Special – *peer-reviewed*
Edited by Simone Arcagni and Adriano D'Aloia
https://doi.org/10.6092/issn.2280-9481/12227

Cinergie – Il cinema e le altre arti. N.19 (2021)
ISSN 2280-9481
https://cinergie.unibo.it/

Traversing the Boundary of the Screen: Contextualizing the Influence of Cinema and Virtual Reality in Artificial Environments

Joseph Fischer*

Columbia University (United States)

Submitted: January 15, 2021 – Revised version: February 23, 2021
Accepted: May 27, 2021 – Published: August 4, 2021

Abstract

Within the last decade, the entertainment industry has witnessed an exponential growth in the production of immersive theme park lands based on popular movie franchises. The diegetic worlds that these environments produce not only endeavor to immerse guests into their favorite films but also to actively involve the spectator and position them as if they are the frame of a camera exploring and creating their own stories within the multi-acre diegesis. These groundbreaking and innovative forms of immersive storytelling have received little attention from scholars in film and media theory and necessitate a thorough contextualization in terms of post-cinematic storytelling. Notably, the hybridity and interdisciplinary nature of the aesthetics and technologies espoused and repurposed for constructing these areas and their respective rides parallel that of conventional filmmaking and post-cinematic media. This paper examines *Pandora—The World of Avatar* and *Star Wars: Galaxy's Edge* — two of the most popular immersive lands located at Disney World in Orlando, Florida — in terms of the cinematic aesthetics and technologies that are employed to guide a spectator while allowing them to experience their own subjective story. Notably, unlike many previous theme park attractions and themed "lands," these immersive environments are rooted in an underlying conceptual narrative. These forms of "real-time storytelling" parallel the concurrent advent of VR experiences as a means of personal post-cinematic storytelling. However, this paper considers these immersive environments to be a form of a physical, tactile alternative reality—a virtual reality that is multi-sensorial and requires no headset.

Keywords: Post-cinema; Storytelling; Theme parks; Artificial reality; Cinematic Virtual Reality.

* jaf2255@columbia.edu

Copyright © 2021 Joseph Fischer
This work is licensed under the Creative Commons BY License.
http://creativecommons.org/licenses/by/4.0/

1 Introduction

As described by Jason Jerald (2015), virtual reality is "a computer-generated digital environment that can be experienced and interacted with as if that environment were real" (9). While the late 2010s have been marked by the rise of commercial implementations of virtual reality experiences and entertainment, a compelling shift in the entertainment industry has presented itself within the space of the theme park amidst the emergence of realistic artificial environments based on recognized film franchises that can be experienced and interacted with yet eschew a wholly digital essence. These novel and unorthodox forms of moving image exhibition are effectively engaging the ontological definition of virtual reality while also stimulating reconsideration about the nature of the moving image in a digital, post-cinematic landscape. While "virtual" connotes an immaterial essence of the environment, the novel form of cinematic, immersive, manufactured atmospheres operating within various prominent theme parks can more reasonably be defined as an artificial reality that amalgamates physical and computer-generated environments. The mounting popularity of these unprecedented modes of entertainment originated in the early 2010s with *The Wizarding World of Harry Potter* at Universal's Islands of Adventure theme park. The park's prosperity conceivably led to Disney's aggressive pursuit of long-term, exclusive licensing rights for *Avatar* (2009).[1] Disney then spent over five years creating *Avatar — The World of Pandora* as a section of Disney's Animal Kingdom theme park that immersed guests into James Cameron's ethereal world and opened to the public in the summer of 2017. Subsequently, Disney capitalized on their acquisition of the Star Wars franchise and, in the fall of 2019, opened *Star Wars: Galaxy's Edge* within Disney's Hollywood Studios in Orlando, Florida, and Disneyland located in Anaheim, California. The expansive projects relate to a historical genealogy of immersive entertainment, such as panoramas, stereoscopic cinema, visual effects-driven cinema, and digital cinema, but share a striking similarity with the prevailing advent of virtual reality systems. Throughout this paper, Disney's brand-new immersive lands will be examined through a cinematic scope that derives from their cinema-oriented establishments in terms of their source material, creative personnel, and the artistic principles informing their conception, while also contemplating how these aspects are in dialogue with principles and aesthetics of virtual reality. Essentially, this manuscript advances that these novel case studies testify to a more comprehensive theoretical bridge between virtual reality and the notion of post-cinema that has yet to be elucidated as moving-image exhibition with the absence of traditional modes of projection and reception.

Given the cinematic purview of this analysis, the term Cinematic Virtual Reality (CVR) aptly operates as a parameter for further contextualizing these artificial realities. According to visual effects producer and scholar John Mateer (2017), CVR "can generally be conceived as a type of immersive VR experience where individual users can look around synthetic worlds in 360-degree, often with stereoscopic views, and hear spatialised audio specifically designed to reinforce the veracity of the virtual environment"(15). Fundamentally, cinematic artificial environments and CVR utilize pre-rendered pictures and audial components to realize a 360-degree environment that allows the participant/spectator to control their own viewpoints and positions within the manufactured space. While there are VR elements that comprise these theme park environments, the physicality of the environment offers a substantial degree of sovereign movement and autonomy for the individual, unlike the slightly restrictive spatial form of CVR projects that manifest through the confines of an HMD (Head Mounted Display). The material, three-dimensional essence drastically shifts the virtual experience into a more aptly titled, artificial experience that still commands the implications of "presence" and "suspension of disbelief" affiliated with CVR.

Mateer interjects the ostensibly disparate terms of "presence" and "suspension of disbelief" to parse how CVR is constructed through formal means and aesthetics. The notion of "presence" correlates with VR as a tool for assessing the extent of transportation prevailing in a VR experience. Frank Biocca describes the concept as "a state where our awareness of the medium disappears, and we are pushed through the medium to sensations that approach direct experience" (qtd. in Mateer 2017: 19). "Suspension of disbelief" associates with cinema and principally entails a conscious inclination by the spectator to suspend speculation and rationality when

1. While the creation and subsequent surge in the production of immersive lands in theme parks are undoubtedly for financial reasons, this project engages with these forms from a perspective grounded in cinematic aesthetics, technology, and history. There is definitely a critique to be had with the exploitative, capitalistic tactics operating in these immersive lands. Perhaps this will be expanded on in a future article.

observing a film and "give themselves" to the screen. Mateer attempts to link the rift between 'presence' and 'suspension of disbelief' by interpolating the concept of transportation, as delineated by Green and Brock, to be "absorption into a story (entailing imagery ... and attentional focus and an integrative melding of attention, imagery, and feelings" (qtd. in Mateer 2017: 17). This transportation theory reasonably constitutes a total engagement with and "full transportation" into the artificial space, consequently enabling a more thorough acquisition of both experience and narrative. Conclusively, Mateer advocates the work of Joseph Bates in maintaining "the need for a 'deep structure' for the virtual world to enable users to fully engage with the experience as well as the importance of 'suspension of disbelief' " and that "the development of VR production techniques and grammars is analogous to that of technical filmmaking methods used in areas such as lighting, camera positioning, and sound" (16). Thus, this paper engages with these notions as theoretical and technical motives underpinning the creative production process of immersive cinematic lands; that, above all, the primary goal in the formation and reception of these environments is to thoroughly absorb the spectator and furtively guide them as if they were a 360-degree camera exploring the space and constructing meaningful narratives through the experience.

This philosophy driving the design and production of these immersive experiences is not so novel to Disney theme parks. Former Disney Imagineer Eddie Soto, reflecting on the original creation of Disneyland in 1955, claims:

> Disneyland is an experience involving many moving parts in harmony, like an orchestra. What you hear, what you smell, what you see, how you see it, the speed at which you assimilate it — all of that, just like a film, is all choreographed. But how do you choreograph if you don't control the camera? Because the camera is the viewer, it's you when you come to Disneyland.[2]

Aside from Hollywood VFX consultants, directors, and producers that characterize the current collaborations that produce immersive cinematic lands, Walt Disney Imagineering[3] prevails as the directors, producers, costume designers, scriptwriters, and artists that blur cinematic diegesis and reality. Throughout the years, the Imagineers have often traversed into cinematic practices and techniques. Markedly, it was art directors — at the time working in Disney animations — that delivered a formidable impression on the conception and development of Disneyland in the early 1950s, aiding in composing plausible scale in the themed lands and three-dimensional configurations of attractions and buildings. Art direction, just as it operated then, still functions as a means of "shaping an environment so that it becomes expressive of character and story and the moods, tones, and conflicts associated with them" (Prince 2011: 170). The last decade has presented a shift as the Imagineers continue cultivating this distinguished approach of the guest performing as a spectator/camera, yet now, further emphasizing one's diegetic agency within the fabricated, immersive environment.

The subsequent analysis of Disney's novel immersive "lands" is rooted in a cinematic position that ultimately strives to interpret how cinematic approaches concurrently affiliated with aesthetics of virtual reality and formal elements of filmmaking foster an eccentric mode of storytelling that inspires a rethinking of the digital, post-cinematic landscape. First and foremost, understanding the type of spectatorship operating within these environments and how the designers, engineers, and artists approach the formation of the project bearing in mind that notion of spectatorship, is pivotal. I will commence this analysis by defining a spectator/camera/character apparatus that underpins and guides the systems of form and design embedded throughout these multi-acre diegeses. An accurate interpretation of this notion will authorize a more absorbable exploration of the production and reception of these simulative environments that also considers the connection between cinematic approaches and the methods and forms underpinning CVR. Lastly, I will discuss the unique brand of storytelling that derives from these immersive environments and how the extensive artificial realities confer the means to create meaningful subjective narratives through ostensibly open-world opportunities.

2. *The Imagineering Story*. *Disney+*, dir. Leslie Iwerks, 2019.

3. Walt Disney Imagineering is the division of The Walt Disney Company that conceives and effectively produces theme park lands and rides in Disney Parks across the world. Essentially, Imagineering is what the play on words suggests: creative and imaginative vision and ideas actualized through practical engineering and construction practices. Those who serve in this department come from an eclectic variety of backgrounds, such as engineering, architecture, graphic design, writing, animation, etc. Those that work in Disney Imagineering are known as "Imagineers."

2 The Apparatus of the Spectator/Camera/Character

Negotiating the theme park guest as a spectator/camera/character within the diegetic, artificial environment is an approach grounded in theoretical constructs concerning genre, the concept of post-cinema, aesthetics of 3-D stereoscopic cinema, and formal components installed within VR experiences. These varying conceptions adroitly consolidate to develop a technical conceptualization concerning how these immersive lands can be received by guests, consequently leading the pre-production and production processes of design. As such, ascertaining and espousing this notion as both a theoretical and aesthetic framework guiding creation permits a sensible analytical approach to investigating the development and reception of immersive theme park lands.

Andrew Darley (2000) hints at the fundamental correlation between the photographic apparatus and the observer, claiming that "through the movie camera the spectator of the narrative film is assigned a delegated mobility which provides anonymous 'entry' to the fictional space or world of the story and its characters" (48). Although the additional dimension of diegetic persona remains elusive, traces of the spectator/camera as character manifest within theories surrounding the science fiction genre and aesthetics of stereoscopic film exhibition. If one considers these immersive lands as a rendition of science fiction, experiential cinema, they very much share what Scott Bukatman (1999) claims is the primary objective of science fiction in that the genre aims "to create the boundless and infinite stuff of sublime experience, and thus to produce a sense of transcendence beyond human finitude" (254). Furthermore, Bukatman contextualized visual effects sequences constructed by Douglas Trumbull[4] — which endeavored to create "some crazy illusion that looks so great that you can really hang on it like a big master shot of an epic landscape" — as spectacular illusions in which "the presence of the diegetic spectator stages an extended encounter with the sublime, rehearsing (and hyperbolizing) the filmic spectator's own experience" (259).

Avatar, upholding this essence of the science fiction genre fittingly, was a film that concurrently revitalized three-dimensional stereoscopic cinema as a means of immersing the spectator into the screen and generating a correlating identity between the spectator and the diegetic characters. Owen Weetch (2016) notes how the three-dimensional cinematography that marks the aesthetics of the film routinely functions so that "convergence and inter-axial depth are such that he [Jake Sulley] emerges out in the audience space" (21). Weetch also distinguishes how various sequences in the film testify to "3D's ability to put the character on the same spatial plane as the spectator, then, allows a literalised 'acentrality'[5] by intensifying alignment with a character — be it Sully experiencing the docks or a worker being briefed — to an unprecedented degree" (22). Both *Pandora* and *Galaxy's Edge* engage with this characteristic of three-dimensional stereoscopic cinema that *Avatar* conceivably fulfilled, as the design of various landscape constructions and monumental set pieces simulate a sense of depth within the space. Conclusively, these immersive lands fuse the fictive and theatrical space "as diegetic and cinematic spectators are, in a metaphorical sense, united" (261).

In terms of treating the guest as a camera within the digital, post-cinema landscape, the idea of a roaming camera is a concept espoused by David Bordwell (2002) in his notion of intensified continuity, a term that encompasses the style of contemporary mass-audience films today while also evoking post-cinematic sensibilities.[6] For Bordwell, one of the four primary traits of intensified continuity is a free-ranging camera (16). Over the years, as filmmaking equipment and technologies shrink in physical size, digital-centered renditions of the photographic apparatus allow for an almost uninhibited range of motion and placement. The concept of treating the spectator as the camera within an expansive, immersive area correlates with contemporary filmmaking aesthetics in that both forms implement Bordwell's free-roaming camera. Notably, the spacious

4. Douglas Trumbull is a prominent VFX supervisor and pioneer who worked on various Hollywood, science-fiction films such as the notable Stargate sequence in *2001: A Space Odyssey* (1968) and *Close Encounters of the Third Kind* (1977). Trumbull shifted the focus of his work to "special venue" attractions such as simulation rides, and continued to develop effects and technologies for World's Fair exhibitions and theme parks (Bukatman 1999: 250).

5. Weetch (2016) considers the notion of "acentrality" in terms of Murray Smith's sentiments regarding Richard Wollheim's concept "acentral imagining." Smith claims that "we comprehend the character and situation, and react... to the thought of the character in that situation... as opposed to the thought of being the character in that situation" (qtd. in Weetch 2016: 22). Weetch ultimately maintains that "blockbuster cinema often builds on this acentrality to heighten spectacle in ways that simultaneously incorporate that spectacle narratively" (22).

6. See Denson and Leyda 2016: 4.

environment that one can openly explore raises difficulties in terms of comprehensive immersion and directing the camera/spectator/character in order to evince a diegetic narrative. It is imperative to examine how the environments are constructed so that the "camera" can be directed, manipulated, and above all, immersed.

Conclusively, the theoretical characteristic regarding spectatorship concerning the science fiction genre, the utilization of 3-D as a means of immersing the spectator in films like *Avatar*, and Bordwell's notion of the "roaming camera" all coalesce with the foundation of Disney Imagineering's spectatorial aesthetics to crystallize an approach towards spectatorship that directs the viewer as if the vast environment were within the confines of a VR headset. Like VR experiences, these immersive lands' design and daily functioning are entrenched in the notion of positioning the visitor as a spectator/camera/character. I introduce this term as the means of hypothesizing that a tourist exploring one of these lands embodies all three roles in their exploration of the environment and effectively realizes a VR experience without the headset. The following sections will further analyze how the artificial environments are constructed to effectively engage with the spectator/camera/character so that story, theme, and message may properly manifest within the experience. Through analysis of the production and the experiencing of these immersive lands, I assert that these interactive environments are fundamentally achieved through a combination of accustomed, tangible cinematic means and digital cinematic methods that share a technical and theoretical relationship with the domain of virtual reality, in that they endeavor to achieve high degrees of 'presence' and 'suspension of disbelief.'

2.1 Production and Reception of Cinematic Theme Park Lands

Mateer delineates how CVR should be approached in a cinematic method so that the director of the production can effectively engage the viewer and enable them to experience the narrative and interpret a story. Initially, the director formulates an interpretation of the story and derives an overall theme or message rooted in that interpretation. Subsequently, the creative process propels the director to consider the technical methods regarding how the project will reveal information, tell the narrative, and visually manifest all of these constituents within an expansive environment. Moreover, Mateer also emphasizes the importance of one feeling 'presence' within the space and mentions interactive designer and scholar Carrie Heeter's three distinct types of presence (19):

1. Social presence: interacting with other characters and human beings
2. Environmental presence: the environment acknowledges that you are there
3. Personal presence: simulating real-world perceptions

These guiding principles and factors involved within VR's creative process are both informative and prevailing within the cinematic production and reception of *Avatar — The World of Pandora* and *Star Wars: Galaxy's Edge*, as the creators concurrently espouse these various aspects of immersion while still considering how to direct a wandering camera.

First, in formulating an interpretation of the story and establishing its themes, each land approaches its source material in different yet intriguing ways. Just as *Avatar* established a trailblazing criterion for utilizing digital 3-D aesthetics and digital visual effects, *Pandora — The World of Avatar* also crystallized a model for immersive practices and can be perceived as a precursor to *Galaxy's Edge* in terms of the land's degree of interactivity and its aptitude to relinquish narrative construction to the individual spectator. Essentially, *Pandora* and *Galaxy's Edge* attempt to direct the spectator through novel methods rooted in CVR exhibition while still appropriating the aspects of stereoscopic, 3-D cinema as well as surround sound, cinematographic lighting, and digital filmmaking exhibition to generate the environment and its respective attractions.

Avatar director James Cameron and producer Jon Landau were profoundly involved with the creation of the Valley of Mo'ara — a fictional, smaller environment within the world of Pandora. As such, the land is situated in relation to the *Avatar* cinematic universe — approximately over one-hundred years past any of Cameron's potential sequels and spin-offs. During one's visit to the Valley of Mo'ara, each guest is positioned as a tourist visiting a shared reservation amongst the Na'vi and humans that is being utilized for ecotourism and research. Not only does this backstory and timeline give Cameron the freedom to explore supplemental stories within *Avatar* sequels, but it also ties in with the themes and values of Disney's Animal Kingdom park.

As Joe Rohde[7] claimed, "If you think about the intrinsic value of nature, transformation through adventure, and personal call to action — these are the values of Animal Kingdom. But, if you say them again, those are the themes of the film *Avatar*." (Niles 2017: ?). Rohde also maintained that the narratives one develops and the interactions one encounters while visiting the land influence one's understanding of environmental issues in the real world.

Galaxy's Edge presents itself as a small village called the Black Spire Outpost located on one of the more unfamiliar planets in the Star Wars universe called Batuu.[8] Scott Trowbridge and the creative team for *Galaxy's Edge* sought to deviate from notable locations, endeavoring to interject novel stories and destinations within the *Star Wars* universe.[9] In terms of the film saga, the immersive land situates itself amongst the ongoing battle focused on in the most recent *Star Wars* trilogy between the First Order and The Resistance.[10] Moreover, Trowbridge alluded to further developing the sense of interactivity and storytelling in Pandora when he claimed that "our intent is to make it feel as if you just walked into one of the movies... Bringing *Star Wars* to life in the physical world gives us the opportunity to play with a whole bunch of things we've never done before... to really engage all of the senses" (Frye 2015: ?). In fact, Trowbridge — testifying to the current, overarching endeavors of Disney Imagineering, maintained that "all of this work we're doing is kind of geared towards this idea of creating emotionally meaningful transformative shared experiences in these environments and these places you can't otherwise do it on your own. And not in a virtual way. Not in a kind of VR, 'I'm wearing goggles' way..." (Trowbridge, *Scott Trowbridge — Unexpected Magic: Inviting the Audience to Drive the Story*). While not as centered on a particular "message" or "theme," the land strives for an unprecedented degree of subjective storytelling and interactivity.

Notably, these experiences are not exhibited through the standard means of virtual reality, but they are prominently informed by both the principles and technology of VR. In the production of *Galaxy's Edge*, a digital system known as BIM (Building Information Modeling) allowed the Imagineers to visually consolidate 2-D plans, 3-D models, infrastructure, and set dressing information into a comprehensive digital model that all departments could reference as they produced the project from the ground up. These digital renderings were imported into a virtual reality system that allowed engineers, architects, artists, and designers to observe and adapt their designs from the perspective of a visitor touring the area. Essentially, there is a quality of CVR direction transpiring through the artistic process and a foundation of VR underlying the production of these projects.

Theoretically, experiencing Black Spire Outpost or the Valley of Mo'ara is essentially an example of what Herbert Zettl calls "deductive sequencing" in cinema. The entrances for each land cinematically present the spectator with stunning wide shots of fantastical props and set pieces that establish the mood and setting of the environment. After these visual introductions, one can roam the area and — operating as the camera — select their own array of medium shots, close-ups, and movements that synthesize into a kind of one-shot, long-take throughout the land. Naturally, the guiding hand of Disney Imagineering is unknowingly present at all times, steering the spectator as camera and instigating various choices.

To properly contextualize the techniques of guidance and the ways in which personal presence manifest throughout one's encounter with the artificial environment, I espouse the work of Zettl, who sought to theorize "how moving images can not only be 'read' to understand their underlying creative structures... but how new moving images can be conceived and 'written,' to communicate with maximum effectiveness" (Frierson 2018: 4). One of Zettl's key concepts was that of vectors, which were rooted in contextualizing the film frame in terms of the Cartesian coordinate system of x, y, and z axes (Fig. 1).

7. Rohde is a veteran executive at Walt Disney Imagineering who was the lead designer for Disney's Animal Kingdom theme park. For the creation of "Pandora — The World of Avatar," Rohde operated as creative director.

8. The planet has only been previously mentioned in *Solo: A Star Wars Story* (2018) and was included as a backdrop in the Lucasfilm novel *Star Wars: Thrawn Alliances*.

9. *Scott Trowbridge – Unexpected Magic: Inviting the Audience to Drive the Story*, Future of Storytelling, 2015. http://www.youtube.com/watch?v=jhIOMjh0D3s.

10. Specifically, the land and the stories one can generate are implied to take place some time in between *Star Wars: Episode VIII — The Last Jedi* (2018) and *Star Wars: Episode IX – The Rise of Skywalker* (2019).

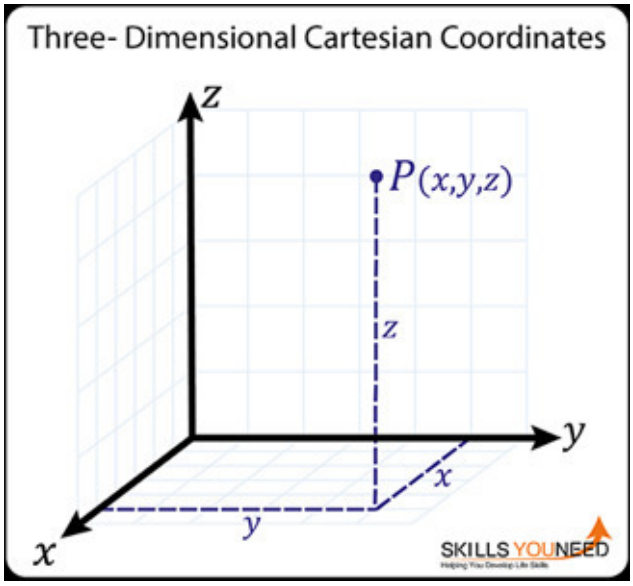

Figure 1. Three-Dimensional Cartesian Coordinates

Various components and set-pieces throughout each environment can be perceived as vectors influencing the spectator/camera/character's perception within this three-dimensional axis. For example, the main entrance to the Valley of Mo'ara utilizes a graphic and index vector in the form of a large, Pandora-native plant called a Flasca Reclonada. The plant's sheer size beckons the spectator's attention, and its interactivity — the plant spews water and mist from the top when it is touched — introduces a sense of environmental presence for the individual (Fig. 2).

The plant's positioning creates a graphic vector[11] that suggests a tilted vertical line that leads to the upper-left side of the subjective frame. Furthermore, if this is understood to be a real flower within the diegetic world that naturally grows in this direction, the giant plant becomes an index vector[12] that carries its inherent directionality into the frame. Considering this connotation of movement and directionality, the interactive prop functions as a cue directing the camera/spectator's perspective to veer towards a trail on the left while simultaneously calling attention to the ostensibly floating rock formation on the frame's z-axis. Succeeding this subtle manipulation, the camera/spectator follows the trail — with each side covered by dense foliage obscuring any views beyond the tree line — until it slightly curves to the right and unveils a spectacular wide-shot of the floating mountain range that hovers over the Valley of Mo'ara. The establishing wide shot of the magnificent floating mountain range, "held for enough screen for the audience to scan the frame, allows a complete 'mental map' of the space to register" (Frierson 2018: 41). Zettl also argued that "aesthetic impact increases with screen size" (41), which renders the 12-acre screen of *Pandora* a perfect example of how the wide shot generates affect for the spectator. The image of the floating mountain range not only establishes location but also "communicates the aesthetic energy of a space" (41). Furthermore, the water rapidly cascading down the rock formations creates vertical, high magnitude motion vectors[13] that solicits the gaze to look up.

Like the cinematic wide-shot of the floating mountain range, *Galaxy's Edge* contains cinematic "reveal" shots that are visual spectacles. Take, for example, the strategic placement of the life-size reproduction of the Millennium Falcon, situated amongst several buildings that conceal the spacecraft from anything but a close

11. Zettl's idea of a graphic vector is "one created by a line or screen elements arranged to suggest a line" (5). They can be predominantly horizontal, vertical, rounded, elliptical, etc. In this case, the prop appears to be predominantly vertical as a means of controlling vision to solicit curiosity in the ostensibly floating rock in the background.

12. Frierson (2018) delineates Zettl's notion of an index vector as a vector "created by something that clearly points in a specific direction" (6). Essentially, the spectator follows this line to the left, which is the way they are supposed to go.

13. Zettl claimed that each form of vector could also be categorized as low magnitude or high magnitude. Motion vectors that are comprised by quick motion are considered high magnitude.

Figure 2. The Flasca Reclonada greeting guests as they enter the environment

encounter. Each of the pathways to reach the ship are arranged around the corners of buildings, staging the camera/spectator to conduct pan-like movements that gradually reveal the spectacular shot. Spacecrafts from the Star Wars universe are also methodically situated in various parts of the land to entice particular actions or feelings of wonderment, like a multi-purpose transport shuttle that one can view from a distance as it is docked on top of Docking Bay 7 Food and Cargo — the area's primary dining location (Fig. 3-4).

As the spectator/camera/character absorbs these images, the implementation of forced perspective is persistently skewing the subjective perception of the land to extend farther beyond the actual size of the environment, implying that Pandora does further dwell beyond eyesight and connoting a sense of widespread exploration that encourages the guest to roam the space. Forced perspective — an illusionistic, three-dimensional stereoscopic visualization — is described by Boyle as "achieving a large space in a limited space. You bring the background up, and you force everything smaller" (qtd. in Prince 2011: 157). The implementation of "forced perspective" is often used to connote depth within a space, and it is realized through both architectural means and digital techniques. In terms of tangible manifestations of this perceptual illusion, miniature rock moldings are interspersed throughout the floating mountain range in the Valley of Mo'ara to make it appear as if the suspended formations extend far beyond into the distance. The smaller-sized models are also painted with a muted color palette and a blue tint to connote distance and render an aerial perspective.[14] This type of difference in color and scale alludes to the compositional tools that Mateer outlines as constituents of controlling audience attention in CVR (21) (Fig. 5).

In attractions such as "Star Wars: Rise of the Resistance" or "Na'vi River Journey," digital projections on screens are incorporated to extend space beyond the physical sets within various scenes and sequences. Take, for example, "Na'vi River Journey," in which digital projections of Pandora's environment and wildlife are interspersed amongst the material sets and animatronics that primarily constitute the experience. Each digital moving image projection is another instance of forced perspective, in which the background images of the forest scene become gradually smaller, manipulating the perception of the environment's z-axis to extend far beyond (Fig. 6).

14. Prince (2011) explains how various depth cues, such as aerial perspective operate to convey visual information regarding the positioning of objects in a three-dimension space. Aerial perspective is achieved as "hazing from the atmosphere and a color shift toward blue affect very distant objects" (199).

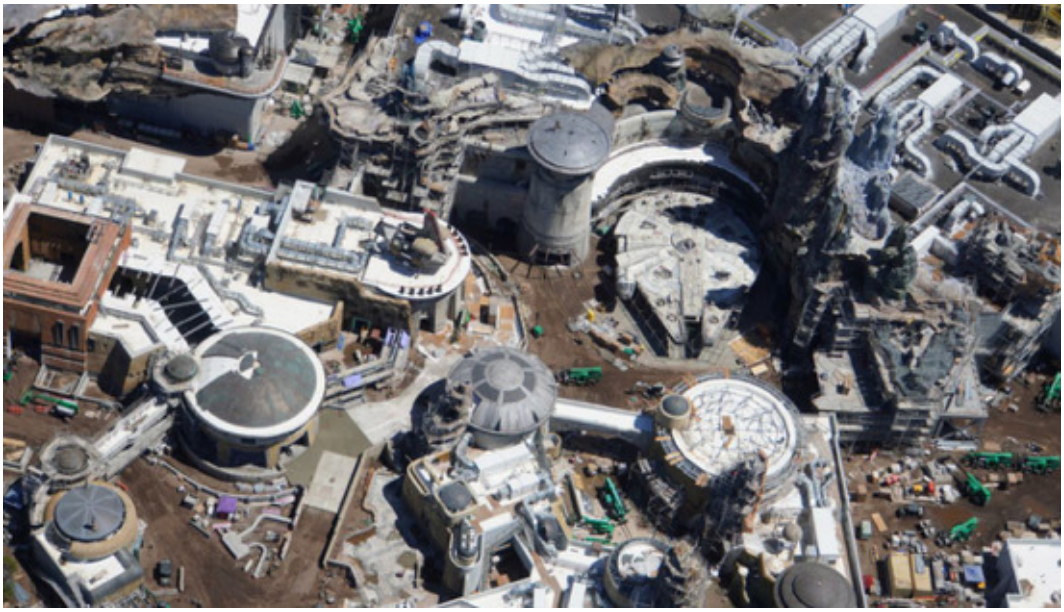

Figure 3. Aerial shot of the land during its construction. Note the strategic, concealed placement of the ship

Figure 4. Millennium Falcon close-up shot from the spectator's POV after they have arrived to encounter the ship

Figure 5. An example of forced perspective in the Valley of Mo'ara's floating mountain range

Figure 6. "Na'vi River Journey," Walt Disney World Resort. Digital projections amalgamate with set pieces to portray depth within the space

Similarly, "Star Wars: Rise of the Resistance" in *Galaxy's Edge* implements various digital moving image projections to sustain the illusionistic z-axis depth of the dynamic sets. When guests are apprehended by the First Order and disembark from their seized spacecraft into the launch bay of a Star Destroyer,[15] a massive, IMAX-Esque screen displays a digital projection of space as Tie-Fighters roam just outside the ship (Fig. 7).

As part of this experience, when Resistance fighters infiltrate the spacecraft and aid in the patrons' escape, the ensuing space battle unfolding just outside the Star Destroyer is exhibited through digital projections (Fig. 8). *Pandora* and *Galaxy's Edge* also utilize lighting techniques that allude to Mateer's emphasis on differences in visibility being utilized as a means of controlling audience attention. The lighting techniques executed are similar to those that *Avatar's* cinematographer, Mauro Fiore, implemented in the film. Fiore's cinematography relied on contrast and lighting instead of selective focus to direct the viewer's attention within the space on screen (Prince 2011: 211). While these techniques are not as prominent in the sunlight, nightfall brings the Valley of Mo'ara to life through an abundance of neon radiance pulsating from various plants and structures. Speaking from personal experience, walking through Pandora at night is a spectacular attraction in and of itself. But more importantly, the pulses of light and alternation between various illuminating surfaces also coerce the spectator/camera/character to notice particular "close-ups." Cameron himself noted how each bioluminescent plant is a guiding light source whose purpose is to manipulate a guest's attention to various special effects and stunning visual displays.[16]

15. Star Destroyer is the term referring to a kind of capital ship often used by the Galactic Empire or the First Order in the *Star Wars* films.

16. See *The Imagineering Story* 2019.

Figure 7. The large screen extending the interior space within the Star Destroyer

Figure 8. Digital projections exhibit the battle ensuing around the ship

Notably, the sound effects that radiate from the foliage of the Valley of Mo'ara are not a slapdash assemblage of various sounds. Rohde explains how the collection of sounds aim to further engage with the visitor while conveying auditory relationships. For Rohde and his team of Imagineers, it is not enough for a guest to only hear noises surrounding their every move, but rather, the goal is to generate eco-relationships between the creatures.[17] Just how sound engineers and designers purposely pinpoint each sound effect for a 5.1 surround sound system, each noise in Pandora is meticulously and specifically crafted to propose a symbiotic and interconnected ecosystem, testifying to the entire experiences' underlying message that implies peaceful cohabitation between humans and nature.

In *Galaxy's Edge*, surround sound expresses the boisterous vastness of the land and insinuates the direction of the spectator/camera/character. Periodically, one roaming the environment can hear the take-off of various spacecrafts hovering around the area. The movement of these spacecrafts is implied audibly as sound effects are administered through hidden speakers in a specific pattern to connote proper spatial organization and action. For example, one may hear an engine off in the distance to their right, followed by a woosh of that spacecraft zooming overhead as the audio resonates from right to left. In this sense, the land's 360-degree audial immersion correlates with surround sound and lossless audio data formats that "provide the full range of sound that filmmakers and sound designers have created" (Prince 2011: 192). The ability to place specific sounds within a 360-degree context manipulates the spectator/camera/character and capitalizes on one's natural tendency to locate diegetic sounds within a landscape (Mateer 2017: 21).

The respective rides in *Pandora* and *Galaxy's Edge* grant more control as ride vehicles (camera dollies and rigs) and rigid queue lines (predetermined scene blocking) construct a setting similar to that of a film set. Furthermore, the previously delineated visual and audio components and principles maintain the aesthetics of the broader environment. The designers espouse these principles and transition them into self-contained attractions while preserving a similar degree of guidance of the spectator/camera/character. For example, the queue line that guests must wait in for "Na'vi River Journey" is designed as a smooth transition from the expansive Valley of Mo'ara to the confines of an excavation site situated in a cave where the boats await for the aquatic journey. The ride takes a guest through an astonishing, glowing forest and depicts a series of vignettes that showcase the fantastical wildlife thriving amongst Pandora. Surround-sound effects encompass the self-contained environment, while the amalgamation of practical and digital effects connotes a higher sense of tactile realism while also maintaining the aesthetic continuity of the expansive land. The digital animals and Na'vi characters continue to cross side-by-side with the spectator/camera as every diegetic character moves on the z-axis within the three-dimensional space. These effects and motion vectors conjoin to espouse the style of continuity editing between shots. Passing through each scene and viewing digital projections moving in a continuous direction not only establishes temporal and spatial continuity like traditional film editing but also serves as a method for continuously directing the spectator's gaze on the x-axis through motion vectors as the physical sets gradually transition from scene to scene on the z-axis. Notably, the movement of each projection of moving images synchronizes and maintains continuity with the subject's physical motion. Even the footage comprising simulation rides is constructed to direct the rider's vision and perception. Such is the case for "Flight of Passage"[18] as Jupiter states that

> VFX design in this format is unique in that it is truly an experience design. Because of the immersive scale, every element has to be composed to support and control the audience's focus. They are able to look everywhere, but we want them to look where we want them to. Not only for storytelling purposes, but to visually support the illusion of flying on the back of a banshee (McGowan 2018).

To further immerse the spectator/camera/character and heighten the sense of social presence within a CVR context, each land's cast members[19] are perpetually role-playing as residents of Batuu or employees for ACE

17. *Populating Pandora — The World of Avatar with Plants & Animals*. Disney Parks, 20 Apr. 2017. http://www.youtube.com/watch?v=2TdhmjbQS2c.

18. For a more in-depth analysis of the ride experience, see: McGowan, Chris. "Avatar: Flight of Passage: A Cinematic, Multi-Sensory 3D Experience That Soars." *VFX Voice Magazine*, 24 June 2018, http://www.vfxvoice.com/avatar-flight-of-passage-a-cinematic-multi-sensory-3d-experience-that-soars/.

19. Employees at Disney Parks are not referred to as employees or workers. Rather, they are called cast members to suggest that they

— a fictional tourist company operating in partnership with the Na'vi. In *Galaxy's Edge*, stormtroopers roam the area monitoring the location and interacting with guests in various manners. In Pandora, an ACE employee might greet someone with "Oel ngati kameie" — a Na'vi greeting that translates to "I see you," they may point out various Pandora-native foliage and delineate facts about the environment, or they may also entice you to undergo the land's rides but only refer to them as experiences that coalesce with the diegetic setting. For example, the 4-D simulation ride, *Avatar – Flight of Passage*, is referred to as a vacationist attraction in which the guest participates in a Na'vi rite of passage through neuralink technology that ACE has implemented with the help of the Na'vi. Likewise, in *Galaxy's Edge*, attractions are not referred to by name. Instead, a local merchant could query if you would like to join a crew in piloting the Millennium Falcon on a secret mission.

While there does exist a degree of guidance in a guest's gaze, the environments do bestow what Darley (2000) calls a *vicarious kinaesthesia*, which he defines as "the impression of controlling events that are taking place in the present" (157). Darley's term is serviceable and relevant in considering the exchange of control and freedom one has in experiencing the environment, as the inclusion of the word 'impression' in Darley's definition connotes a sense of ostensible sovereignty. It is this degree of sovereignty that allows for subjective storytelling to manifest through exploration, as the artificial environments evokes one's ability to construct meaningful narratives.

3 Environmental Storytelling

As *Galaxy's Edge* provides the most interactive and narrative-centered example of this unique brand of storytelling, I will sketch how the land accommodates the guest's agency to manifest an immersive, interactive experience through one's experiencing of the environment. In attempting to contextualize this unique brand of storytelling, the term "environmental storytelling" aptly encapsulates this novel form of narrative formation. Environmental storytelling, as described by Henry Jenkins (n.d.), "creates the preconditions for an immersive narrative experience in at least one of four ways: spatial stories can evoke pre-existing narrative associations; they can provide a staging ground where narrative events are enacted; they may embed narrative information within their mise-en-scene; or they provide resources for emergent narratives."

Given the widely known *Star Wars* universe and its various established narratives, one can approach the land with pre-existing narrative associations. Both the overall environment and the singular attractions confer agency to the guest as they make their own decisions throughout their experience. For example, one can partake in the immersive experience of piloting the Millennium Falcon in the ride aptly titled "Star Wars: Millennium Falcon — Smugglers Run." This innovative motion simulation ride based on Lucas's cinematic franchise positions the spectator/camera/character as a pilot, engineer, or gunner rather than a passive traveler. The overall experience echoes that of a video game, positioning the guest as their own character embarking on a "smuggling mission." Each cockpit — situated within the confines of a domed screen — holds six people who serve as the ship's crew. As the ride ensues, each participant is given control over their station, as pilots veer left and right or up and down within the simulation utilizing basic joysticks as controls, while engineers and gunners press buttons to perform various actions as needed during the experience. The sensation of interactivity extends beyond your ride experience, beginning with the departure into the Falcon's corridors. As one departs from the cockpit, visual and audio effects such as wires short-circuiting and flashing sparks within the walls manifest the extent of the ship's damage. Above all, the company of guests is furnished with a score based on their performance. From there, a guest's performance on the ride accompanies them throughout the rest of their venture in Black Spire Outpost. While a personal experience cannot testify to the accuracy of this event, various blogs and articles suggest that an inadequate performance during the ride can lead to an interaction with a bounty hunter confronting the guest concerning payment of galactic credits to Hondo for the damage of the ship.[20]

Disney also utilizes a mobile phone app called "Play Disney Parks," in which visitors can create their own profile and collect virtual galactic credits and interact with various components of the multi-acre environment.

operating as a part of an imaginative production.

20. See "Star Wars: Galaxy's Edge Interactive Experiences – Bounty Hunters, Rebel Spies, and Space Creatures," https://blooloop.com/features/galaxys-edge-interactive-experiences/.

For example, *Galaxy's Edge* contains a collection of Datapads scattered throughout the land that any guest with the app can engage with — once again radiating a sense of environmental presence. These Datapads permit one to translate Aurebesh[21] texts inscribed on signs throughout the land, hack into various droids and devices, scan crates to discover the contents within them, or tune into communication signals in order to receive transcripts of conversations. All these interactions can be approached from the perspective of a rebel attempting to fight alongside the Resistance or as a proponent of the First Order seeking to sustain totalitarian control of the location.

While even more material could cover the extent to which *Galaxy's Edge* supplies the means for a continuous, cinematic adventure to ensue with every visit, the essential notion to preserve per this article is how the unique aspects of filmmaking and CVR interpolate to confer guests with the capacity to create their own stories and personas. One could "play" within the land, assuming various personas, achieving different missions, and essentially constructing their own narrative.

Conclusion

In conclusion, the advent of synthetic, interactive, cinematic environments situated in theme parks introduces an original mode of cinematic experiential entertainment that shares numerous characteristics and theoretical concepts with forms of virtual reality, namely Cinematic Virtual Reality. These innovative and unique forms of entertainment add to a diverse multi-media landscape that is persistently challenging and modifying traditional perceptions of various screen-centered disciplines that constitute the notion of post-cinema. The interdisciplinary nature of these projects testifies to a more comprehensive shift in moving image exhibition within the ever-evolving digital age that demands further consideration and discussion as the art form continues to submerge into an unprecedented moment of ontological query and spectatorial reconsideration. Essentially, while this article offers a starting point for investigating and studying an unorthodox mode of moving image exhibition, it is also fundamental to recognize a shift ruminating throughout these digital modes of immersion and simulation that fundamentally derives from cinema and perhaps recalls its origins in which physical settings fused with the projection of moving images to create crude modes of simulation, such as the infamous Hale's Tours. Above all, cinematic approaches to virtual reality and the associated methods of storytelling innately testify to an impression of post-cinema that privileges subjectivity and active spectatorship over the conventional passive spectator traditionally connected with cinema.

Returning to the concept of CVR, Mateer (2017) ends the article by interrogating various complications and questions that apply to the novel forms I have focused on in this paper. Questions such as "When does the artifice of cueing become apparent to users and affect transportation?"; "What is the relationship between the level of user autonomy and transportation within CVR?"; and "What techniques from other media, such as traditional stage-based or participatory theatre, are applicable to CVR and how can they be used effectively?" all are in conversation with the future of cinematic lands in theme parks. While the goal of these projects is to submerge the guest into the environment, it is irrational to assume that every individual feels the same degree of immersion. External factors such as the presence of other tourists or individual's refusing to suspend their inhibitions and remain self-aware of the artificiality of the environment complicate the endeavored outcome of these lands. Moreover, while this paper has examined the cinematic/VR aspects of these lands, to what degree do other media amongst the post-cinematic landscape influence their production and reception? Take, for example, video games that also share technical and qualitative characteristics with virtual reality and how interactivity within an experience such as piloting the Millennium Falcon emulates the experience of playing a first-person flight simulator.

As the entertainment industry surges forward with the utilization of exciting new technologies and practices, these entertaining and immersive environments deserve significant consideration within the contexts of cinema and media studies, as well as the burgeoning scholarship surrounding virtual reality. The post-cinematic landscape finds itself at the brink of systematizing this groundbreaking branch of cinematic practice as the hitherto success is reinforcing the standardizing of cinematic, immersive environments.

21. Aurebesh is the fictional language within the *Star Wars* Franchise and was specifically implemented in various ways throughout the land.

References

Bordwell, David (2002). "Intensified Continuity Visual Style in Contemporary American Film." *Film Quarterly*, vol. 55, no. 3, 2002, pp. 16–28., doi:10.1525/fq.2002.55.3.16.

Bukatman, Scott (1999). "The Artificial Infinite: On Special Effects and The Sublime." In *Alien Zone II: The Spaces of Science-Fiction Cinema*, edoted by Annette Kuhn, 249-275. London and New York: Verso.

Darley, Andrew (2000). *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*. London and New York: Routledge.

Denson, Shane, and Julia Leyda, edited by (2016). *Post-Cinema: Theorizing 21st Century Film*. Falmer: REFRAME Books.

Frierson, Michael (2018). *Film and Video Editing Theory: How Editing Creates Meaning*. New York: Routledge.

Frye, Jim (2015). "Chewie, We're Home." *Disney Twenty-Three* 7(4): 20-23.

Jerald, Jason (2015). *The VR Book: Human-Centered Design for Virtual Reality*. San Rafael: Morgan & Claypool.

Jenkins, Henry (n.d.). "Game Design as Narrative Architecture." *Publications – Henry Jenkins*, http://web.mit.edu/~21fms/People/henry3/games&narrative.html.

Mateer, John (2017). "Directing for Cinematic Virtual Reality: How the Traditional Film Director's Craft Applies to Immersive Environments and Notions of Presence." *Journal of Media Practice* 18(1): 14-25. https://doi.org/10.1080/14682753.2017.1305838.

McGowan, Chris (2018). "Avatar: Flight of Passage: A Cinematic, Multi-Sensory 3D Experience That Soars." *VFX Voice Magazine*, 24 June, http://www.vfxvoice.com/avatar-flight-of-passage-a-cinematic-multi-sensory-3d-experience-that-soars/.

Niles, Robert (2017). "Joe Rohde: Why 'Avatar' Fits in Disney's Animal Kingdom." *Theme Park Insider*, 21 Feb.

Prince, Stephen (2011). *Digital Visual Effects in Cinema: The Seduction of Reality*. New Brunswick, NJ and London: Rutgers University Press.

Weetch, Owen (2016). "'I See You': *Avatar*, Narrative Spectacle and Accentuating Continuity," *Expressive Spaces in Digital 3D Cinema*. Palgrave Close Readings in Film and Television. Palgrave Macmillan, London. https://doi-org.ezproxy.cul.columbia.edu/10.1057/978-1-137-54267-0_2.

Joseph Fischer – Columbia University (United States)
jaf2255@columbia.edu
Joseph Fischer is currently an M.A. student in Film and Media Studies at Columbia University in the City of New York. He received my Bachelor of Arts in Mass Communications, as well as his Bachelor of Arts in Psychology in May 2018 from the University of Arkansas at Little Rock. In 2018, he was one of fifty students accepted to the Telluride Student Symposium. He also currently works as a rapporteur for the Cinema and Interdisciplinary Studies Seminar at Columbia University.