

# **Creating Moving Storytelling Experiences Through The Use of Flat Rides**

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# Dedication

*To Meemie, the gardener of my life.*

# Acknowledgements

I could not begin to acknowledge all the people in my life that have enabled me to get to this moment, nor all the people unknown to me who have nevertheless made an impact. So first, thank you to all the family members and ancestors whom I don't know whose sacrifices created the stability I enjoy and the mentors and teachers I don't know who shaped the people that have shaped me. And I can express nothing but gratefulness for all the unearned privileges and strokes of luck that have paved the way in front of me.

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# Abstract

Creating Moving Storytelling Experiences Through The Use of Flat Rides

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This thesis proposes an attraction to be located at Dollywood that attempts to address two current issues in the themed entertainment landscape. First, it looks at flat rides and how they have often been overlooked as attractions capable of delivering a full “E-Ticket” storytelling experience and proposes one way of utilizing a flying island to greater effect. Such use of flat rides could provide regional parks with more options to create experiences of the kind typically only found at destination theme parks. Second, it attempts to fill a gap in themed entertainment storytelling: going beyond fun action adventures where something goes wrong, to attempt to create a story that is moving, meaningful, and with larger significance to the community that visits.

Keywords: themed entertainment, themed experience, flat ride, dark ride, multi-part experience, storytelling, flying island, regional, show writing, 3d concept design

# BACKGROUND

## INTRODUCTION

“Darn it! Why isn’t there more stuff like this?” That is my universal reaction upon experiencing a charming historic dark ride at a regional theme park for the first time. Or the twentieth.

My relationship with theme parks is a bit unusual. For most people, theme parks - at least of the kind that deliver astounding immersive experiences filled with technological magic - are vacation destinations: places that don’t exist except for one blissful week spent in an oppressively hot and humid kingdom. Theme parks closer to home? They can be fun, filled with steel behemoths that shadow the sun, but much more rarely do they feature those former types of attractions. That is something that has grown to bother me.

I was raised next door to that oppressively hot and humid kingdom, to parents who worked in it, and spent a lot of time there. Those astounding immersive experiences - dark rides - are what built my love of themed entertainment as a medium and I was disappointed to learn, upon emigrating to cooler climates, that few people got to experience these types of attractions in their own parks. They made such an impact on me and I felt and feel that everyone deserves to experience them. Unfortunately, there’s numerous roadblocks to that happening. Dark rides and immersive experiences are expensive, they require big show buildings, the maintenance is specialized, and the list goes on. Might there be a way to make these experiences more accessible to the many regional theme and amusement parks across the world? While a full solution is outside the scope of this thesis, I propose one element of it might lie in the humble flat ride.



## FLAT RIDES

As described in his book, *Theme Park Design*, David Younger states, “Flat rides are attractions like carousels, spinners, drop towers, and bumper cars: attractions where the area the ride vehicles move is inherent to the ride system, as opposed to tracked rides where a unique layout can be created every time.”<sup>1</sup> They typically are used to fill in the gaps in attraction programming to achieve the desired THRC of a land due to their much lower cost than typical “E-Ticket” experiences.<sup>2</sup> In practice, this usually means flat rides are rarely star attractions: the machinery lightly decorated to match the general theme and otherwise left alone. Unfortunately, I’d argue that this use case has become so ubiquitous and default that guests and designers alike have difficulty envisioning them being used in any other way: in ways that might more fully tell stories or create otherwise differentiated experiences. As Younger highlights, one of the great problems in how flat rides are typically used is that their experience differs little from park to park. The attractions become generic machines available at any park or carnival midway.<sup>3</sup>

This is a shame. Younger identifies 72 unique flat ride systems, and there are undoubtedly more out there. 72 distinct ride systems, as opposed the handful of roller coaster and tracked ride types out there. 72 ride systems that are famously relatively inexpensive. Imagine the benefits to a park that used these existing ride systems in new clever ways to create experiences that were unique and could only be experienced there. In his book, *Imagineering an American Dreamscape*, Barry R. Hill argues on many occasions that one of the core qualities that creates a park that guests successfully form an emotional bond with and want to return to again and again

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1. David Younger, *Theme Park Design & the Art of Themed Entertainment* (Ort nicht ermittelbar: Inklingwood Press, 2016), 438.

2. Younger, *Theme Park Design & the Art of Themed Entertainment*, 438.

3. Younger, *Theme Park Design & the Art of Themed Entertainment*, 448.

is that of uniqueness. He warns of the dangers of over-homogenization to the longterm prospects of regional theme parks.<sup>4</sup> Flat rides, used in new creative ways, provide one way to achieve that uniqueness in a way that is potentially more accessible to regional parks.

## STORYTELLING

How often have you heard a variation of the following phrase associated with themed entertainment? “Story is at the heart of everything we do.” It’s ubiquitous. It’s how the medium is defined. The Themed Entertainment Association states, “Our members bring the experience of engaging *storytelling* and entertainment to...visitor experiences world wide. [emphasis added]”.<sup>5</sup> Leslie Ferraro<sup>6</sup>, Joe Lanzisero<sup>7</sup>, and Bob Chapek<sup>8</sup> have said it on behalf of the Walt Disney Company. Falcon’s Creative says it.<sup>9</sup> The slogan of The Hetteema Group is “Creating Stories You Can Touch”.<sup>10</sup> Storyland Studios...well it’s in the name.<sup>11</sup> Clearly storytelling is important to themed entertainment design.

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4. Barry R Hill, *Imagineering an American Dreamscape: Genesis, Evolution, and Redemption of the Regional Theme Park* (Texas: Rivershore Press, 2020).

5. The Themed Entertainment Association (TEA), Accessed April 24, 2021, <https://www.teaconnect.org>.

6. “Disney Launches Magic of Storytelling Campaign to Benefit First Book Charity - AllEars.Net,” Accessed April 24, 2021, <https://allears.net/2016/02/11/disney-launches-magic-of-storytelling-campaign-to-benefit-first-book-charity/>.

7. Marc Graser, “Disney Finds Way to Integrate Marvel’s Superheroes into Its Resorts: Cruise Ships,” *chicagotribune.com*, August 15, 2013, <https://www.chicagotribune.com/entertainment/ct-xpm-2013-08-15-sns-201308151620reedbusivariety1200578996-20130815-story.html>.

8. Rebecca Campbell et al., “Disney Investor Day 2020 Transcript,” The Walt Disney Company, 2020, [https://thewaltdisneycompany.com/app/uploads/2020/12/Disney\\_Investor\\_Day\\_2020\\_transcript.pdf](https://thewaltdisneycompany.com/app/uploads/2020/12/Disney_Investor_Day_2020_transcript.pdf).

9. “Falcon’s Creative Group | Brands of the World,” Brands of the World, August 27, 2019, <https://www.brandsoftheworld.com/logo/falcons-creative-group>.

10. “About,” The Hetteema Group, accessed April 24, 2021, <https://thehettemagroup.com/about/>.

11. “Themed Entertainment Design Firm Emerges as Spatial Storytelling Powerhouse,” Storyland Studios, November 14, 2017, <https://www.storylandstudios.com/themed-entertainment-design-firm-emerges-as-spatial-storytelling-powerhouse/>.

But stories come in many shapes and forms. Think about the stories that have had significance in your own life, maybe some were fun swashbuckling adventures, maybe some were tender romances, maybe some were tear-jerking dramas. Stories are as varied as the people that write them...except it would seem in the the world of themed entertainment. All too often themed entertainment stories can be reduced to a thrilling action/adventure where something goes wrong.

For example, a non exhaustive US-centric list: *Indiana Jones Adventure*, *Pirates of the Caribbean*, *Thunder Mountain*, *Splash Mountain*, *Mickey's Philharmagic*, *20,000 leagues Under the Sea*, *Alien Encounter*, *Stich's Great Escape*, *Rise of the Resistance*, *Millennium Falcon: Smugglers Run*, *Tower of Terror*, *Mission: Space*, *Star Tours*, *Kilimanjaro Safaris (original version)*, *Dinosaur*, *Expedition Everest*, *Back to the Future: The Ride*, *Jaws: The Ride*, *Earthquake: The Ride*, *Transformers: The Ride*, *Kongfrontation*, *The Simpsons Ride*, *Men in Black: Alien Attack*, *Shrek: 4d*, *Poseidon's Fury*, *Spiderman Adventure*, *Harry Potter and the Escape from Gringotts*, *Harry Potter and the Forbidden Journey*, *Hagrid's Magical Creatures Motorbike Adventure*, *Jurassic Park River Adventure*, *Blazing Fury*, *Tennessee Tornado*, *Mystery Mine*, *Firechaser Express*, *Justice League: Battle for Metropolis*, *Monster Mansion*, *Timber Mountain Log Ride*, *Calico Mine Ride* - you get the picture. The archetypal theme park attraction doesn't end until the fat lady blows something up.

Even the rides that don't strictly adhere to this formula can be in the same vein. As Eddie Sotto says, "Fear minus death equals fun!"<sup>12</sup> And they are all mighty fun, but perhaps don't exercise the full breadth of what the medium is capable of, or at the very least are drastically

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12. Nate Naversen, "Fear Minus Death = Fun! - Eddie Sotto," *Themed Attraction* (blog), October 2, 2006, <https://www.themedattraction.com/fear-minus-death-fun/>.

overrepresented. What other emotions might a themed experience be able to create? What other stories might it be able to tell? I've seen *Flight of Passage* move audiences to tears with awe. *Omega Mart* provides a humorous critique of capitalism with a dash of wonder. *Sleep No More* conjures a world of suspense and intrigue. I think there are a wealth of emotional experiences, deeply significant meanings, and transformational powers held within the art of experience driven storytelling that we've only begun to see and this project attempts to be a part of the strive to unlock it.

## 2020

To that end, I wanted to create a story that could speak to the time we find ourselves in. The majority of my time in graduate school was spent locked down due to a global pandemic, in the midst of a vitriolic election cycle, a cultural reckoning on police brutality, the second once in a lifetime financial crisis in a decade, transgender people being murdered at an increasing rate<sup>13</sup>, all capped off with a violent siege on the United States Capitol. Many, many people are hurting. Polarization in America is at an all-time high and seems to be increasing.<sup>14</sup> I think now more than ever what the world needs is more empathy: true listening to each other. It can seem that today people are so pre-occupied with winning the argument they neglect to hear it in the first place. We forget the struggles that took place to give us the luxury of having these arguments and lose interest in maintaining the structures and systems that enable us to live in the society we enjoy.

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13. "Violence Against the Transgender Community in 2020," HRC, accessed April 24, 2021, <https://www.hrc.org/resources/violence-against-the-trans-and-gender-non-conforming-community-in-2020>.

14. Gordon Heltzel and Kristin Laurin, "Polarization in America: Two Possible Futures," *Current Opinion in Behavioral Sciences* 34 (August 2020): 179–84, <https://doi.org/10.1016/j.cobeha.2020.03.008>.

It takes an enormous amount of resources to build themed attractions, and it is my personal opinion that with that expenditure comes the responsibility to make it worth it: to entertain, educate, and inspire as one of my high school teachers would have phrased it.<sup>15</sup> I wanted to create a moving experience that reminds guests of the connections we all have to each other, our pasts and futures, and encourages people to try to foster that connection.

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15. Chris Winn, lectures to author, 2005-2009.

## CASE STUDIES

The following case studies provide a look at the various inspirations that influenced the design of the attraction. While countless more attractions, experiences, and places inspired the story and design of this experience, only ones which had a major impact on the experience are included.

### THE FLYING ISLAND

While the exact date of origin is unclear, the flying island is a ride system developed by Intamin with installations going back at least as far as 1983 at Cypress Gardens in Winter Haven, FL.<sup>16</sup> Essentially an observation tower, the ride is notable for a few reasons: its large capacity cabin (holding up to 100 passengers),<sup>17</sup> the option to let guests walk and stand freely, and most obviously the unconventional way the cabin raises and lowers. Rather than being hoisted up and down a stationary pole as is common in a traditional observation tower, the cabin is attached to an arm which pivots up and down into the landscape. Aside from being unique, the ride system comes with many benefits for themed attractions. The large capacity cabin improves THRC. The system only intrudes on sight-lines when it is up in the air and when on the ground the ride system does not “give itself away”. It provides a source of surprise. Finally, it is appropriate where height restrictions on permanent structures might be in effect. In my personal opinion, the sideways motion of the cabin is also more interesting and provides a more cinematic motion to the guest’s perspective.

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16. Dewayne Bevil, “Legoland Florida: Island in the Sky Closed Permanently,” *orlandosentinel.com*, accessed May 3, 2021, <https://www.orlandosentinel.com/travel/attractions/os-bz-legoland-island-sky-closed-20180123-story.html>.

17. Intamin, “Flying Island,” *Intamin Amusement Rides* (blog), accessed April 18, 2021, <https://www.intamin.com/project/flying-island-3/>.

As applicable to this project, those benefits seemed to call out for implementation into something more. I first observed that the large rotating cabin might make for an ideal way, if kept on the ground, to move guests through a variety of sets and scenery. And the hidden nature of the ride’s mechanics could lead to a scenario where you approached what appeared to be an architectural structure on a landscape, that once you were in could “magically” levitate. While neither of these ideas made it directly to the final attraction design, their influence is still felt.

### Cypress Gardens: Island in the Sky

The incarnation of this ride system that I’m most personally familiar with is the *Island in the Sky* at Cypress Gardens, opening in 1983 and closing in 2018.<sup>18</sup>



*Figure 1: Island in the Sky at Cypress Gardens (Roger W, 1989)*

I had the privilege of riding that incarnation of the system several times as a child, and it is how the ride system originally came to my attention. As a kid I thought it was the coolest thing

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18. Bevil, “Legoland Florida.”

in the world...this alien flying saucer quietly rising above the landscape, utterly silent and graceful. The experience on the attraction itself was even more interesting, entering what looked to be like some sort of observation area for a garden only to be magically lifted into the air - and free to walk about the deck! It was an impactful experience that stayed with me. The idea of the cabin being situated within a garden and part of it as a means to view it directly influenced the final attraction experience.

### Efteling: Pagode

Perhaps the most famous flying island is the *Flying Pagoda*, located at Efteling in the Netherlands. It is featured prominently in Intamin's own literature on the ride system and was instrumental in developing this thesis.<sup>19</sup>



Figure 2: Pagode at Efteling (Peeters, D5D\_6997)

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19. Intamin, "Flying Island," *Intamin Amusement Rides* (blog), accessed April 23, 2021, <https://www.intamin.com/product/flying-island/>.



As I was unable to obtain many ride system specifics from the manufacturer, I relied heavily upon satellite imagery and various on-ride videos and photos from tourists and bloggers to approximate dimensions, theming possibilities, and ride mechanics. The Pagoda is also one of the few examples of flying islands I'm aware of that is constructed to look like it is an actual architectural structure, rather than simply an unthemed platform or something more fantastical like a flying saucer, and it was a great reference to see how an architectural structure was adapted to the form of the cabin. Their use of a pagoda undoubtedly informed my choice to make the ride system gazebo-esque.

### Other Manufactures: Blowing Flying Kisses

It is worth mentioning that Intamin is not the only manufacturer of a ride system of this nature. Vekoma also manufactures its own version they call the Sky Shuttle.<sup>20</sup> There are also unidentified Chinese manufacturers. Their version originally came to my attention upon the debut of an attraction in Chongqing, China named *Blowing Flying Kisses*.<sup>21</sup>

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20. Vekoma, "Sky Shuttle | Vekoma Rides Manufacturing BV," accessed May 3, 2021, <https://www.vekoma.com/sky-shuttle>.

21. Hannah Frishberg, "Terrifying Ride above Cliff Has No Seat Belts or Safety Harnesses," *New York Post* (blog), October 6, 2020, <https://nypost.com/2020/10/06/terrifying-seat-belt-less-flying-kisses-attraction-unveiled-in-china/>.



*Figure 3: Blowing Flying Kisses, Chongqing, China. (Press, 2020)*

This attraction features dual flying islands which rotate so as to nearly touch each other midair - and the whole thing is built on the peak of a mountain. This was quite impressive, not only from the spectacular views the attraction allowed, but also the increased range of motion systems like these system provided - not just able to move up and down but side to side. The capabilities of this version inspired many ideas, including the ability to load in one place, and exit in another, or the ability for the vehicle to trace a specific irregular path in the sky. Unfortunately, upon closer examination, the cabin capacity of the attraction was too small to create an adequate THRC for the ride cycle lengths expected. Nevertheless, some of the influence remains - namely locating the ride system at the highest elevation point possible as to provide more impressive views.

## RISE OF THE RESISTANCE

*Star Wars: Rise of the Resistance* opened December 5<sup>th</sup>, 2019 at *Disney Hollywood Studios* in Orlando Florida and January 17<sup>th</sup>, 2020 at *Disneyland* in Anaheim, California.<sup>22</sup> Much lauded, the ride is a trackless dark ride in which guests are transported to a Star Destroyer, captured, and then make a daring prison break.<sup>23</sup> The attraction is notable for the lengths to which it goes to immerse guests in its narrative, combining a traditional queue, several elaborate preshows, queue/walkthrough hybrid spaces, and multiple ride systems that interface with each other. Of particular relevance in relation to this thesis is its use of multiple preshows to construct its story and build an overall experience. Unlike many other attractions, the preshows in *Rise of the Resistance* are fundamentally integrated into the story and do not merely provide exposition. They are absolutely necessary to advance the plot. For an attraction such as the one this thesis proposes, one that is cemented in one location, the need for the central ride to be flushed out into a larger experience in which the ride is only part of the adventure seemed absolutely crucial.

In one preshow, we board a shuttle which transports us to the star destroyer. It follows in the tradition of many attraction preshows: transporting guests from one place to another both diegetically and nondiegetically. The similarities end there though because in many ways this is less a preshow and more a ride before the ride - essentially a mild motion simulator featuring a lengthy space battle in which our circumstances change. The preshow ends with a grand reveal of an absolutely massive hangar - easily one of the largest show scenes ever constructed on a

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22. Thomas Smith, "Timing for Opening of Star Wars: Rise of the Resistance Announced," Disney Parks Blog, accessed May 3, 2021, <https://disneyparks.disney.go.com/blog/2019/07/timing-for-opening-of-star-wars-rise-of-the-resistance-announced/>.

23. Walt Disney Imagineering. *Star Wars: Rise of the Resistance*. December 5, 2019. Orlando FL: Disney's Hollywood Studios.

dark ride, though not technically part of the ride itself. Nevertheless, it establishes our presence in a new location. In another preshow, we are escorted into an interrogation room / prison cell. Kylo Ren attempts to interrogate us, but is called away. Shortly thereafter the resistance cuts a hole in the wall and we escape to the ride vehicle loading area.

In both these cases it is admirable how much of the queue and waiting areas - the necessary logistical and operational components of any attraction - are transformed into necessary *narrative* components of the experience. This strategy transforms a six minute ride into something approaching a 20 minute experience and is something I wanted to replicate.

There is also a technique used in *Rise of the Resistance* I have not seen used anywhere else, which is the juxtaposition of interior and exterior spaces. We wind through an outdoor queue, before heading into caves, before heading outdoors to the shuttle, which transports us to the inside of a Star Destroyer, and finally we escape from the Star Destroyer and land/exit outdoors. Forced compression is a technique that is well known in the design of attractions, and indeed is used in *Rise of the Resistance* several times. By leading guests into a small, confined space the designer can make a subsequent large, expansive space feel ever the more impressive.<sup>24</sup> Such a variance in the spaces also provides a nice sense of rhythm and pacing.<sup>25</sup> While not exactly the same the same thing, *Rise of the Resistance* uses this alternating outdoor/indoor pattern to similar effect: creating grand reveals, a sense of surprise, and a real sense of having traveled. The effect of this on the guest is quite startling and strengthens the sense of it being a true *experience* rather than just a ride and the technique is utilized extensively in this project.

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24. Kira Prince, "Ready When You Are CB: A Primer on Editing for Themed Entertainment," *Theme Park Concepts* (blog), September 3, 2019, <https://www.themeparkconcepts.com/2019/09/03/ready-when-you-are-cb-a-primer-on-editing-technique-for-themed-entertainment/>.

25. Younger, *Theme Park Design & the Art of Themed Entertainment*, 165.

## ENCHANTED TALES WITH BELLE

Debuting in 2012, *Enchanted Tales with Belle* created a new type of character meet and greet for Disney Parks - combining a walkthrough attraction/multiple preshows with a live participatory show.<sup>26</sup> It's roots actually date back much farther to 1999 and the attraction *Storytime With Belle* - which essentially offered the same live show, minus the elaborate sets, special effects, and preshow experiences. With the creation of *New Fantasyland*, Disney set out to create a more immersive version of the experience in which guests would visit Maurice's Cottage, step through a magic mirror portal, and then enter the castle where audio animatronic versions of Madame de la Grande Bouche and Lumiere would assist in the fun.<sup>27</sup>



Figure 4: Enchanted mirror before state (Gobetz, Disney World - Magic Kingdom)

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26. "Enchanted Tales with Belle," Wiki, Fandom.com, September 22, 2020, [https://disney.fandom.com/wiki/Enchanted\\_Tales\\_with\\_Belle?action=history](https://disney.fandom.com/wiki/Enchanted_Tales_with_Belle?action=history).

27. Walt Disney Imagineering. *Enchanted Tales With Belle*. December 6, 2012. Orlando FL: Magic Kingdom Park.

The magic mirror is undoubtedly the showpiece of the entire experience, in many ways overshadowing the actual live show to come. It starts as a relatively small, wall mounted mirror which transforms into a wide doorway guests walk through to access the castle. This is accomplished through special mechanized moldings and a lowering wall which hide the true size of the of the sliding mirror doors behind them in addition to careful use of lighting and projection mapping.

The facade of the attraction also is a clever bit of design.



*Figure 5: The roofline of Maurice's cottage extends past the walls over the queue. (Inside the Magic, Enchanted Tales with Belle)*

It successfully manages to look like a small cottage despite containing the preshow and a substantial amount of queue space. One of the ways it achieves this is by extending the roof line past the building walls and completely over the queue that wraps around the building - providing shelter that otherwise would not exist. The attraction also hides the main show space behind rockwork: creating a natural looking landscape behind the cottage facade, concealing the true scale of the entire experience.

Both the mirror illusion and the overall construction of the cottage facade provided much instruction in the creation of this thesis, which also includes a cabin and magical portal illusion.

# STORY DEVELOPMENT

## SITE SELECTION

With a ride system selected, site selection was the obvious next step. In what regional park might a flying island that tells a resonant story about the value of community be a good fit? It did not take too much looking to find an answer. From my own personal experience, and from the praise of many others, it was obvious that both Herschend Parks, Silver Dollar City and Dollywood, had a homey, comforting feeling and a penchant for creating unique experiences that would be a great backdrop for this sort of attraction. Of the two, I was substantially more familiar with Dollywood, having visited several times in my youth, and chose to use that park in part because of that familiarity with its offerings, layout, and brand voice. The park's values include serving others and creating emotional connections which is exactly in spirit with what this thesis proposes.<sup>28</sup> The park goes to great lengths to preserve the local culture and history of the community, keeping many local craftspeople and musicians employed.

Dollywood originally opened as Rebel Railroad in 1961 with a 5 mile long railroad that still operates to this day as its main attraction. Shortly thereafter, it was purchased by new owners and became Goldrush Junction in 1970, before finally being purchased by the Herschends in 1977 who sought to turn it into a sister park to Silver Dollar City in Branson, Missouri. Under the ownership of Herschend Family Entertainment the park has seen extraordinary growth over the subsequent near 50 years, particularly after the partnership that began with Dolly Parton in 1986 when the park was renamed Dollywood.<sup>29</sup>

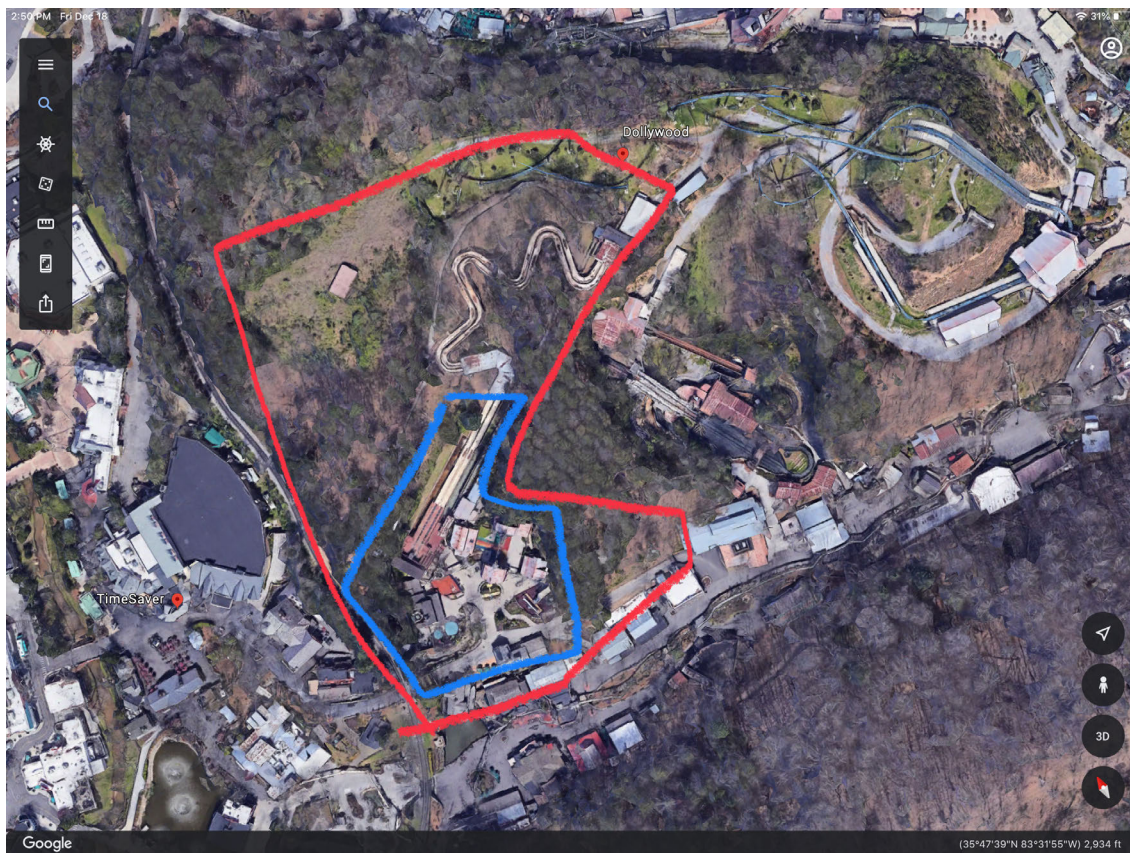
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28. Dollywood Parks And Resorts, "About Dollywood," Dollywood Parks And Resorts, accessed May 4, 2021, <https://www.dollywood.comhttps://www.dollywood.com/en/About-Us>.

29. Dollywood Parks And Resorts, "About Dollywood."



Dolly Parton herself often espouses values compatible with the values explored in this thesis, preaching the importance of getting along with each other and investing in our local communities, as evidenced by her substantial donations to the development of the covid-19 vaccine research<sup>30</sup> and the imagination library initiative, part of the larger Dollywood Foundation<sup>31</sup>.



*Figure 6: Proposed attraction site at Dollywood (Google Earth, 2020)*

30. Carlie Porterfield, “Dolly Parton Gets The Moderna Coronavirus Vaccine Her \$1 Million Donation Helped Fund,” *Forbes*, accessed May 4, 2021, <https://www.forbes.com/sites/carlieporterfield/2021/03/02/dolly-parton-gets-the-moderna-coronavirus-vaccine-her-1-million-donation-helped-fund/>.

31. Imagination Library, “The Dollywood Foundation - Dolly Parton’s Imagination Library,” accessed May 4, 2021, <https://imaginationlibrary.com/the-dollywood-foundation/>.

Dollywood also offers a near perfect site for an observation attraction, with a centrally located hill within the park located next to an area of the park already in need of redevelopment, proximity to the Smoky Mountains, and a need for more attractions suitable and accessible for all guests. The area of the park in question was originally home to the *Tennessee Mountain Slidewinder*: a type of waterslide attraction that featured multi-passenger foam-rubber boats.<sup>32</sup> The attraction closed in 2019 and has been sitting unused since.<sup>33</sup> The area adjacent to the entrance also features a little used restaurant, ripe for redevelopment.

### Inventor's Mansion

When doing research into Dollywood and consulting with Andy Westfall, Senior Director of Strategic Planning and Development, about the site, he made an off-hand comment about another closed attraction at Dollywood, the *Inventor's Mansion*.<sup>34</sup> I was surprised as I had never heard of this attraction, despite visiting the park numerous times. As it turns out the attraction closed before my first visit, being transformed into a Dolly Parton museum, though that also would close and relocate shortly after that first visit.<sup>35</sup> The facade of the Inventor's Mansion was finally demolished in 2019. While exploring that rabbit-hole I came across *Grandfather's Mansion*, which is essentially a sister-attraction located at the original Silver Dollar City. Both attractions were/are types of walkthrough funhouses filled with gags and illusions. With the Inventor's Mansion gone, and Grandfather's Mansion now without a companion it seemed

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32. Herschend Family Entertainment, *Tennessee Mountain Slidewinder*, 1987, 1987, Pigeon Forge TN: Dollywood.

33. John, "Five Changes You'll See at Dollywood in 2019," *Coaster101* (blog), March 25, 2019, <https://www.coaster101.com/2019/03/24/five-changes-youll-see-at-dollywood-in-2019/>.

34. Andy Westfall, phone conversation with author, 2020.

35. George, "What's That Building on the Hill at Dollywood?," *ImagiNERDing* (blog), May 5, 2015, <http://www.imaginerding.com/2015/05/05/whats-that-building-on-the-hill-at-dollywood/>.

appropriate that some sort of tribute might be in order. Attractions in theme parks often pay tribute to the attractions that came before, or that exist in other parks owned by the same parent company. Perhaps both mansions were owned by Grandfather, perhaps Grandfather was the inventor. But what about Grandmother? Where was she? What if she was also an inventor? That provided the spark of inspiration that started the development of this entire attraction.

## REGIONAL HISTORY

“I don’t want to just entertain kids with pony rides and swings, I want them to learn something about their heritage,” Walt Disney is said to have said to Harper Goff while developing Mickey Mouse Park, the early attempt at designing something that would eventually become Disneyland.<sup>36</sup> From Henry Ford’s Greenfield, to Walter Knott’s ghost town, Freedomland USA, the original Six Flags Parks, Silver Dollar City, Carowinds, and more the history of theme parks in the United States is indelibly tied to the local history, culture, and legends of the regions each park and attraction was built in - a trend present in many international parks as well. While such themes may have originally been adopted as much for practical reasons rather than creative - no licensing fees<sup>37</sup> - they came with an enormous side benefit, as Barry Hill explains, “The themed lands represented local culture, past and present... the park had a local identity that made it, well, different from Disneyland. It was *our* park. It was personal, even...It was our brand of magic - local, accessible, and a part of us.”<sup>38</sup> He later observes that each, “told a story, however lightly, about their heritage and where they lived, and

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36. Karal Ann Marling and Centre canadien d’architecture, eds., *Designing Disney’s Theme Parks: The Architecture of Reassurance* (Montréal : Paris: Centre canadien d’architecture/ Canadian Centre for Architecture ; New York : Flammarion, 1997).

37. Hill, *Imagineering an American Dreamscape*, 204.

38. Hill, *Imagineering an American Dreamscape*, xv.

that meant something.”<sup>39</sup> The larger point he makes is well observed: that when a park or attraction becomes about your own history, it becomes personal, you feel a sense of ownership, belonging, and you return again and again. And to those who visit from afar, it feels authentic, interesting, and different. It is not hard to see the logic behind this. People don’t visit Paris to see the Disney Store or McDonalds on the Champs-Elysees: they go to experience the things that make Paris unique.

Dollywood is no exception to this strategy - drawing heavily on local history, culture, and art in addition to Dolly Parton’s own biography - which is inextricably linked with the Sevierville area. Therefore, in developing this attraction it was essential to draw on this tradition.

## **ELKMONT**

The town of Elkmont is an abandoned ghost town, located in the Smoky Mountain National Park. Originally a logging town, with little more than a string of rail cars set up as temporary housing, towards the end of the logging operation the Little River Railroad began offering passenger excursions to the town and selling land - quickly turning it into a retreat for well-to-do families from nearby Knoxville.<sup>40</sup> Two clubs formed, the Appalachian and Wonderland, cementing the status of the area. Eventually the clubs were opened to the public and the town became a retreat for many. In the 1920s and 30s many of the residents, in coordination

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39. Hill, *Imagineering an American Dreamscape*, 198.

40. National Park Service, “Elkmont Historic District, Great Smoky Mountains NP,” March 22, 1994, NPGallery, National Register of Historic Places, <https://npgallery.nps.gov/NRHP/AssetDetail?assetID=19e6395e-4cfb-4b4f-9d9a-ce20fc24f806>, 37-47.

with other towns such as Gatlinburg and Townsend, campaigned for the creation of a national park in the area and eventually the Great Smoky Mountain National Park was formed.<sup>41</sup>

The creation of the national park would prove singularly impactful in the area's history, eventually turning the entire surrounding area into one of the top tourist destinations in the country.<sup>42</sup> The park itself is the most visited national park in the United States.<sup>43</sup> But it also spelled the end of the town of Elkmont, which was located deep inside its boundaries. The residents negotiated lifelong leases on their properties, in which they were allowed to live until their deaths, but the plan was to then demolish the structures and let the land return to its natural state.<sup>44</sup> In the intervening years though, many structures were placed on the national register of historic places, and a campaign began to save the remains of the town from destruction - leading to an ongoing debate which has resulted in the preservation of several houses and the demolition of others. The town is now primarily used as a campground in the park, with many hiking trails surrounding it with excellent views of the ruins.<sup>45</sup>

The story of the town as well as the aesthetics of the structures within it provided direct inspiration and background for the development of this attraction concept. Grandmother's Cabin is based directly on the house of Alice Townsend, named "Happy Landing."<sup>46</sup>

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41. Daniel L. Paulin, *Lost Elkmont*, Images of America (Charleston, South Carolina: Arcadia Publishing, 2015).

42. Tripadvisor, "Tripadvisor Travelers' Choice Awards," accessed May 4, 2021, <https://www.tripadvisor.com/TravelersChoice-TrendingDestinations-cTop10-g191>.

43. Great Smoky Mountains National Park, "Park Statistics - Great Smoky Mountains National Park (U.S. National Park Service)," accessed May 4, 2021, <https://www.nps.gov/grsm/learn/management/statistics.htm>.

44. Daniel S Pierce, *The Great Smokies: From Natural Habitat to National Park* (Knoxville: University of Tennessee Press, 2015), 166-68.

45. National Park Service, "Elkmont Historic District, Great Smoky Mountains NP," 37-47.

46. Paulin, *Lost Elkmont*, 80-82.



*Figure 7: Alice Townsend's Happy Landing (Paulin, 82)*



*Figure 8: Alice Townsend's Happy Landing (Paulin, 80)*

Alice Townsend was the third wife of Colonel Wilson B. Townsend: the owner of the Little River Railroad and the one who first established the town.<sup>47</sup> The house is a perfect balance of Appalachian construction combined with more fantastical elements: essential in differentiating

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47. Paulin, *Lost Elkmont*, 55.

a weenie in a park already filled with Appalachian architecture. The town of Evergreen is a fictionalized version of Elkmont, drawing on its history as both a logging town and resort/tourist destination. The idea that the loss of the town actually resulted in something new and beautiful, and was the result of intentional effort I found quite powerful. The character of Grandmother herself draws much inspiration from Lem Ownby, one of the last remaining residents of Elkmont and a quirky, self-reliant fella with a knack for inventing. The self-watering garden in the queue is drawn directly from Ownby's own attempts at creating a indoor plumbing system.<sup>48</sup> Grandmother's genuine love and passion for the mountains she lives in as well as her tendency to give unsolicited advice to strangers passing though also owes much to Ownby.

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48. F. Carroll McMahan, *Elkmont's Uncle Lem Ownby: Sage of the Smokies* (Charleston, SC: The History Press, 2013).

## THEMES

### THEME IN THE LITERATURE SENSE

Theme is “the foundational premise upon which all decisions are made. Decorative schemes are not themes. Subjects are not themes. Styles are not themes. Ideas are themes.”<sup>49</sup>

“Part of the issue revolves around the use of the word ‘story’ and what it means to people. Some people mean plot structure, character development, and backstory. Others mean poetic interrelationships, harmony of elements, and symbolic meaning. I am more in the second group, I think that what makes theme parks theme parks is the ‘theme’, exactly as it is meant in high school [literature] class.”<sup>50</sup>

These sentiments from Joe Rohde are easy to initially dismiss, surely theme parks are just about having fun? Why be so esoteric about it? But the more you examine them the more you begin to see just how accurate they are. So many of the classic attractions that people have come to cherish have specific voices that relate specific messages. They all have subjects upon which they comment. Some do it via subtext, as in the *E.T. Adventure’s* message about the healing power of love,<sup>51</sup> *Blazing Fury’s* valorization of Firefighters,<sup>52</sup> or the countless morality plays cautioning against the sin of hubris in attractions such as *Pirates of the Caribbean*,<sup>53</sup> *Tower of Terror*,<sup>54</sup> or *Expedition: Everest*.<sup>55</sup> Others do it with scalpel-like precision: “There’s a great big

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49. Joe Rohde (@Joe\_Rohde), “Bad English Is Bad Design. A Theme Cannot Be Applied after the Fact, It Is the Foundational Premis upon Which All Decisions Are Made...,” Twitter, September 24, 2019, [https://twitter.com/joe\\_rohde/status/1176639254891388928](https://twitter.com/joe_rohde/status/1176639254891388928).

50. Joe Rohde, Joe Rohde Personal Correspondance quoted in David Younger, *Theme Park Design & the Art of Themed Entertainment* (Ort nicht ermittelbar: Inkingwood Press, 2016), 65.

51. Universal Creative, *E.T. Adventure*, 1990, Orlando FL: Universal Studios FL.

52. Herschend Family Entertainment, *Blazing Fury*, 1978, Pigeon Forge TN: Dollywood.

53. WED Enterprises, *Pirates of the Caribbean*, 1967, Anaheim CA: Disneyland.

54. Walt Disney Imagineering, *Tower of Terror*, September 22, 2006, Tokyo Japan: Tokyo DisneySea.

55. Walt Disney Imagineering, *Expedition Everest: Legend of the Forbidden Mountain*, January 26, 2006, Orlando FL: Animal Kingdom.



beautiful tomorrow”;<sup>56</sup> “If we can dream it, then we can do it”;<sup>57</sup> “it’s a small world after all.”<sup>58</sup> It seems obvious that if attractions are to tell more powerful stories then it will all start with the theme.

## KEY THEMES & SYMBOLS

### Constant Care & Listening

The primary theme of this attraction is that of constant care. The idea that there are things in life that require constant attention in order to flourish, and it is our responsibility to give that attention where it is needed. The theme manifests in several ways. Primarily, it manifests through the metaphor of a garden. It also manifests through the use of mechanical clocks, each of which must be wound in order to keep ticking. Clocks also represent the journey through time and how the actions of the past ripple into the future. The use of these symbols together was done intentionally, their meanings meant to reinforce each other. The interactive feature in the queue immediately before entering the cabin is designed to be a microcosm of the entire experience and introduce the concept of mechanical clockwork to younger guests who might not be familiar with it. A clockwork mechanism brings water to the vegetable garden so that it may grow. But it requires that guests constantly pull down the weight and wind it so that it might keep functioning.

A garden cannot grow and will die, or at the very least will become chaotic and uncontrolled if there are not people committed to watering it, weeding it, warding off pests,

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56. Walt Disney Imagineering, *Carousel of Progress*, 1993, Orlando FL: Magic Kingdom Park.

57. WED Enterprises. *Horizons*. October 1, 1983. Orlando FL: EPCOT Center.

58. WED Enterprises, *It’s a Small World*, 1964, 1964, Flushing Meadow NYC: 1964 New York World’s Fair.

replenishing the soil, making sure it gets enough sunlight, etc. Similarly the communities we live in, from the local neighborhood to the federal government to the whole world, require that we constantly invest in them and each other - literally and figuratively. Our societies are made up of institutions that without constant care become infected with pests and parasites who seek to use them to their own ends, people who seek to divide instead of unite. Our physical infrastructure is made up of physical objects that must be maintained and replaced. Our interpersonal relationships too require constant renewals of trust and empathy, less we fall victim to our egos, the desire to be right, defensiveness, and tribalism.

The residents of Evergreen do have a period where they fall victim to this danger. They lose sight of the garden and see only the plants, they see their personal ambitions, their personal worries. They become blinded by their own traumas and begin to forget the reason they tend the garden in the first place: to build something beautiful. And in their quest to feel vindicated, to get their way, to be the most important, the garden begins to wither and die.

It's important to recognize that the story does not seek to blame the residents of Evergreen: each of their struggles are real, they each are indeed doing what they think is best. But in their self-absorption they find themselves unwilling and unable to listen to each other despite all wanting the same thing: for the garden to thrive. It takes someone else, Grandmother, to be the person that's willing to truly listen and empathize, in good faith and without judgment, to care about their concerns, no matter how trivial or ridiculous in order for them to feel safe: so that they can, in turn, truly listen to each other. Grandmother is a model that the others can mirror. The story encourages guests to be like Grandmother: to be the person who shows care and compassion to someone else, so that the seed might multiply, and the garden might grow.

The ideas of this story draw directly on my own experience with therapy and my subsequent deep interest in human psychology. Humans, in short, are unable to care for others if no one has cared for them.<sup>59</sup> People can not trust, if no one has behaved trustworthy. People cannot show empathy and kindness in the face of vulnerability if no one has ever let them be vulnerable. It is my assessment that this is in part why the world finds itself at the crossroads it does, why the United States finds itself in the moment it does. There are many people out there hurting, with trauma, who feel abandoned, left out, uncared for, insulted, like they don't matter, who have been systematically abused by systems, or forgotten, neglected, and now find themselves apathetic, trivialized, or demeaned. People want to be heard. And it is the responsibility of those who can listen to do so. Modeling and mirroring are essential to the well-functioning of all of human society and if we cannot have good-faith discussions with each other, without resorting to name-calling, without feeling the need to point fingers instead of saying "I'm scared," we will not be able to solve the problems of the future. That is the message this attraction is trying to send; If a garden must be watered, and a clock must be wound, people must be heard.

## Loss vs. Growth

Another theme explored in this attraction is the dichotomy between loss and growth. Sometimes, in order for something new and beautiful to emerge, something else that is old and beautiful must die. Still, other times the old thing becomes the new thing and we are left to

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59. Brent Mallinckrodt, "Attachment Theory and the Psychotherapy Relationship – Summarizing What We Know," *Society for the Advancement of Psychotherapy* (blog), May 2015, <https://societyforpsychotherapy.org/attachment-theory-and-the-psychotherapy-relationship-summarizing-what-we-know/>.

decide if the story we tell ourselves is one of loss or one of gain. The attraction takes the perspective that loss is a necessary part of growth and we learn that along the way.

The attraction begins in a museum: a place with a fixed view of the past. The past is then, and the present is now. The structures of the town of Evergreen are abandoned and therefore the town is lost. The structures of the present: Dollywood, the Smoky Mountain National Park, and the surrounding communities are built on top of the ruins of old. And with this perspective, the historians look back and construct a narrative: There were arguments, the garden died, the town was lost. A completely different town was built on its grave.

But we learn through the course of the attraction that the memories of the town's residents see it differently. Yes there was an argument, yes the garden died, but then they learned. They began to listen to each other, and the garden and town thrived. They made a choice to then create the national park, to celebrate the land they loved, and in turn that choice created the communities we see today. The past and the present are not separate events, they are connected by a continuous thread of history. And as such the town was not lost, it transformed. Like a butterfly, like a flower from a seed, it blossomed into something new. And yes loss is a part of that process, but it is not something to be lamented, but celebrated. The attraction climaxes in the air, overlooking what the residents of Evergreen created, proud of what their descendants built, not upset that their individual houses might be gone.

This speaks too to the moment of change our culture finds itself in. We're in a moment of cultural reckoning. It is abundantly clear that the narratives, assumptions, categories and systems that have served us for a long time do not work for everyone, have never worked for many, and perhaps have never worked at all. We're stuck in a fight between those who want to change

everything, those who want to change some things, and those who are determined to preserve things exactly as they've been. Those who cling to the old are understandable, they see the importance of these beliefs and ideas to history, perhaps they find them personally meaningful, perhaps they feel a duty to honor the legacy of those who came before them, fearful that the values they care so deeply about will be lost. Like the museum in this attraction, they seek to honor the memory of those who came before by preserving their relics in plexiglass cases, immune to change, cemented down, with little golden plaques. The story of this attraction though takes the position that this is not what those people would have wanted, that their memory is honored, not by preserving the specific structures they built, but by listening to the lessons they learned and following their example in creating something new. Loss is part of the process of growth.

This theme is also deeply personal to my own life. My own grandmother passed away at the end of my first year of graduate school, shortly before beginning work on this project in earnest. The themes contained within the attraction speak not only to the societal need to cope with change, but also the personal. How do we honor the people who are responsible for our success? How do we pay tribute to their sacrifices? We have the responsibility to the people that came before us to make sure those sacrifices were not in vain, but also to live for ourselves. The story speaks to the idea that no person is an island: that we are the result of dozens, or hundreds, or thousands of people who have worked to make our lives possible and better - known and unknown. Surely it is our duty to pay that debt forward.

## **DESIGN CHALLENGES / EVOLUTION**

### **CLIMB EVERY MOUNTAIN**

Perhaps the most difficult design challenge in developing this project was finding a way to actually get guests to the attraction site. Since the core experience of this attraction at its most fundamental level is an observation tower, it was crucial to provide a good view to observe. Ideally, the attraction would be able to provide views of the entire park and, even more importantly, fantastic views of the Smoky Mountains in the distance. After several virtual site visits to the park and in the air above it (thanks to Google Earth VR) it was obvious that the best location was the site previously described in this paper in the center of the park (see Figure 6). This site is centrally located and at the highest elevation within the park. Unfortunately, that elevation difference created a real guest access issue. The site is approximately 60-80ft higher than the guest area nearest to it and up a steep grade. Many options were explored, seeking a solution that would be cost-effective, offer a high enough throughput, and be fully accessible. Some of the options explored are listed below.

#### **Custom Ride System**

A very early solution involved the creation of a custom version of the flying island ride system. Typically, the flying island is designed so that its lowered position is completely horizontal and it's raised position is near vertical, with a kink in the support arm that enables the arm to not collide with the cabin, which always remains level. It seemed like it would be possible to alter the position of this kink so that the arm could come to rest below horizontal, down the side of the mountain. Thus, the cabin would be able to load at the base of the hill. As interesting

as this idea was, it didn't seem entirely in-spirit with the goal of this thesis, to develop a concept using an off-the-shelf version of the ride system, and so other options were pursued.



Figure 9: Proposed modification to the flying island ride system (Kira Prince, 2021)

## Escalator

An escalator up the side of the mountain was also briefly explored, such as the one used at Universal Studios Hollywood. This idea was rejected for several reasons. Aside from its questionable thematic appropriateness to such a rustic park, such an option would not be accessible for guests in wheelchairs, or guests who otherwise could not use stairs. While there are escalators that can be used with wheelchairs,<sup>60</sup> operationally they come with many headaches: namely the need to clear the stair of all passengers. For an attraction queue that needed to support close to 1000 people per hour, such a solution did not seem appropriate.

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60. Accessible Japan, *An Accessible Escalator in Japan* - *Www.Accessible-Japan.Com*, accessed May 8, 2021, <https://www.youtube.com/watch?v=TANDEMyIVQE>.

## Existing Queue

The closed attraction that sits on/near the site, *Tennessee Mountain Slidewinder*, attempted to solve this problem when it was built. The queue does bring guests to the top of the hill and an early plan was to repurpose this queue. Unfortunately, the queue is not in any way accessible to guests in wheelchairs, and more to the point, is barely accessible to guests not in peak physical condition: featuring numerous staircases and steep, lopsided paths. However, a portion of the queue, approximately halfway through, is relatively close to the required 1:20 ADA slope and near the site. Because of this, this portion of the queue was kept with the expectation to use the existing right of way and do minor re-grading and repaving. It was ultimately used as the exit pathway of the design.

## Split Stair/Ramp

This solution was the simplest. Due to the particular terrain configuration of the site, it would be possible to create an accessible path along the top of the slope of the hill for 30 feet of elevation climb if only guests could be elevated to the top of the lowest point on the hill. The easiest way to accomplish that was the creation of a 3-4 story staircase and a separate elevator for guests who could not climb. In this version, the museum would be built as the site of a former lumber mill, and the staircase and elevators contained in a large tower and silo attached to the building. Guests would rise through a timeline showcasing the history of the town of Evergreen. At the top of the silo, they would emerge onto a “hiking” trail which would take them to the entrance of the attraction. The trail would contain both the entrance and exit queues and eventually fork, with the the queue portion headed to the attraction facade, and the other fork consisting of the repurposed Slidewinder queue, now functioning as an exit path.





*Figure 10: Proposed Layout with staircase and “hike” (Kira Prince, 2021)*

As development continued it was pointed out by several consultants that the two tall staircases, the dual elevators, and the approximately 50’ tall facade it would take to contain them would incur their own substantial costs that might be better spent on a more immersive conveyance. Additionally, while this configuration of stair and hike was accessible on paper, it nevertheless demanded quite a bit of physical exertion from the guests that would not be comfortable. I was encouraged to pursue an earlier idea that I had previously dismissed.

## Funicular

A funicular is a railway with two trains or cars connected via cable. Usually used to go uphill, one car acts as the counterweight for the other. The idea to use a funicular to get up the hill came early, but also was rejected early. It seemed too costly and took up too much land. But

with the given feedback, I re-examined it. Upon further research it turned out that the funicular route could be made steeper and shorter than originally anticipated, and this shorter route would enable smaller, more intimate vehicles that would still be more than capable of delivering the required THRC. A funicular also opened the opportunity of a second “preshow”, with the ability to convey exposition while in the cars. It would also create a more complete “experience” - creating a sense of travel and multiple stages to the ride. Given these benefits, the funicular is ultimately what made it to the final concept.

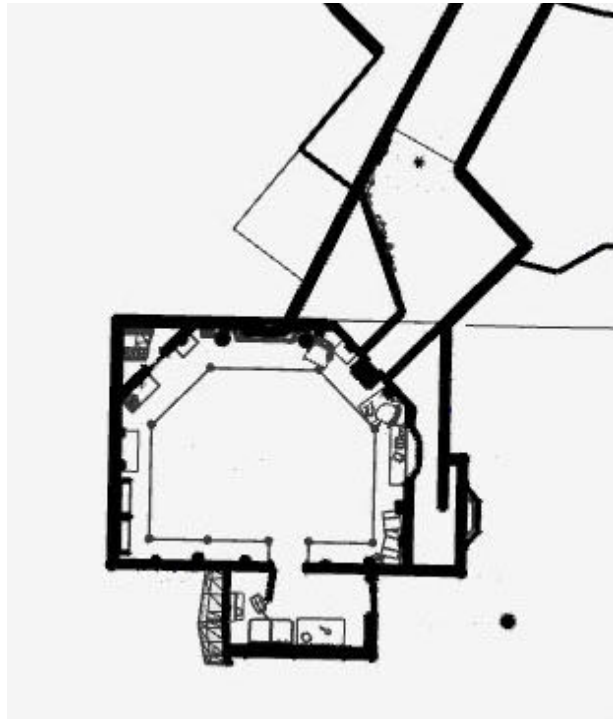


*Figure 11: Final Site Layout with Funicular (Kira Prince, 2021)*

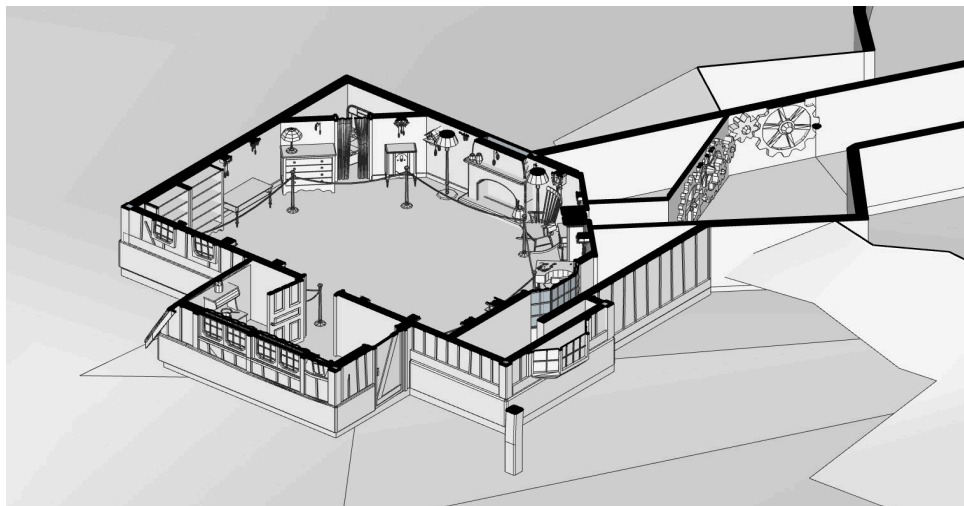
## **PUZZLE BOX**

Another of the main challenges in designing this attraction was the preshow. There were numerous requirements for Grandmother's cabin. It should look small, humble, and abandoned. But it still needed to be able to fit an entire ride vehicle's capacity - approximately 80. There needed to be the ability to have full control of lighting within the space for the projection mapping and special effects, which meant that any windows on the inside could not be the same windows as those on the outside. The room needed to be able to transform from abandoned to new, and a grandfather clock that transformed into a portal was a central element. How to fit all of this into a quaint cabin?

The interior of the preshow was laid out first, determining the exact amount of square footage necessary for 80 guests. Each guest was allocated 6.5 square ft. The preshow area is essentially a rectangle, trying to create a shallow enough area so that everyone would have a decent view to the front of the room. The walls at the front of the room were angled towards guests to assist in this. That angle also opened up room for the passageway to the ride itself, and on the opposite side the creation of a forced perspective bedroom (See Figures 12 and 13). Finally, the preshow area was designed with only one "window": a false bay window, obscured by curtains, with space for lighting equipment between it and the actual facility walls.



*Figure 12: Layout of preshow and ride passage (Kira Prince, 2021)*



*Figure 13: Isometric section of preshow and ride passage (Kira Prince, 2021)*

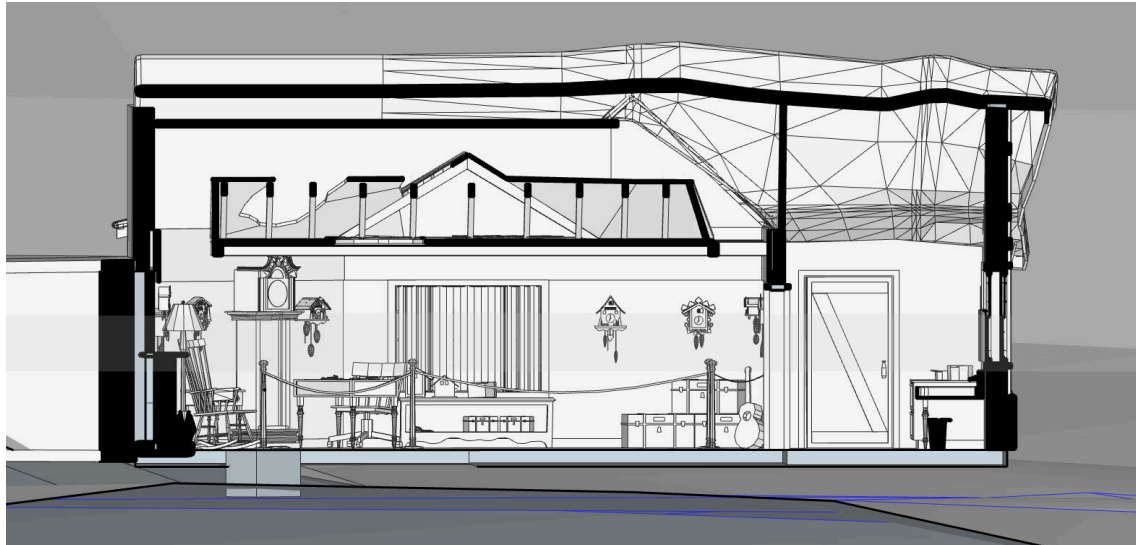
Similarly, the preshow area was given a false ceiling and false attic (See Figures 14 and 15). The ceiling is constructed out of a painted scrim. When guests enter, the scrim is lit from behind to be transparent, and when the room transforms, it becomes lit from the front. Above the scrim is a false attic and false roof, constructed in the general shape of the implied roofline on

the facade of the building. These scenic elements allow guests to see “sunlight” streaming in through the “holes” in the roof, though there are no actual holes in the roof for obvious reasons.

The light they see is instead from stage lights suspended from the real ceiling.



*Figure 14: Front section of preshow cabin (Kira Prince, 2021)*

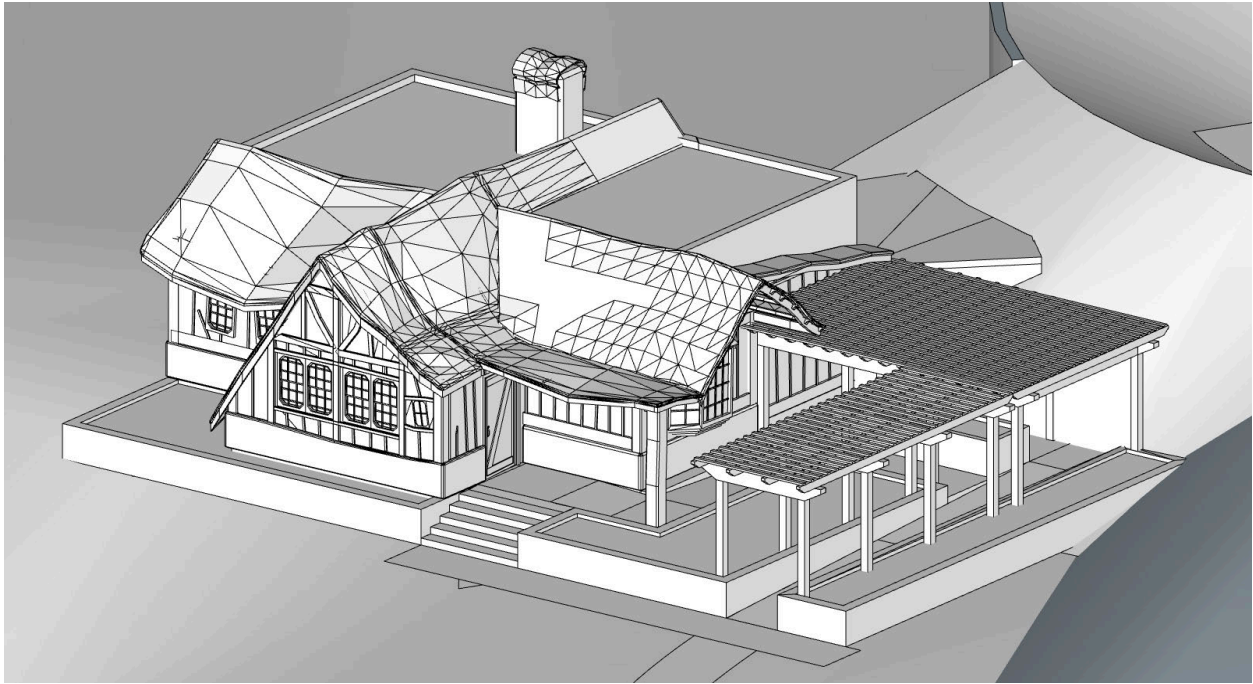


*Figure 15: Side section of preshow cabin (Kira Prince, 2021)*

This ceiling is also designed so that it does not fully meet the walls of the preshow area. A 3-5ft gap is left around the perimeter of the space, largely concealed by the beams in the

ceiling, and the props and stanchions that prevent guests from directly standing under it. This gap is left for projectors and other lighting equipment used for the transformation sequence.

The exterior of the cabin is designed with heavy inspiration from the Alice Townsend house in Elkmont (See Figures 7 and 8). This layout was partially chosen to obscure much of the trickery used to conceal the true scale and shape of the preshow area. The entrance of the cabin is designed as a kitchen, with nearly all of the facade windows occurring on it. In this way, the lack of windows in the interior show space seems less conspicuous. The kitchen entrance area is also laid out to draw attention away from the extra space that exists between the facade bay window and the interior bay window, and the off-center entrance that results. Finally the shape of the house is used to imply a roofline that does not actually exist. The gables only cover the very front portion of the facade, and immediately end past their peaks and intersections. In the rear, a low sloping roof is merely attached to the side of the building, drawing attention away from the corner of the show building that remains. Trellis's, pergolas, and the extended eaves of the roof obscure this corner, protect from rain, and hide the ride system itself from view.



*Figure 16: The facade and approach to the cabin hides its true scale. (Kira Prince, 2021)*

Finally the creation of the transforming grandfather/grandmother clock was a challenge. It took much experimentation and several digital mockups before settling on one solution. Initially the plan was to feature something much more similar in mechanics to the magic mirror illusion in *Enchanted Tales With Belle*. However, it became clear that the methods used in that illusion were specific to the dimensions of the mirror, its frame, and the half timbered walls of a French cottage and that technique could not be directly replicated. Instead a new approach was needed.

Essentially the clock obfuscates a gap in two walls which simply move apart from each other, rather than a portion of the wall descending. The walls are suspended from the picture rail that surrounds the room. The base of the grandfather clock is a shell that surrounds the vertical components of the clock and simply lowers into the floor. The weights are on cables and are raised into the head of the clock, which itself is another shell that raises into the ceiling. The

sides of the clock are attached to the walls and move apart as the walls do. They are attached to telescoping molding that is placed between the head and body of the clock. The glass of the clock is actually two glass doors placed one in front of the other, each attached to one of the side walls of the clock. Finally, the pendulum and back of the clock are part of one assembly which travels back on a track to reveal the length of the passageway (See Appendix B for renderings).

The whole purpose of such a complicated piece of equipment is to provide a show-stopping moment of surprise and delight, where the ordinary becomes extraordinary. Themed experiences take place in a realm of heightened reality, where the unexpected and sublime are around every corner. What is a great experience without moments like these to gush about to friends at home, and excitedly drag relatives in to see? Structurally, in an analysis of the main portion of the experience the transformation is a visual indicator of the “crossing the threshold” moment: stepping from one reality into another, the transition from act 1 to act 2.<sup>61</sup> And in a larger analysis of the entire attraction’s story including the queue and funicular, it is a signifier of the midpoint and turnaround.<sup>62</sup> In either case, from this point forward the story is headed in a different direction, something big is ahead, and there is no turning back.

## **NOT GOING ANYWHERE**

Another challenge was the core challenge of this thesis, to create a show around a flat ride. This proved more challenging than anticipated. The core dilemma with creating a show around a static ride system is trying to create multiple scenes or changes in an environment in

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61. Joseph Campbell, *The Hero With A Thousand Faces*, 2008, 71, <http://archive.org/details/TheHeroWithAThousandFacesJosephCampbell>.

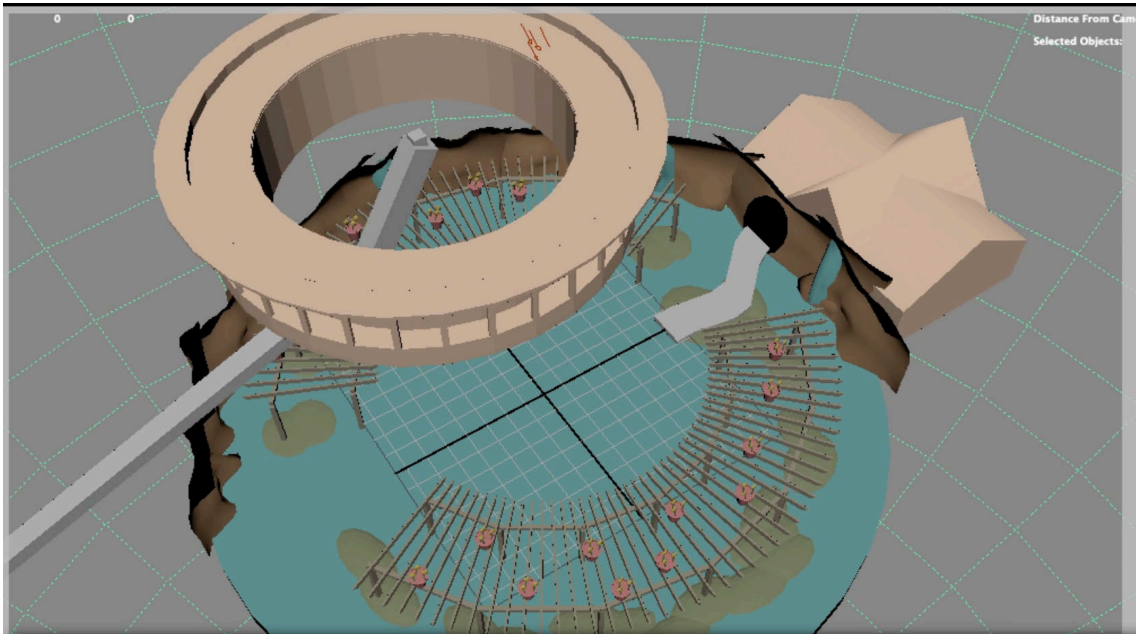
62. Kira Prince, “The Four Elements of Themed Experiences and 5 Act Structure,” *Theme Park Concepts* (blog), February 1, 2021, <http://www.themeparkconcepts.com/2021/02/01/the-four-elements-of-themed-experiences-and-5-act-structure/>.



one space. Traditional dark rides create their stories by moving through multiple sets, but a flat ride is contained in one location.

In the earliest conceptions of this attraction, this problem was solved by creating various tableaux around the perimeter of the vehicle that the vehicle then would rotate past in much the same fashion as a rotating restaurant. However this proved better in theory than practice. In order for such a technique to work, it would have to be irrelevant which scenes guests saw first, since every guest would see a different scene first. Furthermore, when boarding the vehicle guests might walk past every scene on their way to their seats unless some sort of raising or lowering barrier was used. There were additional challenges too in finding ways to shelter these scenes and provide light control. Perhaps most challenging of all, this technique just didn't seem to fit the direction the story was headed. There were also logistical problems: the time it would take to make a full rotation on the ground combined with the time needed to raise and lower did not fully add up to meet the required THRC.

The second attempt to create a show involved the creation of an elaborate set covered by a pergola that surrounded the vehicle. Various items in the set would be able to come alive via various techniques, replicated around the vehicle, before shutters on the vehicle would close and it would lift out of the arena. While the vehicle was in the air, the pergola would lower, revealing a second set constructed on top of the pergola. When the vehicle came back down to the ground it would be as if it had landed in a different place. While no doubt spectacular, concerns were raised about the feasibility of this being constructed in a regional park. Such a set would be massive and expensive.



*Figure 17: An alternate plan involved the ride vehicle surrounded by a physical set with a pergola capable of raising and lowering for multiple scenes. (Kira Prince, 2021).*

In these discussions another issue was raised, which was that of climate. Tennessee has a habit of getting quite cold in the fall and winter, especially at high elevations, and at a time in which the ride would likely be at its most popular: to see the fall colors. It seemed smart for the vehicle to be fully enclosed and climate controlled. This created an opportunity to use transparent OLED screens as the windows for various special effects and overlays and/or electrochromic glass for a dramatic reveal (See the technology section for full details). Eventually it was decided to use the transparent screens to their full potential. The first set when guests entered would be completely digital. This allowed the realm of memory to be entirely stylized and sepia, and the realm of present-day to be realistic. The pergola surrounding the vehicle could completely collapse, and there would be a grand reveal at a specific moment of the scenic vista. When the vehicle landed, the windows could be fully transparent, revealing the flourishing remains of the legendary garden.

## STORY

The final challenge was the creation of the attraction story itself. What would be something that felt natural and inevitable for the ride system of choice? How could the moment the entire experience led up to, the grand reveal of the scenic vista, be made more impactful? Cathartic? How could that moment be framed in such a way so that, even if guests knew from the very beginning that that's what they'd end up seeing, it could have meaning they did not anticipate? How to relate all of that back to the values of investment in the community?

There were many, many ideas that were considered. The seed of the idea, as mentioned earlier, was the character of Grandmother. Perhaps she too was an inventor or some other kind of eccentric and was somehow responsible for this ride system. The town of Elkmont too provided an influence: the idea of a ghost town in the forest was captivating, and initial plans relied on an entire mini-land adjacent to the attraction to support the story. The overall structure of the attraction seemed self-evident. Guests would venture into this abandoned town in the forest and come across a cabin in the woods - an archetype occurring in countless works from Snow White, Little Red Riding Hood, Hansel and Gretel, even the song lyric "Over the river and through the woods to Grandmother's house we go." Guests would venture into the cabin where "something" would happen which would lead them to the ride system which "somehow" would end up in the air.

Those something's and somehow's would prove to be immensely difficult to figure out though. Most initial ideas were literal and revolved around Grandmother having invented some crazy contraption to view the community, or to put out fires. Perhaps it was a version of the observation tower at Clingman's Dome. Perhaps it was a Cherokee Indian counsel house.

Perhaps it was a viewing platform for a cyclorama. Nothing quite made sense, nothing quite seemed to have any emotional resonance, until the problem was approached more abstractly.

Abstract storytelling is nothing new for themed experiences, many famous attractions have abstract elements. Ride vehicles often remain unexplained, ignored, or named and brushed aside as in the *Haunted Mansion's* “doom buggies,” *Horizons*, or *Journey Into Imagination*. The inciting incidents go largely unexplained as in *Pirates of the Caribbean*. Such attractions use dream-like visual language and layers of metaphor to construct an experience.<sup>63</sup>

When approaching the story from this angle, the idea of a garden became apparent. A garden would not only be the perfect setting to find a Grandmotherly character in, but a garden was a beautiful analogy to the idea of community and the themes that were trying to be expressed. The grand vista the ride would reveal *was* a garden in its own way: theme parks draw their lineage to gardens.<sup>64</sup> The national park in the background was a type of garden, preserving and honoring the natural beauty of the area. And society as a whole was a garden that must be constantly tended to.

The rest of the story evolved from that. In the initial story, guests rather straightforwardly met Grandmother in the cabin - portrayed by a live actor who would proceed to tell them there was a story that she wanted to share. She would take us into this contraption in the garden she built and proceed to explain to us the value of community. This version of the story had numerous problems - not the least were the logistical problems a live actor entails, but more

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63. Kira Prince, “Why Is Pirates so Good?,” *Theme Park Concepts* (blog), October 17, 2017, <http://www.themeparkconcepts.com/2017/10/17/why-is-pirates-so-good/>.

64. S. Anton Clavé, *The Global Theme Park Industry* (Wallingford, UK ; Cambridge, MA: CABI, 2007), 4-7.

importantly the story felt too centered on Grandmother for a story about community and too much like lecture.

In a later version the story was framed around the idea of a initiation ritual or ceremony. The ride system was the sacred structure guests would enter, participate in a ceremony where they'd be inducted into an order of gardeners tasked with protecting their community, and then taken up into the sky to view the "garden" that was now theirs to care for. Guests would hear various memories about Grandmother, the creator of this order, and a figure which had changed many of their lives. While this version was more powerfully emotional, introduced the setup and payoff of the clock motif, and broadened the focus to the larger community it also proved confusing. It featured stories within stories and attempted to justify and explain too much in too little time.

The final version of the story again found its solutions in embracing the abstract. The framing of the story was changed from an initiation ceremony, to entering the realm of memory and imagination, to storytime - embracing the deep associations many of us have with grandmothers being storytellers. We are brought into the story via a radio, the recording of grandmother's message to "listen to the garden" seemingly triggering the transformation. The actor that portrays the radio host also voices several other announcers throughout the attraction, subtly implying something might be happening with memory or time, or that he may be pulling some strings, but its left in the background for audiences to uncover - it is not of primary importance to the plot. Furthermore, the realm of memory and the past throughout the entire experience is treated as an abstract, amorphous environment, not fully present, always rendered in sepia tones. A new focus was brought to the story: the tale that's being told about the

community by the museum is incomplete and the memories want to correct the record. More conflict was brought to the story, the central argument realized, showing the consequences of not heeding Grandmother's advice. The ride system itself is left largely unexplained. While there are visual clues that it was the gazebo tourists once admired the garden from, and that it might itself be a large clockwork machine Grandmother constructed herself, those details are again left for guests to discover and speculate upon. What is essential to the story takes place outside the windows of the structure.

## USE OF TECHNOLOGY

This project relies on several key technologies for some of its effects. Below are some highlights of their main components.

### PROJECTION MAPPING

Projection mapping is a technique in which media is projected onto an irregularly shaped surface, usually scanned or modeled in a computer. In primitive forms the technique has been used for illusions as far back in time as the talking head of Madam Leota and the singing busts of *The Haunted Mansion* in 1969<sup>65</sup> but in the last decade, due to advances in computer technology and 3d modeling, it has seen an explosion of more sophisticated uses in the entertainment world. The technology is particularly good at creating virtual, changeable textures, shallow depth animation effects, and sophisticated, highly customizable lighting effects that could not be achieved through traditional instruments - complete with ability to render false shadows. Projection mapping is used in the preshow of this attraction to light the walls of the room, create damage in the wallpaper, achieve the effect of the light coming from unlit lamps, change the colors on the cuckoo clock dials, and animate the butterfly that flies in from the window, as well as provide additional visual oomph to the transformation as a whole.

### TRANSPARENT OLED DISPLAYS

OLED or Organic Light Emitting Diode displays are a type of display panel that are becoming increasingly common in our day to day life. They are the premiere choice for flagship mobile displays, high-end TV's, and high-quality reference monitors used for broadcast

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65. Younger, *Theme Park Design & the Art of Themed Entertainment*, 531.

television color grading. In contrast to technologies such as LCD Displays, they require no backlight as each individual pixel is its own light source - essentially an extremely small lightbulb.<sup>66</sup> Because the components that actually create the oled display are transparent, it's possible to create transparent OLED displays<sup>67</sup> - largely indistinguishable from a pane of glass but with the ability to display images. LG is one of the main providers of such displays - currently marketed for use as digital signage - and their product, the 55EW5F-A, was used as the basis for the window design of the cabin.<sup>68</sup>



*Figure 18: The transparent OLED display used in this attraction. (Adam Wilt, “NAB 2019: Transparent OLED Display by Adam Wilt - ProVideo Coalition,” ProVideo Coalition (blog), accessed May 19, 2021, <https://www.provideocoalition.com/nab-2019-transparent-oled-display/>.)*

66. Metalgrass LTD, “OLED Introduction and Basic OLED Information | OLED-Info,” OLED Info, December 3, 2019, <https://www.oled-info.com/oled-introduction>.

67. Metalgrass LTD, “Transparent OLEDs: Introduction and Market Status | OLED-Info,” accessed May 8, 2021, <https://www.oled-info.com/transparent-oleds>.

68. LG Global, “LG Transparent OLED Signage,” LG Global, accessed April 23, 2021, <https://www.lg.com/global/business/oled-signage/lg-55EW5F-A>.



The use of such displays allows various augmented reality effects, which is one of the two ways these displays are intended to be used in the attraction. These displays are used as the interior-most part of the window assembly in the ride vehicle. After the grand reveal of the scenic vista, the displays can be used to overlay information about the sites guests are looking at, provide direction cues, and offer animation: such as butterflies flying in front of the windows.

The second way they are used is as traditional media displays. With the combination of electrochromic glass, the transparent effect of the transparent OLED can be hidden until the grand reveal moment. Instead, the screens are used as normal digital displays to display the digital set. Once the vehicle is in the air, the electrochromic glass is undimmed and the transparent OLEDs turned off - suddenly revealing the scenery beyond.

## **ELECTROCHROMICS**

Electrochromic glass is glass that can be tinted to near black and back to clear with the flip of a switch.<sup>69</sup> Or alternatively, it can be made opaque or transparent in a similar fashion. The specifics of these technologies vary among manufacturers. Gentex and Smartglass International providing actual glazing with the electronics built in whereas others, such as SmartTint, provide films that are applied to normal glass to achieve the same effect. Gentex is responsible for the dimmable windows on the Boeing 787 Dreamliner.<sup>70</sup> Smartglass International, boasts a product called Blackout Glass which can both dim to block 99.4% of visible light but also independently

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69. Gentex Corporation, “Dimmable Glass | Gentex,” Gentex Corporation, accessed May 8, 2021, <https://www.gentex.com/products-technology/automotive/dimmable-glass>.

70. Ben Smithson, “How Do Those Dimming Dreamliner Windows Work?,” *The Points Guy* (blog), August 17, 2019, <https://thepointsguy.com/guide/how-do-those-dimming-dreamliner-windows-work/>.

change from opaque to transparent without a blackout effect.<sup>71</sup> SmartTint film can be self installed and comes in many colors, including black, and is a more affordable, more flexible solution than custom manufactured glass panels.<sup>72</sup>

While the specific manufacturer and implementation would need to be researched further and mocked up in schematic development, the goal in any case is the same: to block the view out the windows and provide a backing material for the transparent OLED displays until the appropriate narrative moment, where they can like magic, disappear.

It also is conceivable that the electrochromic glass could be used directly as a projection surface within the cabins, with the transparent OLED screens removed. However such a solution would likely run into issues with guests shadowing the projectors, the required throw-length of the projectors, and the brightness of the scenery outside interfering with the projected image and was therefore not explored further.

## **REALTIME RENDERING**

While not used in the attraction directly, real time rendering was essential in developing and visualizing this attraction throughout its design and deserves mention. Realtime rendering uses the power of game engines - the technology used to render 3d graphics for video games - to visualize designs in detail before they are built. Some architecture-specific engines are Enscape, Lumion, and Twinmotion. Twinmotion in particular is built on top of Unreal Engine<sup>73</sup> - a game

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71. SmartGlass International, “Blackout Glass | Switchable Smart Glass,” SmartGlass International, accessed May 8, 2021, <https://www.smartglassinternational.com/black-smartglass/>.

72. Smart Tint, “Smart Tint ® Smart Film ® USA Factory Direct Wholesale,” Smart Tint, accessed May 8, 2021, <https://www.smarttint.com/>.

73. Epic Games, “Unreal Engine | Twinmotion,” Unreal Engine, accessed May 8, 2021, <http://www.unrealengine.com/twinmotion>.

engine used in many popular video games, and increasingly for other uses such as digital sets in virtual production workflows in *The Mandalorian*<sup>74</sup> and providing the real-time visuals for the simulator attraction *Millennium Falcon: Smugglers Run*.<sup>75</sup>

Twinmotion and Unreal Engine were both extensively used while designing this attraction. They provided the technological backbone for early VR walkthroughs, checking of sightlines with realistic trees, quickly jumping through proposed materials, art direction of lighting design, animatics of special effects, and providing final lifelike renders of the various spaces. Of particular use was the new Twinmotion to Unreal Engine bridge which saved countless hours by allowing many of the resources and benefits of Twinmotion, such as its material library and quick UV and triplanar mapping, to be used within Unreal - with its superior lighting and animation controls.

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74. Jeff Farris, “Forging New Paths for Filmmakers on The Mandalorian,” Unreal Engine, February 20, 2020, <https://www.unrealengine.com/en-US/blog/forging-new-paths-for-filmmakers-on-the-mandalorian>.

75. Chris McGowan, “STAR WARS: GALAXY’S EDGE - Deep-Dive Rides, Epic Effects,” *VFX Voice Magazine* (blog), May 30, 2019, <https://www.vfxvoice.com/star-wars-galaxys-edge-deep-dive-rides-epic-effects/>.

# CONCLUSION

## LESSONS

This project brought with it many lessons and learning opportunities. These are some of my key takeaways.

### Chain of Experiences

One of the key lessons, both from looking at case studies, and in trying to solve the story problems this project raised, is that it is possible to craft more immersive, more entertaining, and more operationally efficient experiences by chaining several small experiences together to create a larger one, rather than relying on one big experience. Traditionally, attractions have consisted of a queue and then the ride or show with perhaps a preshow thrown in. Crucially, in this strategy the queue and preshow play a subsidiary role to the main attraction, who's story is largely self-contained. This creates an experience in which the boundaries between where the show begins and ends are clear, and what types of things will be possible are largely predictable. The story is limited by the capabilities of the ride system, and what might logically happen when on that ride system. Instead, if the story is expanded past a singular ride system, and spaces are created for each element of the story: some ride, some walkthrough, some preshow, some theatre, etc, then a much more varied story can be achieved. This strategy is being used increasingly in the theme park industry such as with the free-roaming waiting area experience for *Race Through New York Starring Jimmy Fallon* that features live music,<sup>76</sup> the hybrid dark-ride/walkthrough/immersive theatre attraction *Pacific Rim: Shatterdome Strike* at Trans Studio Bali in which guests actually

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76. "Race Through New York Starring Jimmy Fallon," Universal Studios Florida Wiki, accessed May 9, 2021, [https://universalstudiosflorida.fandom.com/wiki/Race\\_Through\\_New\\_York\\_Starring\\_Jimmy\\_Fallon](https://universalstudiosflorida.fandom.com/wiki/Race_Through_New_York_Starring_Jimmy_Fallon).

exit the ride vehicle halfway through the experience,<sup>77</sup> or *Derren Brown's Ghost Train* at Thorpe Park, which combines a walkthrough special effects show, dark ride, and a VR experience.<sup>78</sup> This strategy was instrumental in this attraction, crafting an experience in which the core ride experience is only a fragment of a larger journey.

## Layers

Another lesson learned in the development of this project is how the use of scenic layers can be used to tell a story in an otherwise static place. In a traditional ride or walkthrough, the vehicle moves from set to set and that is the way the story unfolds. But in a static location, such as a preshow or flat ride, that is not possible. Instead, an alternative approach is to construct a scene in several layers that can be selectively hidden and revealed using various theatrical techniques. For example in the preshow, scrims, projection mapping, and lighting effects are used to change the state of the room from abandoned to new and then ethereal. In the main attraction digital sets are used on transparent displays which can then be switched off to reveal the real world behind them. One can imagine there are many other ways to achieve this, including set pieces that raise and lower and pepper's ghost effects.

## Use of Motif and Leitmotif

The term leitmotif originates in music and refers to small passages of music that become associated with characters or themes and are then subsequently repeated and reworked

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77. Chris, "Pacific Rim: Shatterdome Strike - World's First Immersive Theater Ride," *Escape Authority* (blog), November 24, 2019, <https://www.escapeauthority.com/worlds-first-immersive-theater-dark-ride/>.

78. Simworx, "Derren Brown's Ghost Train: Thorpe Park, England," Simworx, November 15, 2016, <https://www.simworx.co.uk/?portfolio=derren-browns-ghost-train-thorpe-park>.

throughout a musical work.<sup>79</sup> They become an auditory shorthand that can be used to quickly recall and reshape emotions: a theme associate with the main character that was initially happy and upbeat becomes melancholy when their love interest dies. Or they can foreshadow plot details: the theme that's associated with the mysterious beggar women is also played anytime the hero's wife is mentioned - as in *Sweeney Todd*. Notice that the word theme can be used as a stand-in for leitmotif. While traditionally a musical device, it became clear during the development of this story that visual and symbolic motifs could be used just as well as musical ones in the creation of themed experiences. In this attraction the visual of a clock is used and reused throughout the attraction, each time picking up subtly different shades of meaning. And just as in opera, film soundtracks, or musical theatre, it is in those changes in shades of meaning that powerful emotions are generated.

The clock motifs start simple and innocuously - they don't seem very important. It's what might be expected from a slightly eccentric grandmotherly woman: just as the act of listening to each other can easily be taken for granted. Then, the meaning shifts and they become significant, coming to life and ticking backwards: indicating our travel back in time and into memory. But their meaning is shifted a third time when we realize they're a representation of the core theme of the attraction: the need to constantly put work into our society if we want it to keep ticking. The act of listening is not trivial at all. The motif is used subtly throughout the attraction in small details, constantly reinforcing the message.

The moment that occurs when an audience realizes that all the shades of meaning have been within a motif all along creates a powerful emotional reaction that is foundational to how

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79. Encyclopedia Britannica, "Leitmotif | Music," Encyclopedia Britannica, November 24, 2013, <https://www.britannica.com/art/leitmotif>.

story-driven music works and finds wonderful utility in themed experience storytelling for similar reasons. It functions quickly: appropriate in a medium where the duration of a story is relatively short, it is variable: easily used in many different contexts, and it is visceral: largely visual or auditory and does not have to be explained. The key and most difficult part is finding a visual, symbol, phrase, or idea capable of capturing those multiple shades of meaning. Once found, the story practically tells itself.

### Embrace the Abstract

The final takeaway from this project is to embrace the abstract in themed entertainment storytelling. While discussed more at length in the Story Design Challenges section of this paper, the core lesson bears repeating. Themed design is littered with constraints and is a visual, experiential medium. Creating experiences that are more abstract and less literal can simultaneously ease the burden of those constraints, paint more compelling visuals, and create stories that connect more viscerally with our minds than might otherwise be possible.

## **POSTMORTEM AND SELF-EVALUATION**

Looking back on this project, if there is one thing I did correctly, it was the amount of time I spent developing, and redeveloping the story. I wish all projects had the luxury of this amount of rewrite time. The time gave me the ability to craft connections that weren't immediately obvious and truly weave the themes into every single element of the experience. I feel like not only is it a great proposed experience, but that I personally learned something about our relationships to each other and our communities.

If there is anything that could use improvement, my first response would be workflow. The actual design process of this project was fairly messy: requiring many different programs to illustrate different details, and the difficulties associated with building on a very uneven site made the work all the more challenging. The process of laying out site elements in Sketchup, modeling details in Maya, painting in Substance, rendering some things in Twinmotion, and trying to pull it all together in Unreal for final animations and rendering was inelegant and rife with complications. In retrospect, some of that work was unnecessary, and there are probably easier ways to achieve the same goals. However, there is also an equal problem with the software landscape itself, with no individual product designed to meet all the needs this project raised. The landscape is changing rapidly though, and I would not be surprised if the dream tool or workflow is only a few years away. I too, was perhaps guilty of often falling into a schematic or design development mindset, worrying about particulars of operations, construction, or show timing that really did not need to be solved this early. This took up time that could have been spent elsewhere.

I'm exceptionally proud of the overall story and vision of the concept as well as the specific design work I did on the preshow cabin, particular its interior. Not only was it a huge design problem to solve, it was a huge technical problem to solve in visualizing the transformation states of the room. My goal with that portion of the experience was to dive deep into Unreal Engine to discover new ways to achieve that and I'm overjoyed with the final result.

Speaking of goals, the ultimate goal of this thesis was to create a proof of concept of how a standard, off the shelf, flat ride might be redressed and reused to create a compelling emotional experience. And to that end I think it was a complete success. The attraction is unique,



emotionally resonant, and eminently buildable. As a thesis, the concept is perhaps slightly weakened by the elaborate measures that were needed to get guests to the attraction site. One can imagine that a more traditional, flat site would have provided a more straightforward opportunity to demonstrate the core ideas. However, this thesis demonstrates how design challenges can be used to create more interesting and unique multi-part experiences, rather than individual rides, a philosophy which is in part the solution to the main question. Additionally, since this thesis was created with the goal to design an attraction for a specific park, Dollywood, such design decisions were necessary to provide a realistic concept for that park. Overall I am satisfied with the degree to which the goals were met. Future development would see additional attention paid toward the conceptual development of the queue areas, funicular, and exit retail in addition to the schematic and design development necessary to transform the attraction from idea to reality.

# Glossary

\*-Ticket: A shorthand way of describing the relative scale, popularity, and budget of an attraction using the letters A-E (harkening back to the original Disneyland ticket-book system). The further in the alphabet you go the grander the experience.

THRC: Theoretical Hourly Ride Capacity: A key metric that describes how many guests can experience an attraction per hour.

Weenie: A term coined by Walt Disney to describe a central visual icon that serves as a centerpiece to an area, encouraging guests to approach it.

## Appendix A: Script

### GRANDMOTHER'S GARDEN - ENTRANCE AND QUEUE

We find ourselves in front of a relatively humble, low slung structure with a river rock base and glass walls situated across from the Barnstormer. A large sign reads "EVERGREEN VISITOR CENTER". A banner beneath the sign reads "NOW OPEN - INCLINE RAILWAY TO GRANDMOTHER'S GARDEN!"

We enter the queue through a pair of glass double doors and walk inside. We've entered the gift shop of the visitor center (the actual gift shop for the attraction). Directly in front of us is a ticket desk and a pathway that winds around the side of the room slowly upwards to an archway at the back of the room. Above the archway letters spell out "Museum and Railway Entrance". A large map of the Smoky Mountains is painted across the entire wall nearest us, providing an overview of the town of Evergreen. A big red dot with "You are here" rests near a line representing the incline railway, and further up the hill is another large dot labeled "Grandmother's Garden - Assumed Location"

We head through the archway into a small outdoor covered exhibit made up of various walls with large blown up photos and text printed on them in large type. Occasionally we can catch glimpses of the incline railway cars ahead. The exhibit functions as the main queue while guests wait to be pulsed through the funicular up the hill. There are four main sections to the exhibit:

-Evergreen the Logging Town: The origins of Evergreen as a logging town are briefly described.

-Planting of the Garden: The landscape scarred from logging, an elderly woman everyone just called grandmother suggested planting a garden so the community could heal.

-Evergreen the Resort Town: The garden grew so popular people came from miles around to see it.

-Evergreen Withers: Disagreements abounded about how best to take care of the garden, and in the process the garden was neglected and died. And with no garden to attract tourists, the town soon died as well.

We see the loading area for the incline railway up ahead and line up in front of a set of gates as we wait for our car to arrive. When it does we notice that the cars have clearly been around awhile, perhaps bought from another railway somewhere else and refurbished, but they look safe enough.

The doors open and we board - standing room for about 25 people.

#### INCLINE RAILWAY

With a small jolt our car begins ascending the hill. The trip is short and only takes 20-30 seconds once the doors close. As they do a pre-recorded voice comes over the PA.

#### ANNOUNCER

(As modern public transit announcer)

Hello and welcome to Dollywood! Today, you're headed to the speculated location of the once renown Grandmother's Garden: a thriving tourist attraction that infamously fell into disrepair when the community could not agree how to tend it. Today, little is left of the town of Evergreen and only the memories of the garden remain. Pigeon Forge, the Park, and even Dollywood all sprung up in the ensuing years nearby, filling the role it once did. However, Grandmother's Cabin is still here and you're welcome to explore. Be careful not to lose track of time though. People are often said to get lost in memory around these parts. We're just about there. Please keep your arms and legs away from the doors, they'll be opening momentarily. Welcome to Evergreen!

Our car comes to a stop and the doors opposite us open leading us into a heavily wooded area with a small trail curving away into the distance.

#### THE HIKE - QUEUE PART 2

The trail snakes away from us out of sight into the forest, slightly uphill and to the left. As we make our way we notice stone foundations and chimneys hidden between the trees. The remains of a few wooden structures occasionally shelter the path. If we pay attention we might notice we pass by the remains of an old water clock slowly ticking backwards.

## ARRIVAL AT THE CABIN

Then we see it: Grandmother's Cabin. The small cottage sits behind a few trees: half overgrown with moss and ivy. It appears as if no one has entered or exited for decades. Curiously there are a few signs of life...a small vegetable garden is well tended thanks to an ingenious wooden mechanical contraption funneling water to it. It is connected to a set of weights and a large circular crank that we can wind or pull on and let gravity power it as the crank slowly ratchets back the other way. We can hear the clucking of hens from a coup that must be just around the corner. Large wind chimes (made by the park's blacksmith) hang from the trees gently ringing in the breeze. Smoke wisps up from the chimney.

A park ranger welcomes us. He manages the line as we wait in the covered area near the vegetable garden. When the time comes he opens the door to the cabin and directs us inside.

## GRANDMOTHER'S CABIN - PRESHOW

The cabin is cozy, though neglected. Clearly no one has lived here in dozens of years. Everything is caked in a thick layer of dirt and grime. The room is dark; the only light comes from the open doorway and window. Even that light is dim; the windows are filthy. The plaster on the walls is cracked, and the wallpaper peeling. Otherwise, strangely, the room looks as if the occupant just left - some ancient knitting still sits on the arm of the rocking chair, various dishes and cooking utensils are still in the kitchen, and 18 cuckoo and other mechanical wall clocks adorn the walls, along with one large grandmother clock along the right wall. Evidence abounds of Grandmother's clock-making and gardening hobbies - strewn about carefully to form a corral for guests. Everything is dull and grey.

On the left wall, at the entrance to what appears to be the bedroom is an old radio. It plays Appalachian music from the 1920s. As we file into the room the song reaches it's end. We hear the voice of the announcer from earlier, now the host of a radio program, as guests continue to file into the room.

## ANNOUNCER

(As NPR-type Host)

Wonderful, wonderful wasn't that just marvelous? A classic tune from Appalachian history. You're listening to WTYM. Now here's a lovely little clip from the archives: a clip of Grandmother herself being interviewed at the

one year anniversary of the opening  
of the Garden.

Some radio sound effects. The tape being played back is clearly a very old field recording...the interviewer is clearly the same announcer we just heard, though now with a 1920's mid-atlantic accent.

ANNOUNCER

(As 1920s field reporter)

Well hello hello ladies and gentleman thank you for tuning in - we are here today on a most momentous occasion, a celebration of the phenomenon that's taking the area by storm, and that is of course Grandmother's Garden - a most splendid community garden that's attracting quite a bit of attention to the tiny town of Evergreen. And we have with us today a very special guest ladies and gentlemen, Ms. Grandmother herself. How do you do Ms. Grandmother?

GRANDMOTHER

Oh quite well, thank you. How do you do?

ANNOUNCER

Oh quite well thank you. Now Ms. Grandmother - this garden is quite something, and for the folks back home - Do you have any secret to taking care of this garden? Any words of wisdom those at home should remember?

The door to the room closes of its own accord.

GRANDMOTHER

Well of course...I don't think it's really that big of a secret after all. You water, and weed it, and tend it of course - all the gardenin' things. But of course the most important thing is to listen to it.

ANNOUNCER

Listen to it? Is that right?

## GRANDMOTHER

Yes, of course! You must *listen* to  
the garden...

Suddenly the light in the room shifts...the recording abruptly stops...the phrase "Listen to the Garden" echoes around the room bouncing off the walls.

Our focus shifts to the central cuckoo clock, seemingly highlighted on the wall in light. We hear a mechanical ticking sound as the weights begin to move upwards.

Just then the clock comes to life. The bird pops out of the tiny doors at the top and bounces back and forth

CUCKOO 1

Cuckoo! Cuckoo!

A beat

CUCKOO 1

Cuckoo! Cuckoo!

The hands on the clock begin to rotate backwards.

Another cuckoo clock begins to awaken. Then another. And another. A chorus of cuckoos. All the hands begin to rotate backwards. The weights beneath them start moving up and down, gradually getting longer. Music begins and the ticking intensifies.

A splash of color appears on the first clock in the center of the dial as years of dust and grime fade away. The color begins to spread across the entire clock. The same begins to happen with the other cuckoo clocks. The color spreads off the clocks onto the wall and begins to spread across the whole room - as it does the filth fades away, the cracks and tears in the wall begin to disappear. The room is lit from lamps that aren't yet lit.

As the color and light spreads across the room, the lamps illuminate as it passes over them. The room has completely transformed before our eyes, clearly now as it once was decades before. It's warmly lit, clean, and well appointed.

The picture frames on the wall now hang straight, filled with pictures of smiling humans dressed in early 1900s garb.

With one final musical flourish the transformation is complete and the clocks settle down. The room shines in golden splendor as the sun's rays shine through the window.

From nowhere and everywhere we hear the voices of a kind middle-aged man and woman.

MAN

What a memory.

WOMAN

A cuckoo memory. Is it really that hard to-

MAN

(Coughs)

Hrm-hrm. It appears we have guests.

WOMAN

Oh I see. Well why didn't you tell me. Welcome everyone!

MAN

Yes, welcome. We are voices of memory...long gone from this town but present as long as there are those to remember us.

WOMAN

No matter how inaccurately.

MAN

It's not exactly wrong.

WOMAN

It's not exactly right is it?

MAN

It's the nature of memory...it flows throughout time uniting the present and past carrying our legacies into the future.

WOMAN

Yes I know...but there's hardly anyone left to carry the legacy into the future...and without that the true memory will die.

MAN

Then what a fortuitous day this is! Look at all of them. The promise of the future lies within each of you right now.

WOMAN

I suppose...



MAN

What do you all say? Will you  
listen to the full story of what  
happened here?

The audience answers affirmatively

MAN

See...there you go.

WOMAN

Let's do it.

MAN

It's the story of a woman who was  
so important to us all, of the  
tradition she started. The garden  
had thrived, but it was in danger.  
It was a different time...

A ticking sound begins in the room. At that moment a butterfly flies in through the open window and lands on the center of the clock face of the grandmother clock. It is absorbed into the face as colorful light begins to fill the dial. It bursts in intensity as the elements of the clock start to recede from us, moving further and further back. Around the room, the hands on the various clocks begin ticking backwards as the light is sucked from around the room leaving only the grandmother clock lit, the windows black. The frame of the clock begins to stretch vertically, then horizontally revealing two glass doors. They swing open towards us revealing a hallway that stretches away from us, the pendulum now swinging far in the distance. A gardener team member emerges from the hallway and beckons us forward.

## BOARDING

The sound of whistling wind carries down the long hallway as we pass through a long secret passageway. Light beckons from the end of the tunnel. We enter a circular, donut shaped room that curves around to the left and right - the interior of a wooden gazebo. The digital windows (Transparent OLEDs backed by dimmable glass) look out onto a bleak scene. Everything is sepia. The wind whips through a garden that surrounds the gazebo...or what is left of it. It clearly has seen better days. The plants are wilted and brown. The streams run dry. It is clearly dying...just as the story says.

MAN

Things looked bleak. The garden was  
dying.

## WOMAN

We lost sight of the big picture.  
And while we fought the garden  
suffered.

A stab of music. We hear voices echo.

## MEMORY 1

If we follow your plan there won't  
be enough to feed my family!

Another stab of music. A plant dies.

## MEMORY 2

Well if we do you what you want no  
one will visit at all!

Two stabs of music. A statue topples. More plants wilt.

## MEMORY 1

(echoing)

Why doesn't he understand?

## MEMORY 2

(Echoing)

Why doesn't she just  
understand?

Another stab. The music continues throughout abrupt, and  
harsh.

## MEMORY 3

You can't use that much water!

## MEMORY 4

Well you'd rather it die of  
drought?

## MEMORY 3

(Echoing)

No one loves this garden as  
much as I do.

## MEMORY 4

(Echoing)

No one loves this garden as  
much as me.

The cacophony increases as plants continue to wilt and a  
rumbling begins to be heard.

## MEMORY 5

No one cares that my  
petunia's died!

## MEMORY 1

(Echoing)

No one cares about my ideas.

## MEMORY 2

(Echoing)

No one cares about my ideas.

## MEMORY 3

I just want what's best for  
the garden.

## MEMORY 5

I just want what's best for  
the garden.

## MEMORY 4

(Echoing)

What's best for the  
garden...

MEMORY 2  
What's best for the  
garden....

MEMORY 1  
What's best for the  
garden...

A deafening crash as the trellis collapses around us leaving us in the dark.

MAN  
And then we heard a voice. A voice  
that we forgot to remember.

GRANDMOTHER  
(Echoing)  
You must listen to the garden.

The music begins to build as the trellis begins to rebuild itself. We hear it groan and crack as it raises.

MEMORY 1  
I remember when she helped me find  
my mother's favorite watering can.  
It was such a simple, silly thing  
but-

MEMORY 2  
She understood just how much it  
meant to me. I would have been all-

MEMORY 3  
-alone and angry. But it was  
all a misunderstanding. She  
made me feel seen.

MEMORY 1  
(echoing)  
She made me feel heard.

MEMORY 4  
She understood me.

MEMORY 5  
She listened when no one  
else would.

MEMORY 2  
(Fading)  
She always made sure to be  
around when my parents were  
at it. Because of her I-

MEMORY 4  
(Fading)  
Always had enough books to  
read. Because of her I am  
where I am today.

The memories continue in the background softly, nearly unintelligible as the Woman speaks.

WOMAN  
She gave us a gift: The gift  
of being heard: a seed of  
growth. And once received,  
we could begin to spread  
those seeds around.

MEMORY 5  
(fading)  
She was my number one  
cheerleader.

The music shifts as the garden begins to bloom into color.

## MEMORY 4

I'm sorry your petunias died.

## MEMORY 3

Maybe you we're right...we do need to water more.

## MEMORY 1

I was thinking, and actually I think your plan has some real strengths....

## MEMORY 2

(Echoing)  
Wow they really do care about my ideas.

## MEMORY 5

I think someone actually understands.

The plants begin to bloom into color. Water begins to flow in the streams.

## MEMORY 2

(Con conversationally, as to another person)  
So...all of us pulled together, and well here's some extra food for your family.

## MEMORY 5

I never knew how much she sacrificed.

## MEMORY 1

Wow these tomatoes you grew are so delicious!

## MEMORY 3

Wow, you really love this garden as much as I do.

The entire picture has changed to color...super saturated rainbow light emanates from the plants towards us filling the windows with color.

## MEMORY 4

(Echoing)  
Wow, he loves this garden as much as I do.

## MEMORY 5

We all want what's best for the garden.

## MEMORY 2

We all wanted the same thing.

## MEMORY 1

We all wanted the same thing.

We hear a gentle breeze blow past the windows and the sound of wind chimes. We feel the vehicle begin to rotate and rise up. The beautiful garden on screen lowers out of sight as we move into the rainbow colored sky. A subtle clock ticking sound begins. As it slowly increases in volume we hear the voice of grandmother.

## GRANDMOTHER

The sound of listening: that is the sweet music the gardener wants to

hear: the sound of life floating through the air like pollen from flower to flower. Only when she hears it do they blossom with sweet nectar.

The ticking of the clockwork is louder.

GRANDMOTHER

But it's not enough to listen just once. To water once. To prune and weed once. No. You must listen every day - like a clock that must be wound each day as the sun rises.

The ticking intensifies. The music builds. Dim light slowly begins rotating around the cabin clockwise mimicking a sunrise - illuminating wooden gears in the walls and ceiling we haven't noticed till now. They slowly rotate around as we realize we're in a huge cuckoo clock-esque machine. We hear a distant rooster crowing.

GRANDMOTHER

Honesty, Trust, Compassion. These are the specks of life that pollinate the world. From the tiniest of deeds a garden can grow...if we have the courage to listen.

We hear the echoes of the voices of the community again. Their voices are soft and unintelligible, but present nonetheless. The gears turn faster as the light swirls around the cabin. The windows are lit with a rainbow glow.

GRANDMOTHER

I am but one leaf on a vine. It takes an entire community to remember the legacy of those who came before, to carry on their legacy into the future. To remember why their ancestors came together in the first place and move forward together. But if they can do that, then no town is ever lost, no garden ever abandoned. It grows beyond the boundaries that were laid and the people who planted it. It blossoms and thrives and spreads throughout the world, a symbol of the potential each of us holds to foster kindness in each other. It reaches beyond the horizon: a clock that will never stop ticking as

long as we vow to keep winding it.  
And look at how that garden grows!

Rainbows flood the windows, we hear cuckoos and grandfather clock chimes as the carvings in the window frames come too life as the music plays triumphantly. The windows disappear, daylight flooding the cabin. As our eyes adjust we realize we're far in the air and can see for miles around. The music continues to rush around us as we take in the sights of the park, valleys, and mountains beyond. We gaze out the windows.

We're allowed a few moments to take it all in. The music begins to subdue.

MAN

We continued to work together and the garden blossomed year after year.

WOMAN

It became clear that everyone should have a chance to experience it.

MAN

And so the Great Smoky Mountain National Park was formed and soon the entire area grew into a destination for travelers across the world.

GRANDMOTHER

Our little garden has grown so much since it's humble roots. Look! Over there is the fire department, and there eagles fly all day long. Do you see Klondike Katie chugging up the hill? In the distance is Pigeon Forge...And there are my beautiful mountains.

We take in the sights. On summer days we feel the cool breeze blowing through the entire structure as the music plays gently in the background. And in the fall heaters keep us toasty as we gaze upon the vibrant fall colors. At this moment, potentially, an original song from Dolly Parton plays.

The gazebo slowly begins to make it's way back down to earth

GRANDMOTHER

I leave you, my fellow gardeners,  
and ask you to go forth and

remember to always listen to the garden. Remember to always look to the future with hope. We do not mourn lost caterpillars. We celebrate a blessing of butterflies. May you fly to the next flower and blossom too.

Her voice echoes off and we see the rainbow trail of a butterfly streak across the cabin windows as we come to land. We land in an actual garden that surrounds the gazebo.

WOMAN

Thank you gardeners for coming here today.

MAN

We're so glad to share our memories with you

WOMAN

Please as you leave, take a seed from the garden and carry the legacy with you, wherever you may go, and let our memories live on. Remember...

MAN AND WOMAN

From the tiniest of deeds a garden grows.

As we exit the gazebo we're handed a cardboard "seed" printed on seed-embedded paper. On the front it reads "from the tiniest of deeds the garden grows". On the back various "seeds of ideas" suggest ways to get involved in your own community or connect with others.

We exit into the garden and through a tunnel that leads to a path that winds back to the funicular station. It's as if we've arrived back before this whole adventure started.

INCLINE RAILWAY - DOWN

We queue up at the top station awaiting the next car. Soon it arrives and we board. As the doors close we hear the voice of the announcer again.

ANNOUNCER

Thank you all for visiting the town of Evergreen and Grandmother's garden. Some claim the town was lost, but the way we see it, it blossomed into everything you see

today. We hope you've enjoyed your time with us today and that it was filled with memories you'll want to listen to again and again. Please make sure to keep your arms and legs away from the doors as they will open momentarily. Thank you.



## Appendix B: Renderings

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*Figure 1: Approach from funicular to second half of queue. (Kira Prince, 2021)*



*Figure 2: Abandoned chimneys line the queue. (Kira Prince, 2021)*



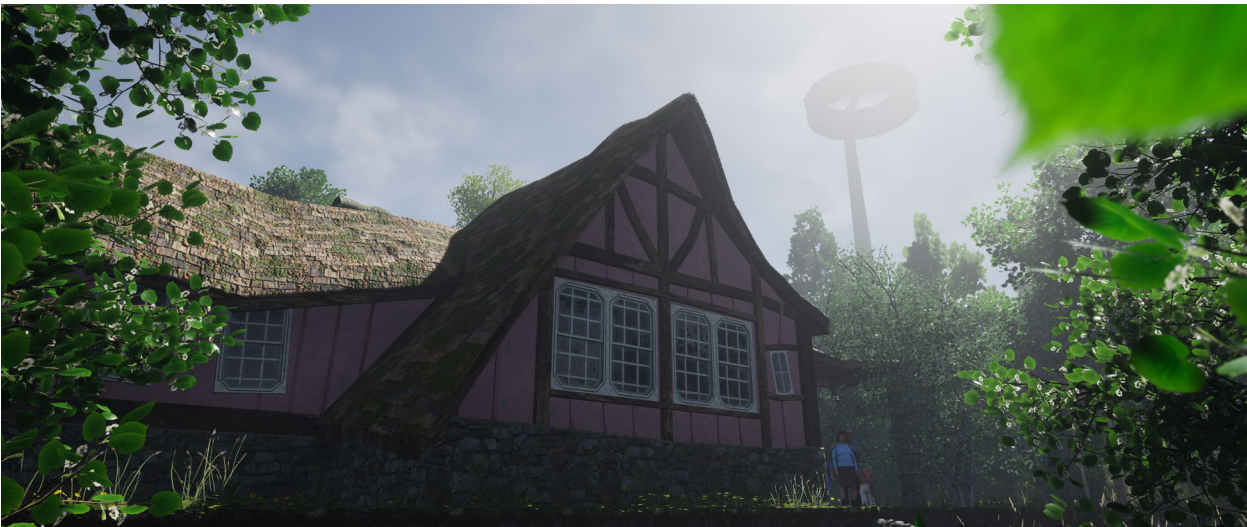
*Figure 3: Aerial view of the approach to the preshow. (Kira Prince, 2021)*



*Figure 4: The abandoned cabin comes into view. (Kira Prince, 2021)*



*Figure 5: Closer view of the cabin. (Kira Prince, 2021)*



*Figure 6: Alternate angle of cabin with ride system in background. (Kira Prince, 2021)*



*Figure 7: The queue wraps around a vegetable garden. (Kira Prince, 2021)*



*Figure 8: We enter the cabin through the kitchen. (Kira Prince, 2021)*



*Figure 9: When we enter the cabin is aged and falling apart. (Kira Prince, 2021)*



*Figure 10: As we hear grandmother say “you must listen to the garden” the central cuckoo clock comes to life. (Kira Prince, 2021)*



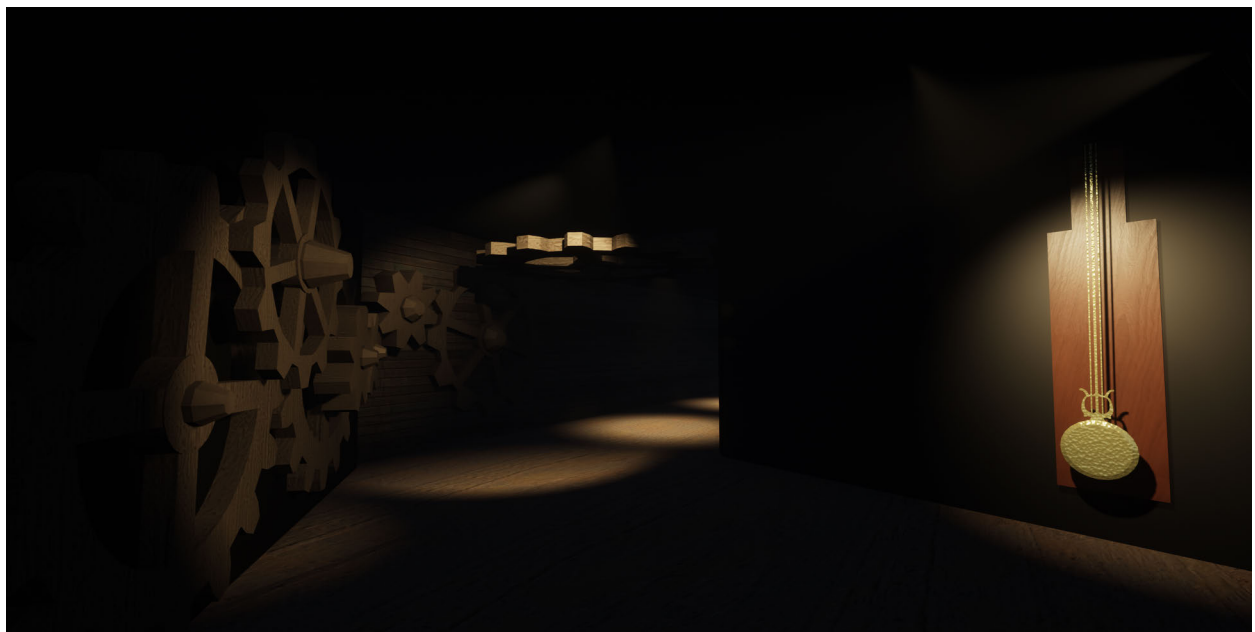
*Figure 11: All the cuckoo clocks come to life and the cabin transforms to a new state. (Kira Prince, 2021)*



*Figure 12: The grandfather clock begins to transform. (Kira Prince, 2021)*



*Figure 13: A passage back in time and into memory is revealed. (Kira Prince, 2021)*



*Figure 14: The world becomes abstract as we enter memory. (Kira Prince, 2021)*





*Figure 15: We head down a mysterious corridor towards the ride vehicle. (Kira Prince, 2021)*



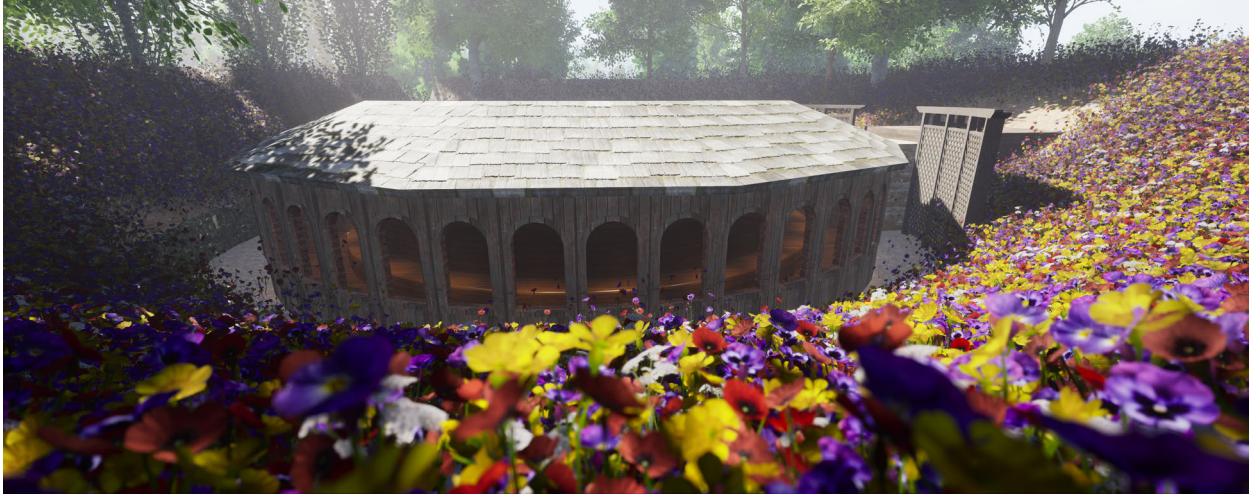
*Figure 16: When we enter the ride vehicle, the screens are opaque and place us in a sepia world.  
(Kira Prince, 2021)*



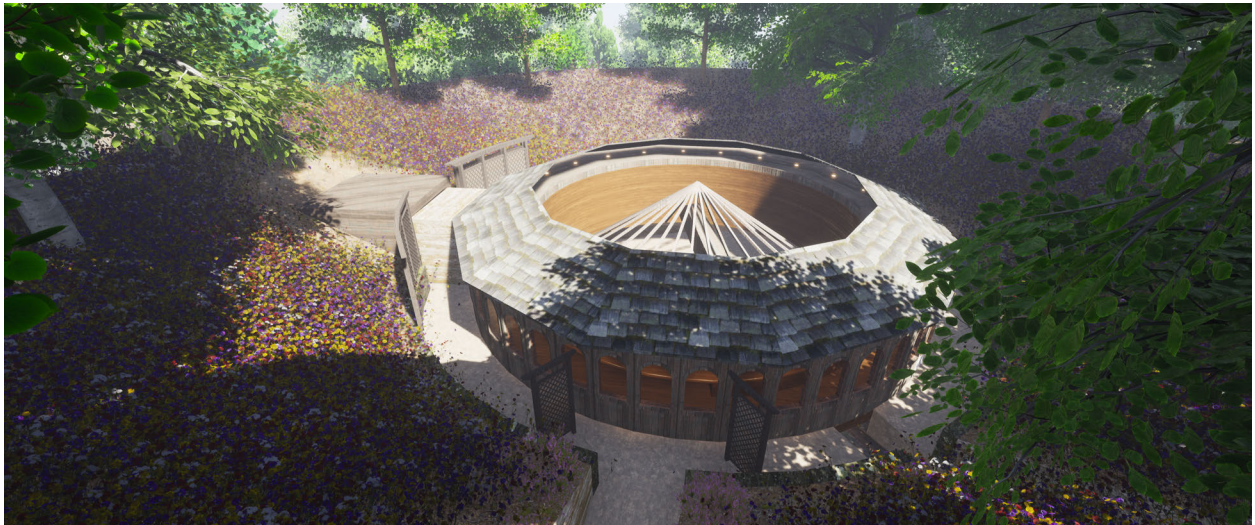
*Figure 17: At the climax the windows become clear, revealing the scenic vista. (Kira Prince, 2021)*



*Figure 18: We land in a real garden that is thriving. (Kira Prince, 2021)*



*Figure 19: The ride vehicle in the garden. (Kira Prince, 2021)*



*Figure 20: Aerial view of ride vehicle “arena”. Entrance passage is at upper left, exit path at bottom middle. (Kira Prince, 2021)*



*Figure 21: The exit path passes another abandoned chimney. (Kira Prince, 2021)*



*Figure 22: View of cabin facade at sunset. (Kira Prince, 2021)*

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