

# Center Cases Studies of Present VR Interactive Movies and Equipment Developing Suggestions for VR Interactive Movies

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## Abstract:

Virtual Reality is a developing technology that contains plenty of possibilities. Meanwhile, interactive movies are not immersive enough because of their 2D scenes. Therefore, this paper discusses the potential of integrating VR with interactive movies. In order to find out the main problems of present VR interactive movies, this paper first analyzed a few cases of interactive movies of both bystander mode and participant mode and finally discovered that moving patterns in the VR interactive movies, the consequence of the limitation of playing equipment, severely damaged the immersion of an interactive movie, which is in urgent need of improvement. Based on this finding, the paper then raised some possible developing possibilities focusing on equipment and relevant themes of each kind of equipment and finally found that with the improvement of equipment and the proper choice of themes, VR interactive movies are bound to be immersive enough to gain a great market share.

**Keywords:** Virtual Reality; interactive movies; suture mechanism; 6 degrees of freedom.

## 1. Introduction

An interactive movie is an interactive narrative work based on animations, which emphasizes the interactions between players and the movie and the immersion of the movie [1]. In recent years, there have been a number of interactive movies based on computers and other two-dimensional game platforms (e.g., Nintendo Switch), including Detroit: Become Human, Black Mirror Bandersnatch, Beyond Two Souls, and so on. However, these works are not immersive

enough because of their two-dimensional scenes and thus do not have enough competitiveness in the movie market. Therefore in order to increase the immersion for the users and become more profitable, interactive movies are in urgent need of combining themselves with Virtual Reality (VR) technology, which aims to build a completely virtual three-dimensional scene to replace the real world [2].

In the field of interactive movies based on VR, some VR interactive movies have been published, includ-

ing Wolves in the Walls, Virtual Virtual Reality, and so on. Besides, here are some essays that analyze the advantages of the combination of VR and interactive movies, which include setting players in a completely virtual 3D scene [3], the design of the scenes in the VR interactive movies [4], and the gameplay of them [5]. However, those VR interactive movies are not attractive and immersive enough, and there are few essays talking about the themes and equipment that can contribute to increasing the immersion of VR interactive movies. Therefore, this essay is going to analyze some of the cases of present VR interactive movies and give suggestions for the development of the immersion of the VR interactive movies, mainly considering the themes and equipment, aiming at a better marketing potential and user experiences of VR interactive movies.

## 2. Overview on Present VR Interactive Movies

Present VR interactive movies can be divided into two types: the first one is bystander mode, which allows players to act as invisible ghosts to watch the animations without making a difference in the movie; the second one is participant mode, which allows players to play a role in the movie and participate in the development of the plot.

### 2.1 Theoretical Foundation for Analysis

Lev Manovich mentioned in the book *The Language of New Media*: "The current interactive movies often design the subject's temporal experience as a series of regularly switching structures, forcing the subject to switch back and forth between the roles of viewer and user, between perception and action, between storyline following and active story participation." [6] This is the so-called suture mechanism, which shows that the gap between reality and virtual reality will reduce the immersion of the interactive movie, according to Changxian Li [7]. Therefore, an immersive interactive movie is an interactive movie that can reduce the gap between reality and virtual reality and prevent users from thinking in the way of viewers or thinking of other things instead of the story.

### 2.2 Case Studies in Bystander Mode VR Movies

#### 2.2.1 The Invisible Hours (Game Trust, 2017)

The Invisible Hours is a typical interactive movie based on VR in which players can freely explore a story about a murder mystery. In this interactive movie, players cannot interact with any of the characters in the movie or make any difference in the development of the story. Instead, what players can do is explore the game scene, teleport inside the scene, control the time using the fast forward and backward functions, and read materials (e.g., diaries) that appear in the game scene.



**Fig. 1 Player Observing a Talk between 2 People [8]**

As an interactive movie, *The Invisible Hours* has several advantages. First of all, *The Invisible Hours* has a consistent narration, which is contributed by the loss of player intervention. Besides, because of the theme of detective in this interactive movie, players will focus on the interactive movie in order to find out the identification of the mur-

derer. Therefore, the players will mostly think about the things that happened in the game instead of the consciousness that they are only players, which then contributes to the immersion.

However, the drawbacks are also apparent. Firstly, as an interactive movie of bystander mode, *The Invisible Hours*

does not allow players to participate in the story, which apparently reduces the sense of participation and then reduces the immersion because players are not totally set in the movie's world. Secondly, the interactive movie does not provide users with a clear goal at the very beginning, thus inducing the confusion of some players who are not used to detective themes and also reducing the sense of participation and immersion.

In conclusion, this kind of interactive game possesses the benefit of plot consistency and the disadvantage of lack of a sense of participation. And the disadvantages can be reduced by the theme of the movie and the clear goal given to players.

## 2.3 Case Studies of Participant Mode in VR Movies

### 2.3.1 Wolves in the Walls (Fable Studio, 2018)

Wolves in the Walls is a VR interactive movie in which players play as a friend painted by Lucy, the main character. In the movie, the player is a part of it, who can conduct research on the walls with Lucy and defeat the wolves with Lucy's family, though they cannot influence the plot and do not possess the domination of the movie experience. In order not to remind the users of their reality, the interactive movie prohibits users from moving instead of allowing them to teleport.



**Fig. 2 Players Helping Lucy with Kitchen Job in Wolves in the Walls [9]**



**Fig. 3 Player Being Dragged by Lucy [9]**

Using the participation mode, one of the advantages of Wolves in the Walls is its sense of participation. Players in this interactive movie participate in the story and can interact with the characters, which greatly increases the sense of participation and immersion. A special booster of immersion in this game is the fast, scenic changes, which input a large amount of information that makes people focus on the transition of the scenes and stops them from thinking of reality.

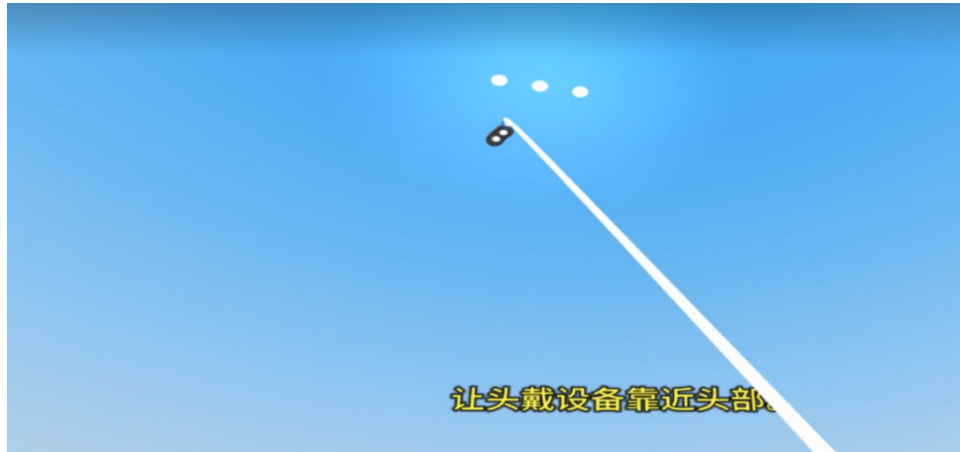
Apart from these, the loss of domination may reduce immersion because players may regard themselves only as visitors to the virtual world without domination. This thought will lead to a lack of responsibilities for this game, which will push players to think as characters.

### 2.3.2 Virtual Virtual Reality (Tender Claws, 2018)

Virtual Virtual Reality is an unusual VR interactive movie in which players play as VR players who are employed by

AI and do their jobs using VR headsets. In other words, the players play as themselves in the interactive movie.

Besides, the players also control the process of the movie and can somehow influence the end of the story.



**Fig. 4 Players Putting on VR Headset in Virtual Virtual Reality [10]**

Because of the special theme, Virtual Virtual Reality has plenty of advantages. First of all, by acting as themselves, players can ignore the gap between reality and virtual reality, which can reduce immersion because it can remind players of the difference between their roles in reality and virtual reality. Besides, as the main character who can control the process of the movie, players are equipped with an obligation for beating the AI, which makes users willing to think about the solutions and their actions in the movie and act exactly like a character in the interactive movie, thus increasing the immersion. What's more? Being a VR user, it is normal to teleport and fetch distant things with the controllers, so players will not feel out of the interactive movie while using controllers to do the two things mentioned above.

## 2.4 Conclusion on Present Interactive Movies Analysis

Contemporary interactive movies have increased their immersion through their elaborately selected themes(e.g., Virtual Virtual Reality and the Invisible Hours) , particular narrative methods (e.g., Wolves in the Walls), clear goals, or special obligations(e.g., Virtual Virtual Reality). However, the moving method(e.g., teleportation), which can lead to a reduction of immersion, is still unchangeable because of the limitation of playing space and playing equipment.

## 3. Current equipment types and potential development

### 3.1 Relevant factors on current equipment sale

#### 3.1.1 Profit and user experience

For companies that produce VR equipment, the balance between costs and benefits is crucial. These factors have a significant impact on product popularity and consumption. Therefore, prioritizing profitability is essential. Additionally, user experience is a key consideration. Higher sales are only achievable when users are satisfied with the product.

#### 3.1.2 Equipment and Game Genres

The equipment belongs to the hardware part of a product. Appropriate equipment can increase the user's experience and increase consumption.

Different Game Genres will attract different consumer groups and age groups. For example, adventure games, horror games, comedy games, or romance games.

#### 3.1.3 Urgent Need of Changing Moving Pattern

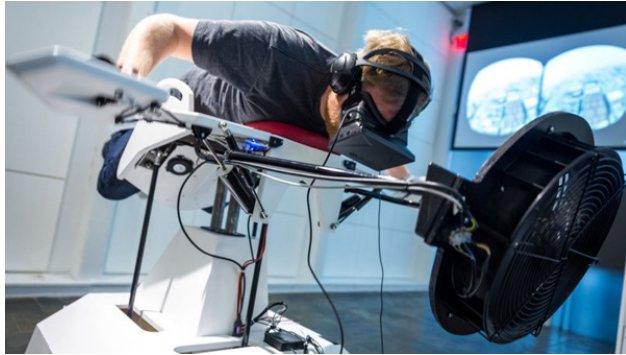
The moving pattern in some games does not match the theme of the game, which greatly hinders the smoothness of the gameplay. Different types of games may require different moving patterns. For example, some games in the open world require free movement, while some games with fixed plots or forms require fixed movement. Smooth gameplay with well-established moving patterns also impacts the sales of games and equipment.

## 3.2 Two types of Interactive game equipment

### 3.2.1 Small-scale use (Individuals or small groups)

Using Birdly as an example. Max Reiner, a Swiss artist and inventor, and his team spent more than 6 months to invent this simulated aircraft, using the virtual reality headset. In order to provide the true sense of flying to the users, they need to lie on a simulation platform, then spread their hands, put them on two control boards, and

ultimately wear a virtual reality head-mounted monitor to experience the feeling of flying. The two control panels have a drag feedback system, which can help users control the flight state and complete the simulation of the flight experience together with the headset [11] This equipment only allows individual users, so it is a typical example of VR technology used a small scale of people for their experience in participant mode.



**Fig. 5 Swiss artists develop simulated aircraft. Users can experience shuttles between high-rise building [11]**

### 3.2.2 Type two: large-scale use (Allow a large group of people to use it together)

VR cinema serves as a prime example for large-scale use. VR cinema equipment has emerged as a cutting-edge technological product in recent years, offering users an immersive viewing experience through virtual reality technology. Viewers can opt for either multi-player or single-player mode. In multi-player mode, one can observe real-time interactions among other participants, gaining inspiration from their experiences. On the other hand, single-player mode provides a heightened sense of immersion and personal experience.



**Fig. 6 VR cinema that can accommodate many audiences at the same time [12]**

### 3.3 Different modes for interactive games and

#### movies

Bystander mode can include topics such as criminal investigation. Players can take on the role of criminal investigators and are tasked with capturing criminals at various difficulty levels to earn rewards. The participant mode can incorporate topics related to restricted movement, vehicle racing, and more. The primary goal is to provide sensory and physiological stimulation.

## 4. Conclusion

This paper analyzed the present situation of VR interactive movies by discussing some cases of present VR interactive movies, including *The Invisible Hours*, *Wolves in the Walls*, and *Virtual Virtual Reality*. Throughout the analysis, it is apparent that the equipment is the biggest obligation for the development of VR interactive movies because it limits the moving pattern in the VR interactive movies, which then reduces the immersion. Based on this, the essay then suggests the public and private VR interactive movie patterns, mainly about equipment and themes in the future, considering the financial conditions of public and private. The paper mainly suggests the 6DoF platforms for their capacity to allow users to move freely and gain instant feedback, which can increase immersion. Finally, it turns out that VR interactive movies have great market potential and can offer great profit and user experience if their equipment is developed and their themes are well selected.

#### Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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