

# Comparative Analysis of Storytelling in Virtual Reality Games vs. Traditional Games

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**Abstract.** Storytelling in games has transformed from a mere backdrop to a central gameplay element, significantly enhancing player engagement and emotional involvement. Through a comprehensive analysis, this study delves into the narrative structures and storytelling techniques employed in traditional gaming, highlighting their strengths and limitations. It further examines the revolutionary impact of VR technology on gaming narratives, emphasizing its unique ability to offer interactivity, immersion, and a profound sense of presence, thus leading to what can be described as "storyliving." The comparative analysis between VR and traditional storytelling in games reveals distinct narrative techniques, player agency, and emotional engagement strategies. VR storytelling introduces unique experiences and challenges, including the creation of a more tangible and emotionally resonant connection with the game world and its characters. Through case studies and user experience reviews, this paper showcases successful storytelling endeavors in VR, noting the impact on learning and emotional engagement. Concluding with a forward-looking perspective, the paper outlines the key differences and similarities in storytelling between VR and traditional games. It posits that the future of gaming lies in leveraging the immersive and interactive potential of VR to create even more compelling narrative experiences. The evolution of VR storytelling holds promising implications for the gaming industry, signaling a shift towards more engaging, immersive, and emotionally impactful narratives.

**Key Words:** Storytelling in Games, Virtual Reality, Technological Advancements in Gaming.

## 1. Introduction to Storytelling in Games

### 1.1. Overview of Storytelling in Games, Introducing Both Traditional and Virtual Reality (VR) Games

Storytelling in video games has evolved significantly, transforming from simple interactive experiences to complex narratives that deeply engage players. Initially, games like "Pong" and "Asteroids" offered minimal backstory, focusing on basic gameplay. The advent of text adventure games, such as 1976's "Colossal Cave Adventure," marked a shift towards more narrative-driven experiences. These early text-based games relied heavily on the player's imagination, setting the stage for more sophisticated storytelling in video games.

As technology advanced, graphical capabilities improved, allowing for more visually-oriented games that continued to build on narrative elements. Point-and-click adventures and iconic titles like "The Secret of Monkey Island" and "Leisure Suit Larry" series began to emerge, offering richer narratives. With the arrival of consoles like the SNES, games like "Final Fantasy IV" pushed narrative boundaries further, introducing more complex characters and story arcs.

In contemporary gaming, storytelling has become a crucial element, comparable to the narrative importance in films and TV shows. Video games now offer immersive experiences with emotional depth, complex characters, and multi-threaded narratives. The evolution of game storytelling has reached a point where it's not just about the visuals but also about delivering compelling narratives that resonate with players.

### 1.2. Brief History of How Storytelling Has Evolved in Gaming

The history of storytelling in video games reflects a journey from basic, linear narratives to intricate, player-driven stories. The distinction between cinematic-style narratives and true gaming

narratives highlights this evolution. Cinematic-style narratives, seen in games like "Grand Theft Auto III" and "Max Payne," draw inspiration from film and offer linear, film-like experiences. On the other hand, true gaming narratives leverage player interaction and choice, resulting in unique experiences for each player. Games like "LA Noir" and "The Stanley Parable" exemplify this, offering branching narratives based on player decisions.

Over time, video game narratives have diversified, incorporating various storytelling styles. This includes linear cinematic experiences, branching path stories, and even player-driven narratives, where players shape the story through their actions and choices. This evolution reflects the growing complexity and richness of video game storytelling, as the medium continues to explore new ways of engaging players in narrative experiences.

### 1.3. The Importance of Storytelling in Creating Immersive and Engaging Game Experiences

Storytelling in games plays a pivotal role in creating immersive and engaging experiences for players. It's not just about progressing through levels or completing objectives; it's about being part of a story [1]. Good storytelling in games can transport players to different worlds, make them feel connected to characters, and evoke a wide range of emotions. Whether it's the emotional depth of a character-driven narrative or the thrill of making crucial decisions that affect the game's outcome, storytelling enriches the gaming experience, making it more memorable and impactful.

In VR games, storytelling takes on an even more immersive dimension. The player is not just a spectator but an active participant in the story. This heightened level of immersion and interaction offered by VR technology presents new opportunities and challenges for storytelling in games. The narrative experience in VR is more direct and personal, making the player an integral part of the story.

In summary, the evolution of storytelling in games reflects the medium's growth and its increasing ability to offer diverse and profound narrative experiences. From simple text-based adventures to complex VR narratives, storytelling in games has become an essential element in creating engaging, immersive, and emotionally resonant experiences for players [2] [3].

## 2. Characteristics of Storytelling in Traditional Games

### 2.1. Explore the Narrative Structures Commonly Used in Traditional Games

Traditional video games often employ linear and non-linear narrative structures. Linear narratives follow a defined, chronological path with predefined plot points that players progress through in a sequence. This structure is straightforward and guides players through a cohesive story, often using cutscenes to advance the plot.

Non-linear narratives, on the other hand, provide players with the freedom to influence the story, as shown in Figure 1. These narratives often have branching storylines where player decisions lead to different outcomes. Non-linear narratives can be further subdivided into open-world and branching structures. In open-world narratives, players can explore and experience game events in any order, while branching narratives have multiple potential outcomes based on player choices.

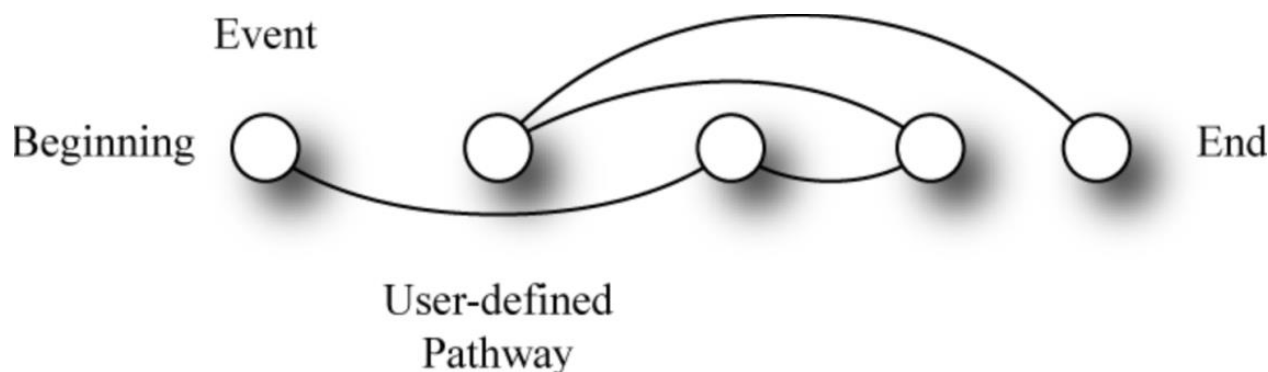


Figure 1. The non-linear story structure [4]

The three-act structure, another common narrative method, divides the plot into a beginning, middle, and end. It is typically implemented in games by interspersing non-interactive cutscenes with gameplay, guiding players towards resolving the main conflict of the story.

## **2.2. Discuss the Limitations and Strengths of Storytelling in a Non-VR Environment**

In a non-VR environment, storytelling has both limitations and strengths. One significant strength is the ability to craft tightly controlled narratives. Linear narratives, for example, allow game designers to create a highly polished and directed experience, ensuring that all players receive the same core story and thematic elements.

However, traditional games also face limitations in storytelling, particularly in immersion and player agency. Unlike VR, traditional games cannot fully immerse players in a three-dimensional, interactive environment. This limitation affects how players experience and engage with the game world and its story.

Additionally, while non-linear narratives in traditional games offer some level of player agency, it's often limited compared to the potential in VR environments. In traditional games, the impact of player choices can be constrained by the game's programming and design limitations.

## **2.3. Analyze Examples of Successful Storytelling in Traditional Gaming**

Successful storytelling in traditional games can be observed in titles that effectively use either linear or non-linear narratives. Games like "Uncharted 2: Among Thieves" utilize the three-act structure to deliver a cinematic and engaging narrative experience. These games balance gameplay and story, offering players clear objectives and a compelling narrative to follow.

Non-linear games like "The Witcher 3: Wild Hunt" showcase how player choices can significantly impact the story. Such games often feature complex branching narratives that lead to multiple endings, enhancing replayability and player investment in the story.

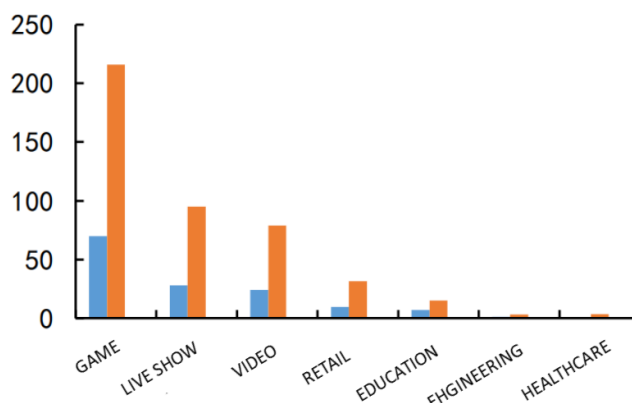
In conclusion, traditional video games use a variety of narrative structures to engage players. While they have limitations compared to VR environments, particularly in immersion and interactive storytelling, traditional games have demonstrated immense success in delivering compelling and memorable narrative experiences [4] [5].

# **3. Emergence and Evolution of Storytelling in VR Games**

## **3.1. Overview of the Development of VR Technology and Its Impact on Gaming**

The journey of Virtual Reality (VR) in gaming has been transformative, evolving from primitive, blocky graphics in the 1990s to the sophisticated, immersive experiences we see today. Initial VR experiences were limited due to crude technology and high costs, often confined to arcades. The Nintendo Virtual Boy, for example, was a notable but flawed early attempt at home VR gaming, suffering from issues like eye strain due to its all-red graphics [6].

The first modern wave of VR games emerged around 2016 with the arrival of consumer-grade VR headsets. Indie game studios played a pivotal role in experimenting with VR, creating games with novel gameplay mechanics and simpler graphics to minimize motion sickness. Titles like "Superhot VR" and "Job Simulator" became popular due to their innovative gameplay and interaction design. Even AAA studios like Bethesda and Capcom started exploring VR, with games like "Skyrim VR" and "Resident Evil 7" offering immersive experiences in well-known gaming universes [7]. Also, the VR application area forecast (in \$1 million) has been shown in Figure 2.



**Figure 2.** VR Application Area Forecast (in \$1 million) [8]

### 3.2. Characteristics of Storytelling in VR Games, Emphasizing Interactivity, Immersion, and Presence

VR storytelling is characterized by its deep interactivity, immersion, and sense of presence. Unlike traditional games, VR allows players to be fully surrounded by the game world, interacting with it in a more intuitive and natural way. This heightened immersion makes the narrative more personal and emotionally engaging.

Interactivity is a key element, as players in VR games can influence the plot through their choices, leading to branching storylines and multiple outcomes. This agency enhances player engagement and emotional investment in the story. VR also enables creators to build profound emotional connections between players and the game's characters and events through sensory-rich experiences. The technology allows for exploring environments in great detail, adding another layer of engagement and discovery to the narrative experience.

However, crafting interactive storytelling in VR presents its own set of challenges, including maintaining user comfort to prevent motion sickness and balancing narrative structure with interactivity. As VR technology continues to evolve, it opens up opportunities for creators to experiment with elements like haptic feedback and AI-driven characters, further enriching the storytelling experience [9].

### 3.3. How VR Technology Has Opened New Possibilities for Storytelling, Creating a Sense of "Storyliving"

VR technology has revolutionized storytelling in games, creating what can be described as "storyliving." This concept extends beyond passive consumption, allowing players to become co-authors of their experiences. VR narratives transcend traditional storytelling techniques, offering players a canvas where creativity knows no bounds. They can transport users to different eras, alternate realities, or fantastical realms, breaking the constraints of physical space and time.

The immersive and interactive nature of VR narratives represents a paradigm shift in storytelling. These experiences offer a fusion of interaction, immersion, and empathy, redefining how we engage with narratives. As VR evolves, it continues to reshape our perception and engagement with stories, inviting us to become integral parts of captivating digital worlds.

The future of immersive VR narratives looks promising as the technology becomes more realistic and accessible. Innovations in hardware, software, and AI are expected to refine user experiences, making them more intuitive and engaging. Collaborations between storytellers, game developers, and filmmakers could lead to cross-medium narratives that blend storytelling and gameplay seamlessly, creating expansive story universes for users to explore [9].

In summary, the emergence and evolution of storytelling in VR games reflect the rapid advancements in VR technology and its profound impact on gaming. From its humble beginnings to the creation of complex, immersive narratives, VR has redefined the boundaries of storytelling in the digital age, offering players an unprecedented level of engagement and emotional connection.

## **4. Comparative Analysis: VR vs. Traditional Gaming Storytelling**

### **4.1. Detailed Comparison of Narrative Techniques, Player Agency, and Emotional Engagement**

Traditional gaming and VR offer distinct approaches to storytelling, each with its unique strengths and limitations. Traditional games often follow linear or branching narratives, where the storyline is primarily predetermined, with limited pathways based on player choices. This structure allows for tightly controlled storytelling, ensuring all players experience key narrative elements and thematic beats [10]. However, it often limits player agency and the feeling of impacting the game world.

In contrast, VR gaming offers an unprecedented level of immersion and interactivity. Players in VR environments experience a heightened sense of presence and agency. They're not just observing a story; they're actively participating in it, with their actions directly influencing the narrative's direction. This can lead to more emotionally engaging experiences, as players feel genuinely invested in the outcomes of their choices. However, this increased agency can pose challenges in maintaining narrative coherence and ensuring the story remains compelling and cohesive [9].

### **4.2. VR Storytelling's Unique Experiences**

VR storytelling provides unique experiences that traditional gaming cannot replicate, primarily due to its immersive nature. In VR, players are not just passive consumers of a story; they're active participants. This immersion is achieved through a combination of sensory experiences, including visuals, audio, and even haptic feedback [9]. The ability to explore virtual environments in detail adds another layer of engagement and discovery, making the narrative world feel more tangible and vibrant.

Moreover, VR allows for a personalized engagement level unmatched in traditional gaming. Players can interact with objects, characters, and even influence the storyline through their choices, fostering a deeper connection to the narrative and its characters. This sense of agency is a key differentiator, making the storytelling experience in VR feel tailor-made for each individual player [11].

### **4.3. Challenges in VR Storytelling**

While VR storytelling offers innovative and immersive experiences, it also comes with its own set of challenges. One of the primary challenges is balancing user comfort with narrative immersion. Preventing motion sickness and ensuring that the VR experience remains comfortable for the player is crucial. Another significant challenge is maintaining narrative coherence while allowing for player agency. Giving players too much freedom can disrupt the story, while too little can make the experience feel constrained and inauthentic.

Designing narratives for VR requires a departure from traditional, linear storytelling techniques. Creators must navigate the fine line between user agency and a structured narrative, often leading to innovative storytelling methods like non-linear narratives and spatial storytelling. This delicate balance is essential for creating compelling and emotionally impactful VR narratives that resonate with players while maintaining a coherent and engaging plot [9] [11].

In conclusion, VR and traditional gaming offer distinct storytelling experiences, each with its strengths and challenges. While traditional games provide controlled narrative experiences with limited player agency, VR games offer immersive, interactive narratives where players have significant influence over the story's direction. However, VR storytelling faces unique challenges in maintaining narrative coherence and balancing player agency, requiring innovative approaches to narrative design.

## 5. Case Studies and User Experiences

### 5.1. Case Studies of Effective VR Storytelling

Many case studies can demonstrate the effectiveness of storytelling in virtual reality, and the following is an analysis of classic game cases.

1. "Faoladh": This cinematic VR storytelling project serves as a significant case study. It demonstrates how VR can be used to craft immersive narratives that differ from traditional media. In "Faoladh," the emphasis is on spatial storytelling, where the user's environment and interaction with it become central to the narrative experience. This approach showcases VR's unique ability to create a sense of presence and immersion, making the narrative more engaging and impactful [12].

2. "Bonfire," "The Line," "The Key," and "Wolves in the Walls": These four award-winning Embodied Virtual Reality (EVR) films have been analyzed as part of a study to develop heuristics for new filmmaking techniques in VR. The study explores how these films use VR to create immersive, interactive narratives. It highlights the importance of the embodiment of the user in the story and the interaction between the user and the narrative in EVR films. The findings from this study are particularly useful for filmmakers transitioning into EVR production, offering insights into emergent VR storytelling techniques [14].

3. "Batman Arkham VR": This game, developed by a AAA studio, features realistic graphics and allows players to embody the caped crusader. The gameplay focuses on solving puzzles and crimes by interacting with the game world, with movement limited to teleporting. Despite its mixed reception, "Batman Arkham VR" won the best VR game award at the Game Critics Awards 2016 and is a notable example of VR's potential in storytelling and creating immersive experiences [7].

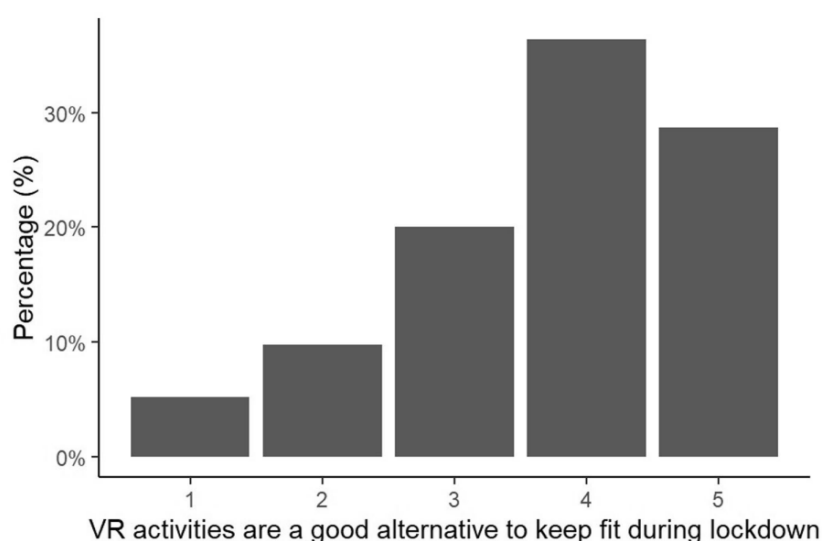
These case studies highlight VR storytelling's unique capacity to create immersive, interactive, and emotionally engaging narratives. They demonstrate how VR can be used effectively in both cinematic and gaming contexts to transport users into the heart of the story, offering experiences that are vastly different from traditional media.

### 5.2. User Experiences and Perceptions

User experiences in VR storytelling emphasize enhanced engagement and immersion. Studies have shown that VR gaming can significantly increase engagement levels compared to traditional gaming. User experiences and perceptions in VR storytelling vary widely, but several key aspects frequently emerge:

1. Enhanced Engagement: Users often report a significant increase in engagement when using VR compared to traditional gaming. This is primarily due to the immersive nature of VR, which makes users feel as if they are part of the game world. For instance, a study conducted by VR Playhouse found that VR users experienced a 34% increase in engagement levels compared to those engaging in traditional gaming. This heightened sense of presence and participation in the virtual world contributes significantly to the overall gaming experience [10].

2. Physical Activity and Presence: Unlike traditional gaming, which typically involves sitting in front of a screen, VR gaming often requires physical movement, which users find more engaging and realistic. This physicality can also have health benefits, such as improved balance and coordination. The direct control of the game through body movements enhances the feeling of presence in the virtual world. A study has indicated that during the COVID-19 pandemic, VR gaming effectively alleviated the negative physical and mental impacts caused by reduced outdoor activities, see in Figure 3 [13].



**Figure 3.** Percentage of respondents reporting that VR activities are a good way to keep fit during the Covid-19 lockdown on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree) [13]

3. Social Interaction in Virtual Environments: VR gaming tends to enhance social interaction, offering players more immersive ways to communicate and interact within the virtual world. Users can use voice commands, hand gestures, and even facial expressions for interaction, making the experience more realistic and socially engaging compared to traditional gaming.

4. Emotional Impact: Users often report a deeper emotional connection with the narrative and characters in VR games. The immersive nature of VR allows users to experience the story from a first-person perspective, often leading to more intense emotional responses. This is particularly true in narratives that are specifically crafted for VR, where the story is designed to take full advantage of the medium's immersive capabilities.

5. Learning and Memory Recall: In educational settings, VR has been shown to enhance learning and memory recall. For example, studies in fields like medical training have demonstrated that VR-trained individuals perform better in terms of speed and accuracy compared to those trained through traditional methods. This suggests that the immersive and interactive nature of VR not only makes the learning experience more engaging but also more effective.

These user experiences and perceptions underline the unique capabilities of VR storytelling in creating more engaging, physically interactive, and emotionally resonant experiences compared to traditional gaming. The immersive nature of VR fundamentally changes how users interact with and perceive game narratives, leading to new possibilities in both entertainment and education.

### 5.3. Impact on Learning and Emotional Engagement

VR storytelling has a profound impact on learning and emotional engagement. Various studies across different industries, such as aviation, medical, and defense, have shown the effectiveness of VR in improving memory recall, performance, and reducing procedural errors. For example, surgeons trained in VR performed operations 29% faster and made six times fewer errors than those trained via conventional methods. Additionally, studies have demonstrated that VR can aid in the learning of physical tasks, with participants showing improved performance in activities like Tai Chi when trained in VR compared to video-based learning. These findings underscore the potential of VR in enhancing not only the cognitive aspects of learning but also the emotional engagement of users with the content [14].

In summary, VR storytelling is proving to be a powerful tool in both entertainment and educational contexts. Its ability to immerse users in a narrative, coupled with the interactive nature of the medium, offers new avenues for storytelling that are more engaging and emotionally resonant than traditional methods. As VR technology continues to evolve, it is likely to play an increasingly significant role in how we experience and interact with stories.

## 6. Conclusion and Future Directions

### 6.1. Key Differences and Similarities in Storytelling between VR and Traditional Games

The storytelling landscape in gaming has seen a significant evolution with the advent of VR technology, distinguishing itself from traditional gaming in several ways.

The most remarkable aspect of Virtual Reality (VR) is its unparalleled immersive nature. VR crafts an experience of physical presence in a distinct environment, offering a comprehensive 360-degree view along with interactive elements that actively respond to the player's movements. This technology engages multiple senses simultaneously — auditory, visual, and occasionally haptic feedback — significantly enhancing the sensation of being enveloped in the game world. VR typically necessitates physical movement, thereby rendering the experience more tangible and enriching players' sense of control and interaction. This direct and physical engagement with the game environment empowers players to significantly impact the story, a stark contrast to traditional games where player agency is usually confined within the bounds of a pre-established narrative structure. Traditional games, while immersive in their own right, generally present a more detached view of the game world. In traditional gaming, the focus is often on hand-eye coordination and mental engagement, which primarily appeals to players through visual and auditory stimulation. This style of gaming tends to be more sedentary, emphasizing strategic thinking and reflexes within a visually rich and auditory detailed environment.

Despite their differences, both VR and traditional gaming fundamentally aim to create engaging and memorable experiences for players. These mediums employ various narrative techniques, including character development, plot twists, and elaborate world-building, to captivate their audiences. Both VR and traditional gaming strive to appeal to a broad spectrum of audiences, encompassing diverse interests and preferences. They achieve this by offering a wide range of genres and gameplay styles, tailored to meet the varying needs of different players.

The future advancements in technology and narrative techniques in VR will likely amplify these differences, making VR experiences even more immersive and interactive, while traditional gaming will continue to evolve in its own right, potentially incorporating elements inspired by VR to enhance player engagement.

### 6.2. The Future of Storytelling in Gaming

The future of storytelling in gaming is poised for transformative growth, driven by several key trends and technological advancements:

1. **Advanced AI and Machine Learning:** The integration of sophisticated AI and machine learning algorithms in gaming is set to revolutionize narrative structures. AI can be used to create more dynamic and responsive game worlds, where characters and environments react in real-time to player actions, leading to more personalized and unpredictable storytelling experiences. An example of this can be seen in games like "Middle-earth: Shadow of Mordor" and its sequel "Shadow of War". These games feature the Nemesis System, which uses AI to remember the player's interactions with specific characters, who then react accordingly in future encounters. This level of AI sophistication creates a dynamic narrative that changes based on player actions.

2. **Augmented and Mixed Reality Integration:** The blend of augmented reality (AR) and mixed reality (MR) with VR and traditional gaming platforms will likely result in new forms of storytelling. These technologies can bring game narratives into the real world, offering a seamless blend of reality and virtual experiences, and enabling new types of interactive and immersive storytelling. Pokémon GO is a prime example of AR integration in gaming. It overlays the game's creatures onto the real world, creating a seamless blend of reality and virtual experiences. This type of storytelling extends the narrative into the real world, offering interactive and immersive experiences.

3. **Cross-Platform and Cross-Media Storytelling:** The future may see a rise in narratives that span across various platforms and media types. This could involve a game's story extending into AR applications, web series, or even interactive books, creating a comprehensive and immersive narrative ecosystem. The "Quantum Break" game, which combines traditional gameplay with a television



series, is an example. Player choices in the game influence the storyline of the integrated live-action show, creating a comprehensive narrative experience across different media platforms.

In summary, the future of storytelling in gaming is expected to be more immersive, interactive, and emotionally resonant, shaped by advancements in technology and innovative narrative techniques. As these trends evolve, they will continue to redefine the boundaries of storytelling in the gaming industry, offering players richer and more engaging narrative experiences.

### 6.3. Future Evolution and Influence of VR Storytelling in the Gaming Industry

As VR technology continues to advance, VR storytelling is expected to play an increasingly significant role in the gaming industry.

VR offers unique storytelling opportunities that are not feasible in traditional gaming environments. We can anticipate the emergence of more innovative narrative formats, capitalizing on VR's distinct strengths. This evolution might encompass non-linear storytelling and interactive narratives where players play a pivotal role in shaping the story. Moreover, VR facilitates immersive experiences that diminish the boundaries between gaming and reality. In the future of VR storytelling in gaming, we're likely to see increased collaboration among game developers, filmmakers, writers, and other creative professionals. This amalgamation of diverse talents and media could foster the creation of multidimensional narratives and experiences, surpassing the conventional limits. As VR technology continues to advance, there's a potential shift towards more user-centric design and personalized experiences. Future VR games may offer narratives that are adaptable to individual players, providing a uniquely tailored and personal gaming experience.

In conclusion, VR storytelling represents a significant shift in the gaming industry, offering new ways to engage and immerse players in narrative experiences. As the technology evolves, it will not only enhance VR gaming but also influence the broader landscape of digital storytelling, opening up new possibilities for how stories are told and experienced in the gaming world.

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