. Topic and Intention of Planning in <*Floating Tent*>



Figure 1. *Floating Tent* screenshot

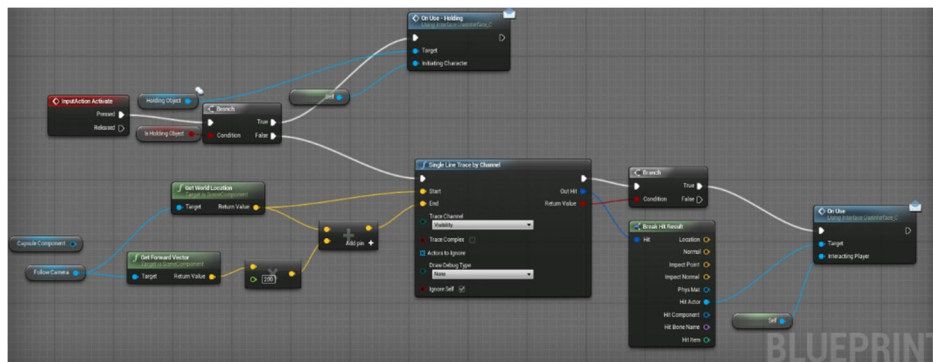


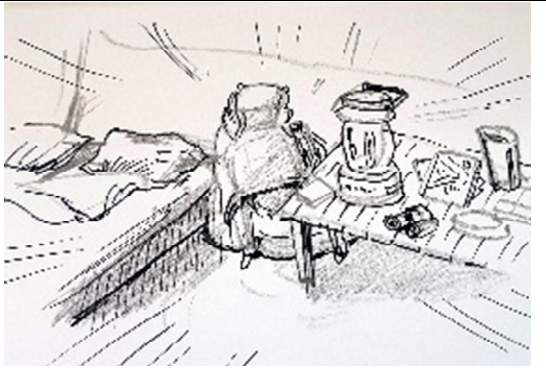
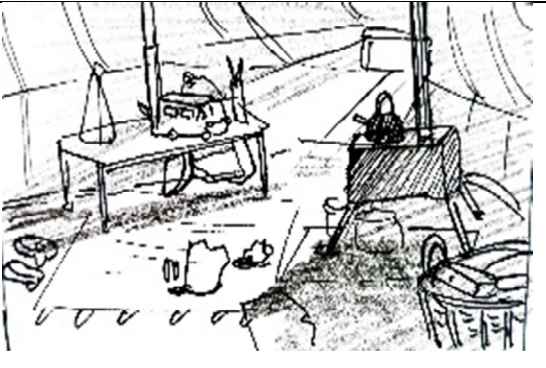
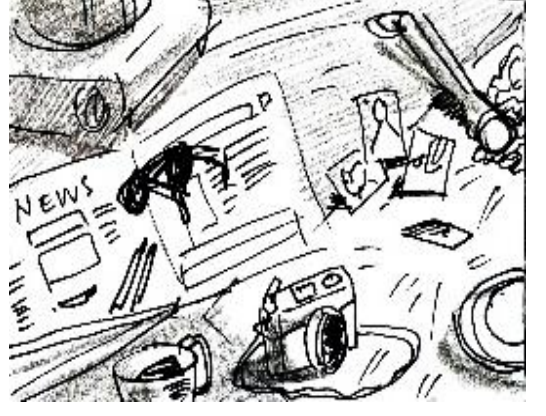
Figure 2. Object grab blue print

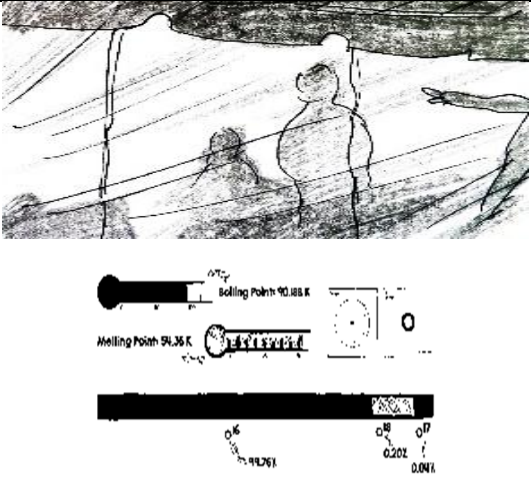
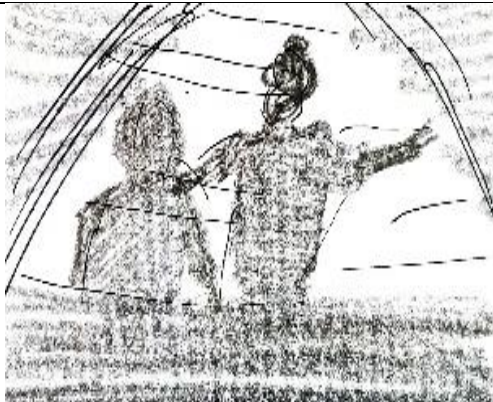
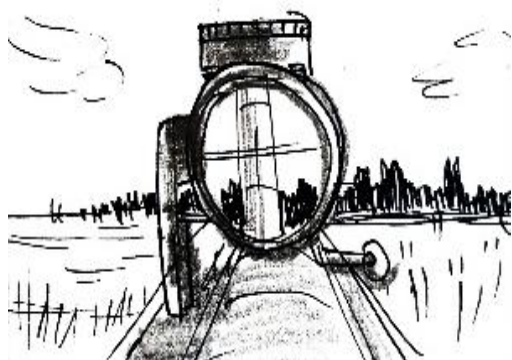

*Floating Tent* was made as an interactive VR film to combine its narratives with the audience's interactive acts. The film is set in a tent that fits the closed nature of VR devices well. The story depicts apocalyptic phenomena in spaces in and outside the tent. The media cave form was adopted to maximize the legitimate reason for the choice of the closed space of a tent for VR space. The film makes use of Plato's cave story

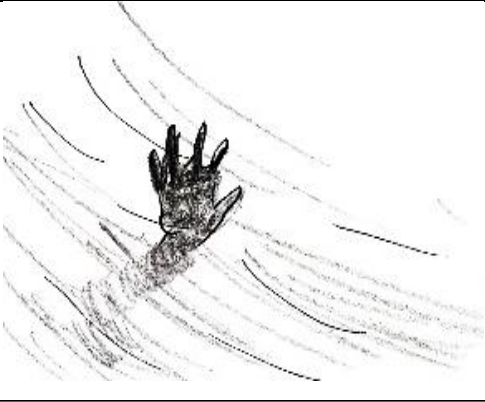
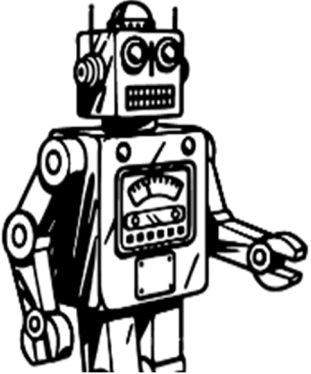
through shadow performance and presents game elements through interactions. The curiosity for outside spaces is felt inside the closed tent(closed space). Psychological principles are used as tools of narrative expressions through the off-sound format. This film was made with the concept of experiencing a movie rather than that of seeing a movie. There are limited environments of time and oxygen reduction outside the tent. When viewers move to outside spaces, they will be able to feel spatial experiences. Game elements are inserted into its story. This narrative style allows the audience to intervene in the narrative development based on their activity instead of remaining as bystanders.

#### 4. The Storytelling and Narrative Structure of <Floating Tent>

Table 1. Storyboard by Scene

Scene	Contents	Image
Prologue	When I woke up, I found one of my colleagues missing in the tent. I, the main character(viewer), open my eyes and find myself in a strange tent.	
S#1.	The tent is empty. It is morning, judging by the sunlight coming through the window. I find a memo left by a colleague next to me. I am certain that he is missing. I sometimes hear people talking far. I am alone in this empty tent.	
S#2.	Looking around the tent, I see small tools scattered on the ground. Strange floor plans, manuals of some objects, newspaper articles, maps, several photos, a camera, green tea bags, a boiling teapot, shamanistic forms made of wood, convenience store receipts, sunglasses, telescopes, flashlights, etc...These small tools seem to belong to the missing colleague that has disappeared from the tent.	

<p>S#3.</p>	<p>When viewers choose a couple of props(interacting), the shadow outside the tent starts to change gradually. Once the outside noise comes inside the tent, the viewers' imagination is stimulated.</p> <p>※ Limited time and oxygen will be distributed to viewers.</p>	
<p>S#4.</p>	<p>There are noises, lights, and sporadic shadows outside the tent. Viewers can estimate where they are with the noises and shadows. Once realizing where they are, they are eager to go outside.</p>	
<p>S#5.</p>	<p>After choosing their small instruments, they find the tent door opening and faces the outside world.</p>	
<p>S#6.</p>	<p>My colleague has disappeared suddenly. Is he man or woman? Why did he or she leave me alone? In case of never finding him or her, I will have to hurry and find other spaces with my instruments.</p>	

S#7.	Can you find your missing colleague? In case of failure: Time is up → Getting in a random tent	
S#8.	In case of success: Getting to know your identity(clockwork robot) in the mirror viewers will check who they are in the mirror. Once the film is reset, they will return to the empty space in the prologue.	

## 5. Shadow Being inside the Tent(film device for narrative delivery)

The setting of shadow upon the tent stimulates viewers' desire for external expansion as there is closed space rather than open space in the VR domain. Offscreen and sound offers signals about the outside space.

Scene changes and sequence in common movies are expressed in the mobility of the tent in the VR film. As narrative scenes and spaces move around, the audience in the tent can follow events and place changes naturally. Surrounding spaces of the tent will change instead of the tent itself so that the audience will experience no dizziness in VR. Interactions to trigger the move of space are stored in things inside the tent through programming. The audience will choose objects with HMD sensors. As spaces(plain, mountain, empty house, urban street, etc.) changes according to object signals, the audiences will move to these spaces. Different sounds are added to changing spaces. Spatial sound recording and voices will provide sound information about changing spaces to the audience.

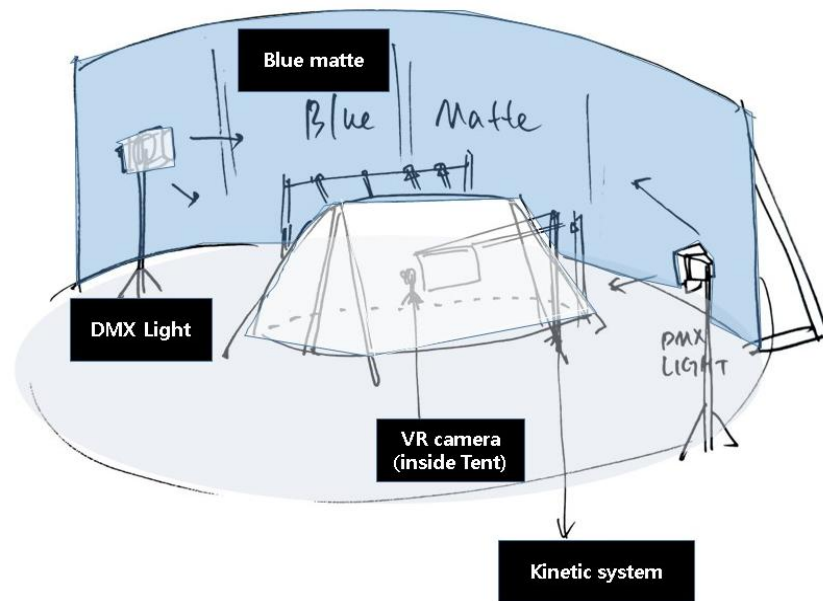


Figure 3. The Structure of Shadow blue matte recording with VR camera

## 6. VR Viewers' Self-Discovery and Jacques Lacan's Mirror Stage Theory

The VR audience cannot see themselves in relation to the sense of isolation stemming from differences between the absence and presence of VR viewers. As they experience interactions in a situation where they have no existence, they get to have desire to know their existence and identity. In the VR film, the mirror is set to make use of one's existence and given location through others like Lacan's mirror stage theory. A mirror is placed inside the tent at one of many different spaces. When one of viewers stands in front of the mirror, he or she will see him or herself in the mirror through programming.

A viewer(main character) adopts the first person narrative inside the tent and eventually realizes that he or she is a "clockwork doll" through reflection on the mirror. As he or she realizes that he or she is a clockwork robot in the tent through the mirror, the film ends. He or she has been able to move for him or herself because of the power left in the clockwork.



Figure 4. Jacques Lacan's Mirror Stage Theory [9].

## 7. CONCLUSION

The interactive approach was recently applied to VR films for the passive structure of narrative appreciation on the part of bystanders in VR films. The audience will appreciate the narrative of a VR film in the same way as common movies, but they exist in the same space in VR films and thus need a different way of narrative structure from the screens of common movies [10]. In *Miuby*, viewers are tasked with missions to look around the room. When they gaze at things in the room, they will have interactions with them. It is a good case of leaving room for the audience's intervention without affecting the overall film narrative. *Floating Tent* highlights game elements further as the interactions of things themselves have impacts on the narrative. The closed nature of the closed tent reflects the spatial characteristics of closed VR devices. The spaces outside the tent change with the inside space of the tent kept intact to develop the narrative effectively according to place changes. Unlike the old VR films that forced upon scene changes to develop the plot, *Floating Tent* changes space itself through interactions with things and has made an improvement to the limited narrative development of VR films. Following the advancement of interaction and image processing technologies, screen-based movies are gradually moving toward experience-centric appreciation under the influence of VR films and games [11]. Editing technologies for narratives have to undergo changes at the experience-centric narrative stage. It will be essential to take into consideration the introduction of interactions and the reorganization of narratives accordingly in the development of VR films. The conditions of immersion should be met at the stage of spatial expression where the audience stands before the development of narratives between characters so that narrative will be delivered effectively between characters, which should not be neglected.

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