

The Throne for a Soul: A Study of the Storytelling Affordances of Japanese VR Games

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Abstract

In this paper we present an analysis of the storytelling affordances of three virtual reality (VR) games hosted at two VR arcades in Japan: *Taiko no Tatsujin: VR Festival*, *Evangelion VR The Throne of Souls: Berserk*, and *Godzilla VR*. The study is both an autoethnography of the researcher's own play experiences and an analysis of the tension between storytelling and agency in these three games. Gameplay analysis is supported by heuristic evaluation to assess the ludic and narrative experience of each game. Results highlight the tension between agency and storytelling in immersive games designed for Japanese VR arcades.

1 Introduction

The video game industry in Japan is a significant market, with arcade culture resonating among Japanese youth. The games market in Japan is often associated with the golden age of game development with early companies such as Nintendo, Taito, Namco, and others making significant contributions to gaming in the early 80s. Video game arcades are quite common in Japan.

Virtual Reality (VR) arcades have become more common in Japan in recent years, with Bandai Namco opening its first VR arcade in Tokyo in 2016. Although the traditional Japanese arcade market has shown a decline in recent years (Statista, 2019) the market for VR games in Japan has been increasing. The virtual reality (VR) gaming market was valued at USD 7.7 billion in 2019 and is projected to reach USD 42.50 billion by 2025 (Markets, 2020).

The game studies community has come to understand games as existing on a spectrum, where ludology is situated at one end and narratology is situated at the other. In the context of narratology, games researchers have looked to theorists such as Janet Murray and her *Holodeck* (Murray, 1998) as a way of unpacking the narrative potential of immersive environments. In this paper, we present a qualitative analysis of three of VR games hosted at two VR arcades in Japan: *Mazaria* in Tokyo and *VR Zone* in Osaka. The analysis is situated within autoethnographic studies at both sites in the months of July and August in 2019.

2 Related Work

Early research in game studies sought to identify suitable theoretical frameworks and analytical methods to further the study of computer and video games. Scholars recognized immediately that most games have narrative potential – and indeed many games are heavily story-driven, but that video games are also made up of mechanics and procedures that are written in code. The resultant narratology/ludology debate – where games were initially viewed by some to be complex narratives and by others as complex systems of play (e.g., see: Frasca, 2003; Jenkins, 2004; Pearce, 2005; McManus & Feinstein, 2014) highlights the interdisciplinary nature of games scholarship. As the field grew alongside this emerging medium, game scholars came to recognize games as existing on a spectrum rather than a binary, where games can be understood as having both ludic and narrative properties to varying degrees (Pearce, 2005; Murray, 2005).

As our theories of games grew more robust, game scholars began to recognize novel narrative and ludic properties in games. For example, Jenkins writes about the potential for games to tell spatial or environmental stories, likening comparing them to elaborate theme parks where story elements are “infused into the physical space” (2008). Bogost (2010) suggests that the ludic characteristics of video games make them capable of a new kind of rhetorical expression, one he refers to as “procedural rhetoric” – an argument expressed through computer code.



Player agency has been discussed in the context of its impact on storytelling in games (e.g., see Adams, 1999; Jenkins, 2004). Game critics often note that true interactivity poses a potential threat to narrative design, where the alternative – stories “on rails” – can overly constrain the “freedom, power, and self-expression” associated with interactivity (Adams, 1999). In the context of this paper, we understand the concept of “on rails” game design to refer to both the potential for physical movement within the environment to be pre-scripted or constrained, as well as the story elements and/or the users’ progression through the game’s narrative.

3 Immersive Stories

Virtual Reality (VR) is a simulated experience – a computer-generated simulation of a three-dimensional image or environment that can be experienced by using specialized equipment. Most common commercial applications of VR involve the use of a head-mounted display (HMD) – a helmet or visor with a screen inside. Additional devices may be used to provide information to the other senses, such as haptic devices to mimic tactile sensations. VR is most commonly used in entertainment applications, such as video games. Presently, advances in computing have made it possible to develop high-quality, affordable HMDs and VR home gaming systems for a consumer base.

Game scholars have written a great deal about immersion in games (e.g., see: McMahan, 2003; Calleja, 2011; Denisova and Cairns, 2015; Cummings and Bailenson, 2016), likening it to the feeling of being “in the game” (Cairns et. al, 2000). The term is sometimes used interchangeably with presence. VR researchers generally understand immersion to be a user’s engagement with a VR system that results with being in a flow state and presence is defined as one’s sense of being there in the virtual world. (Slater, 2003). The sense of immersion can be very powerful in VR and has been demonstrated via studies where changes in the user’s heart rate, respiration, and skin temperature changed in response to changes in the virtual environment (Wiederhold et al., 1998). This technique has been used to help patients overcome phobias through controlled and repeated exposure to the phobias in VR (Botella et. al, 2017).

Janet Murray first described immersion as “a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from

a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus... in a participatory medium,.. immersion implies learning to swim, to do the things that the new environment makes possible... the enjoyment of immersion as a participatory activity” (Murray, 1998, p. 98). Murray explores the concept of immersion in the context of interactive digital stories – mobilizing the fictional construct of the Holodeck – a room featured in the science fiction franchise Star Trek, where characters go to engage with different virtual reality environments. In considering the impact of immersion and interactivity on storytelling, Murray suggests that, “the medium of narration changes in time and new narrative opportunities appear with emerging technologies” (Murray, 1998, pp. 553-554). In other words, new and emerging storytelling platforms afford new and different models of storytelling. Murray imagined immersive, virtual worlds in which the individual who was once positioned as “reader” could take on an active role, potentially transform the course of the narrative. She suggested that the authors of immersive narratives would be “procedural author[s],” who define the “rules by which things should happen,” and structures for participation by the interactor.

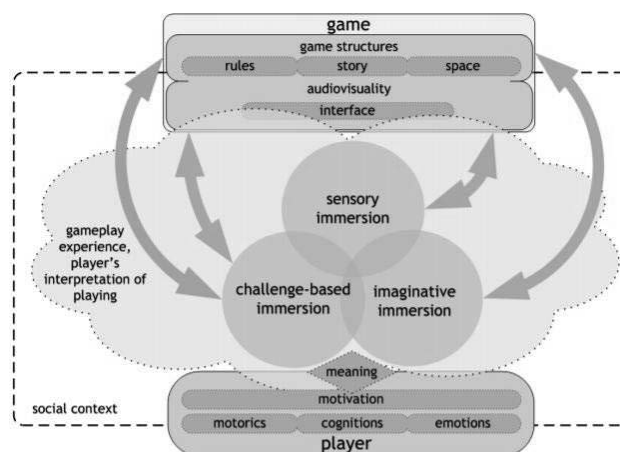


Figure 1. Simplified immersion model
(Ermi & Mayra, 2005)

Beyond discourse, game scholars have provided models of immersion that allow us to mobilize more effective discussions about immersion in games. For example, the simplified immersion model of Ermi and Mäyrä (2005) shown in Figure 1 distinguishes between three different yet interconnected types of immersion that

occur between the space of the game and the player: sensory immersion, challenge-based immersion, and imaginative immersion. Sensory immersion, as defined by Ermi and Mäyrä (2005) relates to the audiovisual execution of games and can be understood as the game-world stimuli. We would add here that any peripheral devices that provide other types of diegetic feedback, such as vibrotactile controllers, also contribute to sensory immersion. Challenge-based immersion is the satisfying balance of challenge and abilities and is commonly understood as Flow in games research (e.g., see: Csikszentmihalyi, 1997). The third type of immersion is imaginative immersion, in which the player becomes emotionally invested in the game world and/or its stories and characters.

In the context of this paper, we are most interested in the narrative affordances of Japanese VR games. The concept of an affordance was coined by the perceptual psychologist James J. Gibson (1979) and was later introduced to the human-computer interaction (HCI) community by Donald Norman (1988). In computing, an affordance is the design aspect of an object which suggests how the object should be used, or “an action possibility available in the environment to an individual, independent of the individual’s ability to perceive this possibility” (McGrenere and Ho, 2000, p. 179). This is a broad definition, but an important one when considering the variety of digital storytelling platforms available today (e.g., hypertext, 360 video, augmented reality, etc.) and the differences in how they support storytelling. As an immersive storytelling platform, VR has the potential to position the audience in ways that other media cannot. Like games, we are interested in the impact on ludic elements on storytelling in the context of Japanese VR games.

4 Sites of Study

Observations were taken at two VR arcades in Japan in July and August of 2019. The first site was *Mazaria* in Toshima City, Tokyo and the second was *VR Zone* in Osaka. Both were owned by Bandai Namco, but unfortunately *Mazaria* and *VR Zone* Osaka both closed permanently in 2020 due to the covid-19 pandemic on August 31st and October 25th respectively. Since both arcades were owned by the same company, they featured many of the same games. VR games at both sites were experienced using an HTC Vive Pro HMD (see Figure 2), which has high display resolution and 3D spatial audio.

Each game also has its own custom haptic tactile interface – such as a specially designed physical controller, cockpit, platform, etc. Haptic technology refers to any technology that can create an experience of touch by applying forces, vibrations, or motions to the user. This can involve a range of skin senses, including touch or pressure, heat and cold, and even pain. Haptic technologies increase presence and user performance by recreating the tactile elements of a virtual environment.



Figure 2 HTC Vive Pro head-mounted display (HMD)



Figure 3 Inside the ハネチャリ (Hanechari) game.

Image courtesy Bandai Namco.

For example, the game ハネチャリ (*hanechari*, shown in 3), which means wind bicycle, puts the user in the seat of a vehicle that is part bicycle and part glider. To play this game, the user sits on a stationary bicycle that resembles an exercise bike and puts the HMD on their head with the assistance of an arcade employee. The experience begins with the user’s glider atop a cliff – a fan begins to gently blow in the user’s face in the real world, simulating the breeze atop the cliff and adding to their sense of presence. To pilot the bike, the user pedals to generate

thrust and uses the handlebars to control the direction and altitude of the glider.

The stationary bike and fan are specific to this game and provide haptic and tactile feedback, increasing presence and the user's sense of both sensory and imaginary immersion. Custom interfaces for other games are discussed in the following sections.

5 Methodology Introduction

This study is supported through analysis of gameplay data that was collected in two autoethnographic visits to the aforementioned VR arcades in Japan. Data collection was conducted via field notes (observations, reflection on the researcher's play experiences, etc.), photos of the game stations and VR technologies, and interviews with game center employees. Gameplay analysis of each game is based on the researcher's fieldnotes. Games were then subject to heuristic evaluation to assess the ludic and narrative experience of each game. Heuristic evaluation is a methodology that is common in game studies and is conducted by evaluating a game against an established set of criteria (Desurvire et al., 2004). Heuristic evaluation is typically used to identify usability issues in user interface (UI) design but can also be leveraged as a systematic way to isolate and analyze various aspects of game design (Koeffel et al., 2010).

Autoethnography is a qualitative research method - a form of self-reflection in which the researcher's own personal experiences are documented and reflected upon in order to connect the researcher's own thoughts and ideas to the wider cultural understandings of a given phenomenon. Ellis (2004) defines it as "research, writing, story, and method that connect the autobiographical and personal to the cultural, social, and political" (Ellis, 2004, p. 48). Therefore, unlike other research methods, autoethnography offers a chance for researchers to embrace their subjective experiences, rather than attempting to limit subjectivity in the interest of objectivity. Autoethnographic approaches have been adopted in game studies and are particularly prevalent in qualitative studies of games, wherein the researcher reports on their own play experiences within her network of peers and friends (Nardi, 2010; Pearce, 2011; Taylor, 2006).

While the highly subjective nature of autoethnographies makes it difficult to extrapolate from these studies to larger populations of players, when used in concert with other methods, autoethnography not only

presents the researcher with an opportunity to methodologically disclose their own subjectivity, but also to present additional data that may provide an outsider with a more intimate account of the subject of study. Boellstorff et al. (2012) describe autoethnography (as conducted in the virtual world) as a method that may potentially "yield new insights and discoveries", but caution that autoethnography has also been used to mask a lack of method or experimental design (p. 44). Thus, in conducting an autoethnography, the researcher must take great care in being consciously disciplined in their approach. Although autoethnography is a highly reflexive and qualitative method, the resultant narrative must be grounded in fact. To ensure accuracy of the resultant analysis, the researcher compared the results against details found on the official Bandai Namco website, online reviews by other players and viewing other players' gameplay videos on YouTube.

The analysis of storytelling affordances presented herein is informed by approaches that recognize interactive immersive stories as complex artefacts that possess both ludic and narrative properties (Cardona-Rivera and Young, 2013). In the context of this paper, we are focused on the storytelling affordances of Japanese VR games and wish to distinguish between VR experiences that have ludic or interactive elements vs. those that do not. The latter is considered here to function as VR cinema, which is also a kind of immersive story, but is not considered a game. This distinction is important in the work of Mateas (2001), who referenced Norman's affordances (Norman, 1988) in considering a way to approach the design of interactive narratives that support player agency.

Mateas suggests that interactive stories and games have two types of affordances: *material affordances* and *formal affordances*. Material affordances are defined as opportunities for action that are presented by the game to the player, either by directly prompting the player for action, or indirectly by allowing the action to take place. Formal affordances are a more complex matter and are defined as the players' motivation to perform one particular action out of all potential actions (Mateas, 2001).

As noted by Pinchbeck (2009), it is important to understand gameplay as "a network of affordance relationships which define supported actions." In this case, the theoretical focus is upon actions that are both supported by the game's algorithms and are guided by the game's narrative elements. Pinchbeck states that it is clear in immersive stories that balance both ludic and narrative elements that "story is used to manipulate player behaviour

- that it serves a distinct gameplay function” (Pinchbeck, 2009). Pinchbeck asserts that gameplay must be understood as a network of affordances.

6 The Games

Three games were chosen for this paper: *Taiko no Tatsujin: VR Festival*, *Evangelion VR The Throne of Souls: Berserk*, and *Godzilla VR*. Game choices are based on the researcher’s familiarity with the franchises from which the games are derived. Other games that were played at the VR arcades were removed from the analysis if they contained no narrative elements, for example: *Hanechari*, which is more of a flight simulator and contains no storytelling elements.

6.1 Taiko no Tatsujin: VR Festival!



Figure 4. Custom hand-held haptic device for Taiko no Tatsujin: VR Festival

Taiko no Tatsujin is a series of rhythm games created by Namco. In the game, the player simulates playing a Taiko drum in time with music. The first release of the game was in February 2001 and the series has since been released for the arcade and for console and mobile platforms including the PlayStation, Nintendo Switch, iOS, and Android smartphones. The arcade version of the game features two large hardware drums and a set of sticks for

each of the two players. Players stand in front of their drums, facing a large screen that presents scrolling drum symbols. As is common in most rhythm games, when the symbols reach a designated marker on the screen, the player must hit the drum correctly. The notes consist of various red and blue markers. The red *don* note requires a hit on the face of the drum, and the blue *ka* note requires a hit on the rim. Other notes require quick, consecutive hits on the drum, or double taps with both drum sticks simultaneously. Console versions may use the buttons to play (or a simulated drum on a touch screen), or players may buy specially designed drum input devices designed for use with the game.



Figure 5 Player’s point-of-view inside the VR Festival. Image courtesy Bandai Namco.

The VR version of the game is featured at both *Mazaria* and *VR Zone* arcades. The game supports one to four players and takes approximately 10 minutes to play. The station attendant at this game wears a *happi* – a traditional Japanese coat that is worn during festivals. The design of the *happi* matches the aesthetic of the game. Unlike other releases of the game which typically have dozens of songs to choose from, the VR version only has four possible songs. Players stand in a designated spot, wearing the Vive Pro HMD and holding two custom haptic input devices shown in Figure 4, which are used as the drumsticks in the game. The position of the device is tracked by a tracking system and the inside of the barrel has a haptic component that slides within the tube and replicates the sensation of striking a physical object with the drumstick. Where the notes typically scroll from right to left across the screen in the console and arcade versions of the game, the notes in the VR version fly at the player and must be struck when they are within arm’s reach. When a note is struck correctly, the note lights up and the player hears the sound of the drum being struck. More importantly,

when the virtual note is struck, the haptic device activates within the drumstick, so the player feels as though they have struck the note. If they miss, the device does not activate and the note flies past the player's position.



Figure 6 Player's point-of-view: hitting the don notes in Taiko no Tatsujin. Image courtesy Bandai Namco.

In the game, the player is met by the drum characters, and is invited to visit the land of the taiko to attend a special festival. The player is transported to a stage where many of the game's familiar faces are in the crowd, cheering them on as they play through their chosen songs. The player cannot physically roam throughout the virtual world – they remain stationary on the stage, only able to look around in 360 degrees while playing the game. At the end of the final song, the player returns to the real world.

6.2 Godzilla VR

Godzilla is a fictional giant monster or *kaiju* that was first featured in Ishirō Honda's 1954 film *Godzilla* and became a cultural phenomenon, appearing in more than 32 films produced by Japanese production company Toho and four Hollywood films. The character has also been featured in video games, novels, comic books, and television shows. The monster's name appears in katakana when written in Japanese and is *Gojira*, a portmanteau of the Japanese words *gorira* (gorilla) and *kujira* (whale).

Godzilla is depicted as a large, destructive lizard-like monster that emerges from sea, participates in a catastrophic degree of destruction in one or more Japanese cities, and then returns to the sea at the end of the film. In some films he is depicted as the villain, and in other films he appears as an antihero to defeat other *kaiju* that threaten Japan. In addition to his gargantuan size, Godzilla is also known for the radioactive beam he emits from his mouth – one of the main reasons why Godzilla is considered to be

a metaphor for atomic attacks on Hiroshima and Nagasaki (Noriega, 1987).

The *Godzilla VR* game that is hosted at both *Mazaria* and *VR Zone* is based on the 2016 film *Shin Godzilla* directed by Hideaki Anno and Shinji Higuchi and produced by Toho films. At the start of the film, *Godzilla* appears following the flood of the Tokyo Bay Aqua-Line. The film largely focuses on the botched and clumsy response of government officials to *Godzilla's* appearance, which favours bureaucracy over action. Although a nuclear response is considered, the government eventually attempts to enact a plan to force *Godzilla* to swallow a coagulant that will freeze him. In the film, this is accomplished by attacking *Godzilla* during a period in which he is in the process of recharging his energy. During this time, he is attacked and tricked into expending his atomic breath, after which point he is knocked over by a coordinated bombing. Once on the ground, tanker trucks drive up to the *kaiju* and pump the coagulant in his mouth.



Figure 7. Tactile cockpit for *Godzilla VR* (*VR Zone* Osaka)



Figure 8 Player's point-of-view in *Godzilla VR*. Image courtesy Bandai Namco.

The *VR* game supports one to four players and gameplay takes approximately ten minutes. When it is the

player's turn to play, they are greeted by a representative of the VR arcade who is wearing a military uniform. This person greets the player in character, providing both diegetic and non-diegetic instruction while describing the VR hardware and their in-game objectives. To play, the player sits in a custom vibrotactile cockpit (see Figure 7) with hand-held firing mechanisms and wears the HTC Vive Pro.



Figure 9 The final showdown in *Godzilla VR*. Image courtesy Bandai Namco.

In this game, the objective is to fire a coagulant missile into Godzilla's mouth at a specific point during his attack on Tokyo. The player takes on the role of a military pilot and flies around the city on a pre-determined path between the buildings of Tokyo, catching glimpses of Godzilla's tail or profile at various points during the flight. In this game, the player has very little agency in their spatial or narrative exploration of this world. Their only agency is in where they direct their attention during the pre-battle flight, and in the timing of their attack on Godzilla at the end of the experience. If the player looks down at their body in the game, they see a virtual body where they would expect to see their own – wearing a military uniform. If you move your legs in real life, they remain stationary in the game – unresponsive as they are not being tracked by the VR system.

During the flight and the final showdown, the tactile cockpit, which is seated atop a motion platform, tilts and vibrates in response to visual cues in the game – these are carefully choreographed movements intended to increase immersion and player experience. For much of the experience, the player is a passive participant – an observer who has been inserted into the climax of the movie, albeit a modified one since the coagulant in *Shin Godzilla* was not a missile nor was it delivered via air attack. At the start of the game, the player witnesses buildings being smashed and

destroyed by Godzilla's tail and radioactive beam. During the final approach, much of Tokyo is in flames and the sky is dark and the player can see other military aircraft blasting Godzilla with various projectiles. Godzilla lets out his signature roar and lights up the night sky with a radioactive blast, this time emitted from the spikes along his back. The player's moment arrives – they approach and are face to face with the beast, who opens his glowing mouth in preparation of a final blast. If the player is successful, they get to experience a final on-rails aerial view of the frozen *kaiju*.

6.3 *Evangelion VR The Throne of Souls: Berserk*

Neon Genesis *Evangelion* is a Japanese mecha anime series that was broadcast on TV Tokyo from October 1995 to March 1996. The series is set fifteen years following a worldwide cataclysm, in the futuristic city of Tokyo-3. The series is centered around protagonist Shinji Ikari, a teenage boy who was recruited by his father to pilot a giant mecha called an *Evangelion* or "Eva". Shinji is supported in battle by other pilots of the same age, including Rei Ayanami and Asuka Langley Soryu. The series received critical acclaim and is in the midst of a reboot, referred to by fans as the *Rebuild of Evangelion*, which is a retelling of the television series through a series of four feature length theatrical releases.

In the series, the teenage protagonists pilot the *Evas* to battle angels – gargantuan, often abstract shaped mysterious beings foretold in the series' fictional interpretation of the *Dead Sea Scrolls* (Ortega, 2007). Pilots enter a tube-shaped cockpit called an entry plug, which is inserted into the neck of the *Eva*. The plug is filled with LCL fluid, an amber-colored, translucent liquid, which allows an *Eva* pilot to mentally link or 'synchronize' with their *Evas*, allowing them to partially control them subconsciously, thus reducing lag in pilot maneuvers. LCL is said to be oxygenated, which therefore makes it "breathable" by the pilots. Although the entry plug is seated deep within the *Eva's* spine, once synchronized, the pilot sees everything from the *Eva's* point of view, via a wrap-around screen inside the entry plug. Pilot Rei refers to the entry plug as "the throne for a soul" in episode 14 of the original series. In addition to the world view, the screen in the entry plug also superimposes a sort of heads-up display, which shows additional information relevant to the pilot, such as targeting systems and time remaining until battery drain. Powering the *Evas* frequently becomes problematic in the

original series as Evas tend to run out of battery during critical points in combat or can only operate within a small geographic area due to being “plugged in” to an alternate power source via a cable.



Figure 10 Custom hardware stand-in for the pilot's seat inside the Eva (VR Zone Osaka)



Figure 11 The same custom hardware at Mazaria, Tokyo.



Figure 12 Player's point-of-view – junbi. Image courtesy Bandai Namco.

Throughout the series, it becomes evident that the Evas themselves are not actually giant robots, but rather they are

themselves large creatures wearing a mechanical armor. The Evas are revealed to be cloned partly from one of the first angels encountered by humanity and are imbued with the souls of each pilots' deceased mother (this familial link is revealed to be a critical component in affording synchronization between pilot and Eva).



Figure 13 Player's point of view - fighting Zeruel. Image courtesy Bandai Namco.

The VR game supports one to four players and gameplay takes approximately 13 minutes. When it is the player's turn to play, they are greeted by a representative of the VR arcade who is wearing a NERV uniform. In Evangelion, NERV is the special organization tasked with protecting humans from the angels. As with the Godzilla VR game, this attendant greets the player in character, and provides both diegetic and non-diegetic instruction while describing the VR hardware and their in-game objectives. To play, the player sits in a custom vibrotactile cockpit (shown in Figure 10 and Figure 11) that is similar to the one used in the Godzilla VR game in terms of haptic capabilities, but it is shaped more like the inside of the entry plugs from the original series. Unlike the Godzilla game, players get to choose to play as one of four characters from the series: *Shinji*, *Asuka*, *Rei*, or *Kaworu*. The game features Evas 00, 01, and 02, as well as the Mark.06, which is one of the new units introduced in the Rebuild of Evangelion tetralogy.

The VR game is experienced from the pilot's point-of-view – essentially following the FPS paradigm. At the start of the game, the player is seated within their Eva's entry plug and can see the inside NERV headquarters, which is located deep within the geofront below Tokyo-3. The plug slowly fills with LCL fluid as it does in the anime, and once the cockpit is full of LCL the custom hardware of the game shows bubbles emerging from the vicinity of the player's mouth if they exhale deeply enough for the hardware to

receive the input. The VR game is faithful to the paradigms and aesthetics of the series – giving the player a sense of presence from within the Eva.

Next, the Evas are moved from the pens to the launching catapult via moveable platform. Motion cues are generated by the gentle rocking of the motorized platform upon which the vibrotactile cockpit is seated. Then, as in the anime, the Evas are launched from the depths of NERV headquarters to the city above, where they collaborate on a plan to defeat the 10th angel Zeruel. The pilots are then commanded to coordinate their attack above ground, and the players are nearly defeated, until Eva-01 goes into Berserk mode. Berserk mode is explored in the anime as rare times when the soul within the Eva is able to, despite hardware constraints, “awaken” and reclaim agency from the pilot, often to overcome an enemy at a moment when all hope seems to be lost (a deus ex machina). In this mode, the Eva’s strength and abilities dramatically increase, and their movements become more savage or animalistic. At this point in the VR experience, the player’s screen goes dark and warning messages are displayed on the screen of the entry plug’s cockpit. Then, suddenly, they can see Tokyo-3 again, but everything is red. They are no longer in control of their Eva, which rushes the angel to finish the battle.

7 Heuristic Evaluation

Heuristic evaluation is a methodology that is common in game studies whereby a game or set of games are evaluated against an established set of criteria (Desurvire et al., 2004). Due to the differing degrees of agency in each of the games, a heuristic set was compiled from existing sets of game heuristics (Desurvire et al., 2004; Koeffel et al., 2010), VR heuristics (Murtza et al., 2017), and 360 video heuristics (Sheikh et al., 2016) to support this research. Heuristics were then aligned with the immersion model of Ermi and Mäyrä (2005). Results are shown in the table below.

Only heuristics relating to the immersive and storytelling qualities of the games were included from the aforementioned related work. Heuristics pertaining to other features such as ergonomics, gamification, or the ability to set the difficulty of the game were excluded from this evaluation. Referring again to the immersion model proposed by Ermi and Mäyrä (2005), heuristics were aligned to the three types of immersion based on the following criteria:

Sensory immersion = audiovisual execution, haptic/hardware feedback, etc.

Challenge-based immersion = mechanics, flow.

Imaginative immersion = opportunities for player attachment to game world stories and/or characters.

Table 1. Heuristic Evaluation

Immersion	Heuristic	Result
Sensory	Synchronous body movements between VR/RL (M)	All three games tracked head movement, but only Taiko tracked other body movements.
Sensory	Minimal, diegetic user interface design (K, M)	All three
Sensory	Intuitive controls (D)	All three
Sensory	Meaningful acoustic and visual feedback (K)	All three
Sensory/ Imaginative	Characters acknowledge the player (S)	All three
Challenge	Player has agency/impact on game world (D, K)	Evangelion (Godzilla at end only)
Imaginative	Story supports gameplay (D, K)	Evangelion
Challenge	Game mechanics support story (D, K)	Evangelion
Challenge	Appropriate pacing of in-game actions (D, K)	Evangelion
Challenge	Player can respond to threats (K)	Evangelion (Godzilla at end only)
Imaginative	Story discovered as part of gameplay (K)	Evangelion
Imaginative	Player has sense of control over avatar (D)	Taiko + Evangelion

8 Discussion

8.1 Storytelling

As with any other media, there is always potential to express transmedia narratives in VR games that feature stories from other media such as Evangelion and Godzilla. Jenkins describes transmedia storytelling as not the retelling or transposition of an existing micronarrative or plot via an alternate platform; rather, it is the systematic distribution of integral story elements across multiple delivery platforms (Jenkins, 2009). In true transmedia storytelling, the various components fit together like a puzzle, telling a single story that can be seen once the

pieces are in all in place. Typical western stories tend to follow Freytag's pyramid – a five-part model that begins with an introduction, followed by a rise, climax, return or fall, and denouement (Freytag, 1904). Japanese narratives tend to follow the structure of Kishōtenketsu (起承転結), which involves an introduction (*ki*), development (*shō*), the twist (*ten*) – the crux of the story, the climax (*yama*) – and conclusion (*ketsu*) (Maynard, 1997). *Godzilla* and *Evangelion* immerse the player in what might be considered the climax or *yama*. While VR gaming could be used to implement transmedia stories, none of the games analyzed in this paper were trans-media narratives. *Taiko no Tatsujin* took a side-scrolling rhythm game and placed it into a setting that would allow the game to be played in three dimensions while maintaining the aesthetic of the originals. The other two games insert the player at the climax of stories that have already been told, but do not leave the user with any new understanding of the story or its characters.

8.2 Immersion and Agency

Although two of the games had strong narrative components, only one presented the player with sufficient agency to afford a sense of presence and immersion. Specifically, while all three supported sensory immersion and imaginative immersion, only *Evangelion* allowed for sufficient agency to support challenge-based immersion. The narratology/ludology spectrum is useful here in considering the narrative affordances of these games. *Taiko no Tatsujin: VR Festival* is largely a ludic experience where players can play a familiar rhythm game in virtual reality. *Godzilla VR* has very little agency, and diverts slightly from the source material while giving the player little agency in how the story plays out. *Evangelion VR The Throne of Souls: Berserk* gives players agency within a critical battle from the anime – taking that agency away in the final moments as a plot device. Of the three, the *Evangelion* game presented the most promising VR storytelling model for games.

One limitation that becomes evident when considering the narrative possibilities of VR games in Japan is that VR arcades are designed like small amusement parks, intended to present patrons with well-crafted experiences that are short enough to accommodate a steady flow of customers. The narrative design of these games could very well have been expanded for greater storytelling – however, this would likely increase the amount of time it takes to play the

game, which would be difficult to implement in a VR arcade.

The *Evangelion* franchise is well-suited to a VR gaming experience for several reasons. Firstly, piloting a giant robot from a cockpit is considerably easier to design for as the user is stationary during gameplay. The game hardware does not need to support full body motion to immerse the player into the game world authentically. The game engine affords a great deal of agency within the combat space above ground. Additionally, the *Evangelion* VR game plays with agency as a narrative device – allowing users to experience the loss of control of the Eva during Berserk mode. As a player who is familiar with the franchise, this loss of agency at the climax of the story is thrilling to experience. Hypothetically, an *Evangelion VR* game designed for home use could present the player with hours of FPS-like battles with angels. However, while HMDs have become more affordable for commercial use, the custom cockpit is still too costly to become a common household item in the near future. That said, the fact that Evas are partly piloted subconsciously does suggest a possible exploration of brain-computer interfaces (BCIs) in future.

9 Conclusions

In this paper, we presented an analysis of the storytelling affordances of three Japanese VR games. This analysis was presented in the contexts of the works from which these games were derived to understand how each leverages story and agency to immerse the player in the game world. Analysis was supported by heuristics and focused on agency and storytelling in the context of the three types of immersion: sensory immersion, challenge-based immersion, and imaginative immersion. Although the games all possessed narrative components to varying degrees, agency was limited with respect to narrative control. We hypothesize that VR games based on Japanese stories that are designed for longer periods of play could potentially offer a more immersive narrative experience. In other words, VR games do afford a great deal of agency, but when it comes to storytelling in games, the tension between storytelling and agency is present even in virtual reality. Although these games do not demonstrate the fulfillment of Murray's Holodeck, each series presents a familiar world that players want to be immersed in.

When we think about emerging digital poetics, it is important to consider the storytelling affordances of each

platform. Different platforms allow for different types of agency. Different platforms will also change the way we tell stories. In future work, we intend to conduct additional research on the narrative affordances of Japanese VR games designed for both home and arcade.

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