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Dark Rides: A Method for Featuring Inaccessible Heritage Sites; Applied on Ancient Egyptian Tombs

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Tourism organizations seek to develop an accessible destination experience for all tourists. This should include the feasibility of accessing heritage buildings. However, certain heritage sites cannot be modified to make it accessible since any change in them threats their value. This study addresses accessibility to heritage sites as a challenge confronting cultural tourism. It aims at introducing the idea of using dark rides for featuring the inaccessible heritage sites as an alternative for tourists to visit instead of the original site. The paper focuses on the ancient Egyptian tombs as one of these inaccessible heritage sites. With this regard, In-depth interviews were conducted to explore the opinion of the mobility disabled individuals concerning this idea as they form a main potential tourist segment that will greatly benefit from this project. Content analysis showed that all participants have agreed that the dark ride project in this case is considered a good solution for the accessibility problem, fulfilling as well their desire of experiencing a cultural-recreational journey. Finally, the study presents a hypothetical model for a dark ride featuring the burial chamber in Queen Nefertari's tomb to emphasize how this project can be employed effectively in demonstrating inaccessible ancient Egyptian tombs.

Key Words: dark rides, heritage sites, cultural tourism, ancient Egyptian tombs, accessibility

Introduction

Cultural tourism has been one of the most important types of tourism for centuries. It involves paying visits to art galleries, music concerts, theaters; museums and historic sites; cultural events, festivals and fairs; ethnic communities and neighborhoods; architectural and archaeological treasure, animal/marine parks and botanical gardens (Canadian Heritage, 2006; The National Centre for Culture and Recreation Statistics of the Australian Bureau of Statistics**,** 2001; National Assembly of state art agencies, 2008).

Lately, cultural tourism has been experiencing a decrease in its international market share reaching 5-8% only (Canadian Heritage, 2006).This is due to the gradual incline of the international tourists towards recreational tourism and other new types that have emerged recently. New technologies have also enhanced and reinforced this trend by creating whole artificial places and sites that can provide the tourist with an amazing, extra ordinary experience offering him both joy and knowledge at the same time. This can be seen especially in theme parks like Disneyland (Laughing Place, 2011; Mirski & Abfalter, 2004).

Cultural tourism needs to be reshaped to be able to compete and regain a satisfactory market share of the international tourism. One of the main clear solutions that should be used to help cultural tourism reduce some of the challenges facing it in the digital era is to learn from the other competitive tourism types and use the same tools that they utilize to attract tourists. In other words, integrating technological applications and systems in certain cultural attractions can help in overcoming some of the constraints facing cultural tourism and attract tourists to practice cultural tourism and visit heritage places.

Technology can play a vital role in various areas transforming cultural tourism and Heritage sites into an unforgettable "edu-tainment" (Mirski & Abfalter, 2004:599) experience for the tourist (Canadian Heritage, 2006; The National Centre for Culture and Recreation Statistics of the Australian Bureau of Statistics**,** 2001). One of these areas is interpretation and information presentation. Instead of the traditional ordinary interpretation methods used in museums and art galleries, dynamic technologies can be utilized such as video or multimedia kiosks with background information on the displayed objects, the interactive

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documentary presentation table, the museum wearables and the 4D movie theaters (Davenport, Sparacino & Pentland, 2000; Sparacino, 2004a; Sparacino, 2004b).

Another area that technology can help cultural tourism in is eliminating the constraints related to accessibility to certain cultural and heritage sites or at least offer some alternatives that would reduce the problem. This paper proposes the idea of using dark ride technologies as an alternative for inaccessible cultural and heritage sites

Accessibility a Challenge Confronting Cultural Tourism

Tourism organizations have been focusing on offering accessibility to all tourists in streets design, transportation and accommodation by providing physical access requirements in these places. However, the development of an accessible destination experience involves more than that. It needs the understanding and provision for what any tourist would regard as essential for his tourism experience to run smoothly, satisfactory and with dignity. Thus, the accessible tourist experience should involve the freedom and feasibility of accessing historical sites and heritage buildings. This involves the physical access to all parts of the building including its initial entrance, pathways, hallways and chambers. It also relates to the simple access to services and to information within the place (Darcy & Dickson, 2009).

Thus, dignified access for all people should be provided to, and within heritage sites. However, many heritage buildings have certain challenges that need to be overcome when providing access for all. Accessibility barriers does not affect only the tourists or visitors with a disability or impairment, they also limit access for their caregivers, families and friends. In addition to young children, parents with strollers, pregnant women, elderly people and people with reduced mobility or temporary disability (Darcy, 2010).

Before undertaking any change to a heritage site to provide access for all, the impact of this change on the place's significance and heritage value should be considered in the first place. It is possible to modify a range of heritage buildings so that they are accessible to all people while maintaining the heritage values of the place. The goal is to achieve maximum access with minimal impact on the heritage values. Different heritage buildings will have varying levels of significance and there may be a range of possible solutions to optimizing access for all. Each case needs to be assessed on its own by an experienced architect who works with heritage places to test the available options for maximizing access against the impact of this work on the place significance and value (Martin & Gard'ner, 2008).

Modification and change in certain heritage buildings or sites to make it accessible for all may have profound negative impacts on its significance and value. These include heritage buildings with numerous narrow stairs, narrow balconies ,narrow doorways or hallways. In this case, a final strategy to overcome access issues in such places should be addressed. This strategy involves providing alternative methods to present and interpret the building and its value to the people giving them the opportunity to see how it look like, admire and appreciate its components and value. Models can be used as a useful alternative in such cases as it can replicate inaccessible areas and offer a greater understanding of a place. Nothing can alternate originality and nothing can compensate visiting the actual original heritage site, living the atmosphere of the past and admiring the actual work. However, if this opportunity is not possible for all people or all heritage sites, replica models can be a good alternative demonstrating objects or furniture that can be available for people to touch, so they can appreciate an object without placing the original piece under any threat (Martin & Gard'ner, 2008).

This paper embraces the idea of using replica models as an alternative to inaccessible heritage sites. It elaborates this idea by adopting a certain technological type of replica to be used in demonstrating these places. This type is dark rides. Applying dark ride replica or model featuring the heritage place that cannot be accessed for certain reasons helps a wide range of visitors and tourists to enjoy some of the scenes and appreciate the culture without experiencing the challenges and constraints that would confront them while visiting the actual heritage place. At the same time, it offers a satisfactory solution or alternative to accessing the impossible buildings previously mentioned. Hence, the goal of permitting the visitor to enjoy the experience without causing any threat on the original heritage site and its value is fulfilled.

The paper takes the ancient Egyptian tombs as an example for those impossible buildings that cannot be modified to be accessible due to their narrow stairs, doorways or hallways and for the threat that any change might destroy their construction, value and significance. Furthermore, it demonstrates how a dark ride model can be applied on one of these tombs offering the visitor the opportunity to live the experience instead of accessing the actual tomb.

The following section explains the meaning of the dark ride, its history and types, the systems and tools needed for building it.

The Dark Ride Definition

A dark ride or ghost train simply is an indoor amusement ride where riders in guided vehicles travel through specially lit scenes that typically contain animation, sound, music and special effects. A dark ride does not have to be dark inside, however, it is enclosed even if it uses brilliant color schemes and artificial light effects to emphasize certain scenes and create theatrical atmosphere. The darkness helps hide the ride mechanisms and increase the visual drama of the experience. Modern attractions in this field vary widely in their use of technology. Smaller-scale rides often feature the same sorts of simple animation and sounds that have been used since the early days of dark rides, while grand projects may feature complex audio-visual special effects, and more sophisticated ride vehicles. The secret to a dark ride is location and construction rather than content (Sexton, 2013; Theme Park Builder 3D, 2013; Levine, 2013).

To give the dark ride the effect and sense of a journey, it usually includes tunnels that curve and bend frequently. Sudden tight curves in the tunnels give a sense of surprise allowing new scenes to surprise the rider. Tunnels may also feature sudden ascents or descents to further the excitement of the ride. A famous example for a rich, brightly lit dark ride is "Disney's It's a Small World" , while an example of an intense and thrilling dark ride would be "The Spiderman ride" at Universal Islands of Adventure(Sexton, 2013:2; Theme Park Builder 3D, 2013, p.3).

Dark rides history and types

Dark rides actually are some of the oldest rides in the history of amusement parks. The first dark rides appeared in the late 1800's, and were called "scenic railways" and "pleasure railways" using a railway-style cart such as the Great Coal Mine at New York's Coney Island (Davis, 2013, p.1; Sexton, 2013, p.1). Another popular type of dark ride at this time used small boats to carry riders through water-filled canals with musical caves lit by state-of-the-art electric lights and decorated with romance scenes. These rides were known as "Old Mill or Tunnel of Love"(Davis, 2013, p.1;Sexton, 2013, p.1; LaCross, 2014). The first patent for a dark ride was obtained by Leon Cassidy of Pretzel Amusement Ride Company in 1928 (Davis, 2013, p.2). This dark ride used a single-rail electric ride over which the cart would move. The cart would also twist and turn back and forth to allow riders to see the decorations on either side.

Many of the early dark rides featured educational sets, recreational and humorous scenes or beautiful exotic places that the people of the time could only dream about visiting.

From about the 1930's through the early 1970's, various themes were applied to the inside of the rides, from comical scenes featuring popular cartoon characters of the time to jungle themes and scary settings. The first dark ride that really went further beyond the tunnel-of-love was The Futurama, designed by Norman Bel Geddes and presented at the 1939 World's Fair in New York. The Futurama dark ride was designed to show people what the world might look like in 1960. Walt Disney was inspired by Futurama to build many of the rides at Disneyland. Walt Disney provided the next great leap in dark ride technology introducing the idea of the well themed storyline .Instead of a collection of pop-up surprises in the dark, Disney's rides were more illuminated and took riders on an adventure into the fantasylands of familiar stories such as Snow White and Peter Pan bringing the characters to life and allowing the guests to be part of the stories. These dark rides operate on the same principle as the original dark rides but are advanced in terms of animation. Other famous amusing dark rides in Disneyland are it's a small world brightly lit dark ride, Pirates of the Caribbean and The Many Adventures of Winnie the Pooh at the Magic Kingdom (Levine, 2013; Davis, 2013; Sexton, 2013).

In the late 1970's, other types of dark rides were introduced in theme parks (Davis, 2013; Sexton, 2013, Incredible Coasters, 2014):

-*Dark roller coaster*: Thrill rides using the roller coaster was introduced to the world of dark rides with Space Mountain at Disney World. Since then, more and more roller coasters have been built in enclosed spaces that use lights and lasers to create a more exciting experience.

-*Ghost trains*: so called especially in UK and Australia. These are dark rides with a scary theme.

-*Shooting dark ride or interactive dark ride*: An interactive type of dark ride where riders aim for targets throughout the ride. Each vehicle is equipped with hand-held or vehicle-mounted light guns. Successfully shooting a target usually triggers special animation such as flashing lights or moving the target. The more targets a rider hits, the higher their score at the end of the ride. Good examples for this ride are The Men in Black: Alien Attack 2000 featured in the Universal Studios Florida and the Challenge of Tutankhamon2001 at Walibi Belgium the greatest theme park in Belgium.

-*Hybrid or Cross over dark rides*: These are typically dark rides that combine two systems together.

Such as Disney-MGM's Twilight Zone Tower of Terror which combines the suspense of the traditional dark ride with the thrills of a drop ride, and the Universal's Amazing Adventures of Spiderman that combines the dark ride with 3-D video and independently moving motion based platforms.

It is obvious that most of the dark rides emerging nowadays are used in theme parks featuring a scary and thrilling theme to increase the adventure and exciting experience of the rider.

While the former dark rides that carry out an educational and pleasure experience to the rider is fading away. The only project that has used dark rides for cultural purposes in recent years was the Dark Ride Project art exhibition by Eric Rudd opened to the public on July 10, 1996, located in the Historic Beaver Mill, adjacent to the Contemporary Artists Center and Natural Bridge State Park, in North Adams, Berkshires (Rudd, 2011, p.2).

This paper aims at employing the dark ride with its former educational and entertaining concept for cultural purposes. The following section presents the technology and tools needed for building a dark ride.

The Factors Needed for Building a Dark Ride

Building a dark ride ranges between the use of simple less expensive tools and methods to complex, more expensive systems and technology. Choosing the tools and methods needed depends on the aim and nature of the dark ride and the budget specified for implementing it.

The following lines illustrate briefly the tools and systems that can be used for building the dark ride that can be appropriate to the topic of this paper.

The Place: Any place can be converted to a dark ride. Starting with a raw space, modular rooms and chambers can be designed and built by using polyurethane foam. Even an existing building of any type can be switched to a dark ride, and the ride size may be tailored to the available space (Rudd, 2011; Davis, 2013).

Paints and lights: Dark paint should be basically used to cover all the walls even doorways, pathways and hallways. Fluorescent paint and simple3-D paint then are utilized for decorations and drawings on walls and even on floor. Ultraviolet lightsre used fora lightening (2013, Sexton; 2013, Davis).

Display elements: The display elements serve in forming the desired scene whether it is scary, humorous, lively scientific, educational or anything else. These scenes include a lot of details serving the dark ride main goal. By using recently developed robotic technologies, packaged with systems of control signals, the display elements are controlled to move and change while the viewer is watching (Sexton, 2013; Davis, 2013).

The Vehicle: A rail-motor chair, vehicle or train is used to move about the space designed for the dark ride in a specific route without other people walking. The vehicle is usually equipped with an anti roll-back, dynamic brake and seat belts. The capacity of each typically ranges from two adults, two adults and a kid to four adults. The viewer sits in one of those vehicles and enjoys the show. A user friendly sensory integrator could be used to change routes and add sequences. The sensory integrator also allows the vehicle to stop if someone gets off, someone gets in the way or even if it gets off the planned route (Rudd, 2011; Davis, 2013; Reggio, 2013; Jump Jet, 2013).

Special effects and Multi-media: These are related to sound, light and motion, controlled by interface devices which in turn are controlled by pre-programmed electronic brains or computers that allow the sound, lights, movements and effects to be activated in a planned and synchronized way. For example light can be systemized to switch on and off focusing or introducing each scene. Sound as well is added and synchronized with the visual stimulation. It is transferred to the riders through speakers that are mounted in the corners of the dark ride space or in the vehicles (Rudd, 2011; Davis, 2013).

Certain dark rides, especially those used for educational or cultural purposes, can make use of their audio and video systems for information presentation and interpretation (Martin & Gard'ner, 2008).The audio system allow the riders to enjoy the information presentation in a lively way as if each of them has his own personalized tour guide who talks to him separately from the group while convenience is provided through sitting in an electric-motor moving vehicle in an air-conditioned space. Using headsets or head phones can facilitate presenting the show with more than one language at the same time. While utilizing a video system mounted in the vehicle can also be used in presenting the information in sign language for those who have hearing impairments or problems.

The Reasons for Choosing Dark Rides to Feature Ancient Egyptian Tombs

As mentioned previously, nothing can compensate visiting the actual, original ancient Egyptian tombs, living the atmosphere of the Pharaonic Era and admiring the actual work of those great people. However, this desire cannot always be fulfilled. Thus, applying dark rides for certain ancient Egyptian tombs can help a wide range of audience to enjoy the scenes and culture and live the atmosphere

without experiencing the challenges and constraints that would confront them while visiting the original tomb. The following paragraphs discuss some of these challenges and demystify how the benefits of applying a dark ride replica can resolve them.

The challenges related to visiting the original ancient Egyptian tomb

***Challenges related to the audience*:** Usually young, healthy, intellectual people have greater chances to visit and enjoy ancient Egyptian tombs. Those who have physical, cultural or educational obstacles to visiting the actual tomb have weaker chances. These segments can benefit from applying the dark ride technology on replica that features the same actual ancient tomb while eliminating the constraints that would prevent them from enjoying the site.

Challenges related to the Site: These tombs are considered to be as the previously mentioned impossible heritage places that cannot be modified for any reason even for accessibility ((Martin & Gard'ner, 2008) as this requires playing in their original structure and construction and any change in them will definitely threaten their conservation, significance and heritage value.

Most of the ancient Egyptian tombs have numerous narrow rough flights of stairs, rough slopes, narrow doorways and sometimes narrow spaces between pillars and chambers. Making these tombs accessible needs adding ramps, elevators or electric stairs and sometimes widening entrances, hallways or doorways. Hence, certainly messing with the original structure and destroying its value. In this case, alternative methods have to be approached to demonstrate and interpret the heritage site and its components to the visitors without placing a threat on its value. Besides that, these tombs are built under the ground without enough light or air penetrating them. Even healthy visitors who are capable and like to enter the actual ancient tomb suffer from tired feet, long queues, crowded entry ways and hallways and insufficient air and light (Hawass, 2014).

In addition, people visit these tombs to gain knowledge about the history of the site and its significance, thus, gain an understanding of the past. Interpretation in actual ancient Egyptian tombs depends mainly on tour guides accompanying tourist groups and explaining to them the history of the place and the inside scenes. Various groups can enter the tomb at the same time with different languages and cultural background. Tour guides explanations and languages interfere and each visitor can hardly hear the appropriate information. Thus, due to being crowded and noisy, visitors in actual tombs can suffer from receiving inadequate background information (Rudd, 2011). Furthermore, some ancient Egyptian tombs are closed for a while for maintenance. Others are closed to public totally for conservation and safety concerns (Hawass, 2014; The Theban Tombs Project, 2014). Hence, visitors, especially international tourists, cannot see certain tombs during their limited visit to Egypt due to their closure at this time and they cannot see other beautiful must see tombs due to their total closure.

A perfect method that can be used for evading all that is designing a model for the tomb that looks exactly like it and replicate the paints, scenes, texts and remains found in the original tomb to be demonstrated in the model exactly as they could be seen in the original tomb.

The benefits of using dark rides for featuring ancient Egyptian tombs

Applying dark ride technologies for featuring an ancient Egyptian tomb or a part of it can help in decreasing some of the challenges that confront people when visiting the actual tomb. The benefits of the dark ride can be listed as follows:

- The dark ride tomb replica provides visitors with physical, cultural or educational obstacles, the opportunity to see how the tomb looks like and get involved with the information, details, scenes and stories related to it through the dark ride presentation. In addition, it suits a wide range of tourist segments or visitors as it appeal to a large age group: families, kids and elderly people and is considered to be an edu-tainment experience for all ages, besides being safe and accessible for people who have a temporary or permanent reduced mobility condition such as pregnant women, elderly people and physically disabled individuals (Davis, 2013; Rudd, 2011).
- Unlike the actual ancient tomb, the dark ride replica offers alternatives that can meet all viewers' needs. During the ride, visitors are sitting comfortably in electric- moving vehicles, in an air-conditioned space, enjoying the lively dynamic way by which scenes, objects and information are presented through 3D paints, audio- visual effects and multi-media while narration can be heard clearly. The vehicles can be equipped with narration options that can give the viewer the opportunity to choose the language and narration level that he would like to hear. This can include for example narration levels appropriate to adults with extensive knowledge, another level for the general public, in addition to the school age level for kids and a special level for people with learning disabilities. Thus, the audio/video system in the dark ride works as if each visitor has a personalized tour

guide talking to him separately from the group, through head phones, with the suitable language and the appropriate level of information. The video system mounted in the vehicle can also include sign language interpreter for those with hearing impairments or problems. Another option for interpretation diversity is providing the dark ride with different languages and/or different narration levels in separate times and shows. This option could be applied in case the vehicles used for the ride are not equipped with audio/video system (Rudd, 2011).

- The Dark ride project ensures the right for people with disabilities to visit heritage places and agrees with the general guidelines and principles regulating accessibility to those sites. To guarantee equality between all people, the aim is to provide disabled individuals access to heritage places giving them the opportunity to enjoy those sites while ensuring independence and dignity for all users entering and using the place. However, this has to be done while guaranteeing minimal impact on the heritage site. The dark ride project provides people with disabilities a decent accessible alternative for entering the actual ancient Egyptian tomb, using sign language through monitors for hearing impaired and electric-moving vehicles for mobility impaired, giving the visitor the opportunity to enjoy the scene, while keeping the actual site safe, unaffected by adding ramps and other modifications that can impact the value of the place (Rudd, 2011; Martin & Gard'ner, 2008; Darcy & Dickson, 2009).
- The dark ride tomb replica gives all its visitors the opportunity to see and know more about certain tombs that they cannot enter for real due to being closed for conservation.
- Discoveries revealed that certain remains in some tombs were either robbed, destroyed or transferred to other countries or museums, only signs and cues in the main tomb showed that they have existed once in the tomb, but they can no more be seen in the actual tomb. The dark ride tomb project can offer its visitors an extra option in this field by replicating some of these remains and placing them within the tomb model in the assumed locations that the discoveries have suggested. Thus, not only giving the visitor the opportunity to recognize and appreciate the tomb and its components but offering him the chance to imagine how the tomb looked like when it was first built during the pharaonic period.
- Compared to other technological equipments and systems, dark rides are considered relatively affordable (Davis, 2013).
- A dark ride occupies a relatively small space. Any existing building of any type may be converted to a dark ride (Davis, 2013).
- A dark ride does not experience down times or low seasons in comparison to the actual historical site and to some other attractions since it can operate in any weather (Davis, 2013).
- Dark rides are re-themeable, meaning that the ride may be refurbished featuring a totally different concept while keeping the same basic building and ride system and also keeping costs down. This flexibility gives the chance of featuring more than one historical site generally and more than one ancient Egyptian tomb specifically using the same space and equipments. Thus, the dark ride can be converted every period of time to demonstrate a new chamber of the featured ancient tomb or a new tomb or an entirely different historical site depending on its space (Davis, 2013).
- The Dark ride can encourage return visits with the option of switching it to a new one every period of time, incorporating new interactive elements to feature a new tomb or another historical site and applying the appropriate marketing efforts to promote it (Davis, 2013).
- Dark rides can have big marketing and branding opportunities if they are designed to demonstrate famous places and characters. The recognizable characters in the famous Sally's Scooby-Doo ride have greatly aided marketability for the rides. Thus, it can be assumed that dark rides featuring difficult to access ancient tombs in Egypt, especially, if they are for famous Egyptian kings and queens, will have great marketing opportunities among international and domestic tourists.

The Study

The study encompasses two phases. *The first phase* involves investigating the view of a certain tourist segment, that is assumed to benefit from such project, to explore opinions concerning the idea of applying dark rides to feature inaccessible heritage sites, generally, and ancient Egyptian tombs, specifically, and get feedbacks and recommendations regarding the implementation. The second phase involves representing a hypothetical model for a dark ride featuring a section of an ancient Egyptian tomb.

The First Phase

Methodology

This has been done through conducting a qualitative study employing in-depth interviews with a number

of *mobility disabled individuals* to explore their opinions and recommendations about the idea of applying dark rides to feature inaccessible heritage sites, generally, and ancient Egyptian tombs, specifically. The study has selected this group, particularly, to survey since its participants form an important potential tourist segment that has travel motivations for cultural and recreational purposes and seeks to accomplish them. However, barriers, including inaccessibility to certain places limit their opportunities to fulfill their desire (Darcy, 2010).Thus, it is assumed that this group of potential visitors or tourists would benefit a lot from the dark ride project as it will provide them with an accessible, convenient option through which they can admire and appreciate what is featured in certain heritage sites that they cannot enter.

Seventeen individuals have accepted to participate by giving their opinion concerning the idea of the study. This number is acceptable in qualitative research based on interviews as a small number, less than 20, facilitates the association with the respondents, and help addressing the research problem in depth (Crouch & Mckenzie, 2006).

Since social media has changed the way research can be conducted (Hayes, 2010), hence, to target the sample, this study has depended on online communities and discussion forums addressed to mobility disabled groups who like to travel.

The advantage of this is that these online communities and discussion groups give the participants the chance to brainstorm and discuss the idea together. The online communities employed in this study are: Traveling the World on Wheels, TA-DA! Tourism Abroad - Disabled Accessibility and Disabilities-R-Us.

The interview encompassed: A brief introduction of the present research. Profile questions: age and gender. Four open questions including: if accessibility to some heritage places is considered a challenge that confront the interviewees during their tourist trips. If any of them has been on a dark ride before and how he liked the experience. If any of them has been to Egypt before or like to visit it in future. Finally, inquiring about their opinion concerning the idea of going on a dark ride that features an ancient Egyptian tomb to overcome the challenge of accessing the actual tomb.Content analysis was used to analyze the collected data.

Findings

As mentioned previously, *Seventeen* individuals have accepted to participate by giving their opinions and suggestions concerning the idea of applying dark rides to feature inaccessible heritage sites in general and ancient Egyptian tombs in particular; *Four* of them were from Travelling the World on Wheels, *six* from TA-DA and *seven* from Disabilities-R-Us. The ages of the participants ranged from 20 to 40 years old.

All the participants have declared that accessibility to some heritage sites is a challenge confronting them during their tourist trips. Fourteen of the respondents have admitted going on a dark ride before and liked the experience and was satisfied with it. Only one participant has gone to Egypt before but did not visit an ancient tomb there. Lastly, all the participants have agreed that the dark ride project in this case can be very useful since it will offer them the opportunity to see heritage places that they cannot visit or enter for real, like some of the ancient Egyptian tombs, and at the same time, it will fulfill their desire of living a cultural-recreational experience during their trip. Some participants described the idea as being great and awesome and had no further suggestions or recommendations about its implementation. Others had some comments and suggestions as follows:

One participant suggested that future phases include demonstrating the entire burial ancient Egyptian site including all its tombs in the same way. Another participant suggested that the dark ride location would offer written brochures, especially for the hearing impaired individuals, in addition to the sign language interpretation option.

Two participants commented on the project that despite being a good solution for seeing how some of the inaccessible ancient Egyptian tombs look like, it will still miss the "*ancient*" feel that gives the real tomb its magic and mystery. However, they agree that it offers a better alternative to adding ramps, rails and tracks to the original tombs to make it accessible and thus, kill the overall feel and historic value of these monuments.

Finally, a participant stressed on maintaining the main purpose of the dark ride project to be edutainment, offering the visitors an accessible method that would permit them to know how the tomb look like from inside in a dynamic, convenient manner without including any mocking or thrilling aspects that can destroy the whole idea.

The Second Phase

The study has selected the tomb of Queen Nefertari, located in Luxor at the Valley of the Queens, to represent it as a hypothetical example or a model for how a dark ride project can be applied to feature it or a section of it in a creative way. This particular tomb

has been selected for multiple reasons clarified below. The burial chamber has been chosen specifically to demonstrate it in this dark ride model since it is the most important chamber in the tomb and it encompasses some of the most beautiful scenes that deserve watching. The study tries to transfer the impression of being in a dark ride journey navigating through the burial chamber of the tomb, its paints, scenes and remains by giving a brief description of all these aspects and elaborating how the dark ride's technological system can emphasize them and represent them in a lively way as it could be observed in the following paragraphs.

Nefertari's tomb dark ride

Nefertari was the great royal wife of Ramesses II living in the XIXth Dynasty. She is one of the most famous Egyptian queens. Her full name is "Nefertari Merytmut" which means "The Most Beautiful, Beloved of the goddess Mut" (Swarthmore, 2014, p.1; Osiris Net, 2014, p.1; Egypt Sites, 2014, p.1). Her tomb was built by Ramesses II at Luxor in the Valley of The Queens which is the royal burial ground for the ancient Egyptian queens in Egypt. The tomb was discovered in 1904 by Ernesto Schiaparelli (Swarthmore, 2014, p.1; Osiris Net, 2014, p.1) and quickly became world famous. It is one of the must see ancient Egyptian tombs as it has the best preserved and most expressive and beautiful paintings of any Egyptian burial site. The paintings on the tomb walls portray Nefertari's journey after death to afterlife, guided by various guardian-spirits and deities, including Isis, the great mother goddess; Hathor , goddess of motherhood and love; and Osiris, the supreme god and judge of the dead (Swarthmore, 2014; Egypt Art Site, 2014).It represents a life-size copy of the Book of the Dead, in stone. Although not all the chapters of the Book are demonstrated, those which fulfill their purpose of helping the queen to complete her journey are present (Swarthmore, 2014; Osiris Net, 2014).

The limestone in the Theban area is not of very high quality, hence, several layers of plaster were required to be applied to the walls before painting. Serious problems affected the tomb and its beautifully painted walls, thus, the tomb was closed several times to the public to undergo repairs and restorations in1950's, 1980's, 1990's and 2000's. Even limited numbers of tourists or visitors have an effect on the surface of the paintings as their moist bacteria-laden breath causes mould to grow on the surface of the walls as a result, the real tomb is now closed due to the damage that viewers' breath and its humidity Caused to the paintings (Swarthmore, 2014; Osiris Net, 2014).

Applying the dark ride project to demonstrate this particular tomb or even a part of it will allow tourists and visitors to know and see how this spectacular tomb looks like since they cannot visit the real tomb any more.

Nefertari's tomb has been recreated using computer graphics, so that viewers can see it or tour it virtually on their computers. However, this requires certain software to be available on the computer. Besides, most of the sites offering this option are no longer operational. Even if some of them still exist, it will not give the spectator the same experience that he can get when going on a dark ride journey showing him every detail and explaining to him the history behind it in an educational-recreational atmosphere.

Nefertari's tomb is inaccessible for many reasons; for conservation purposes as mentioned above and for including narrow spots and rough flights of steps. Thus, replicating it and presenting it in a dark ride fulfills the optimum goal of providing maximum access with minimal impact on the place. The dark ride will allow the place to be accessible for all even for elderly visitors, pregnant women, people with disabilities and even kids. As it was mentioned previously, it gives all visitors the opportunity to go through the journey admiring and appreciating the work in a comfortable, non-tiring and relaxing atmosphere.

The dark rides journey of Nefertari's tomb can also offer the visitor the option to imagine and experience how the place was supposed to look like before being affected. It can offer him as well a demonstration for the remains that were supposed to be in the tomb when it was initially built but have been robbed, ruined or transferred to other places. For example as it will be discussed later, the sarcophagus of Nefertari, that has been destroyed and some of its parts have been stolen, can be demonstrated as a whole in the dark ride in the place that it was supposed to be placed or found in the real tomb. This imaginative experience is not even available in the actual site for anybody.

It has been chosen to present how the dark ride project can be applied on one of the most important sections in Neferatari's tomb: The Burial chamber.
The journey would start when all the visitors sit down in their electric-moving vehicle and relax. A brief audio introduction about Queen Nefertari and her tomb is given. Then, the vehicle would start moving in the dark in a descending motion giving the visitor the physical feeling of entering the tomb which is originally entered via a flight of eighteen steps in a roughly northern direction. Then the vehicle would turn eastwards and descend again to reach the secondary level of the tomb where the burial chamber is located (Rogovoy, 2013; Rudd, 2011; Osiris Net,

2014). Narration would be relating these descending motions to the design of the original tomb.

Reaching the burial chamber, light would be turned on to highlight the whole design of the chamber and its stunning painted walls. Narration would explain that the chamber is divided into three sections across its width, with the central section being 0.6 m lower than the front and rear levels. The chamber contains four square section pillars, standing on the higher end sections, supporting the large ceiling, leaving the central area clear. A solid bench is situated along the bottom of the four perimeter walls maintaining its height even across the lower central area. The general decoration of the burial chamber consists of kheker [a stylized plant] frieze at the top of the walls and a dado area at the bottom above the bench. The base area of the dado is black in color while there are yellow and red bands separating the dado and the bench from the decoration above (Osiris Net, 2014, Tour Egypt, 2014a).Then lights would be turned off again allowing the visitors to view the frieze and the dado area even in the dark by using fluorescent colors and flash lights focusing on this specific area.

Background music would start instead of the narration and the vehicle would move along its tour within the chamber until it reaches the ***Western Wall***, left to the entry.

Lights would focus on the whole Western Wall and narration would explain that decoration on this wall present Nefertari's entry into the underground through five of the seven gates described in Chapter 144 of the Book of the Dead. In all the scenes, "***the gate***" is shown as a red rectangle, representing a wooden door, to indicate reaching a new gate or entry way. Lights would go off again and the vehicle then would stop in front of each scene presenting each gate of the five gates Of the Book of the Dead demonstrated on the wall. Spotlights would focus on each scene, one after the other, and the narration would resume, announcing the name of the gate and its Door Keeper and explaining the scene in front of the spectators.

The vehicle then would stop in front of another important section situated on the Western Wall: ***the niche*** which is possibly intended for a canopic chest. Spotlights would focus on the niche where a chest containing four vessels holding the embalmed internal organs of the deceased is supposed to be located. This suggested chest has not been found in the original tomb, however, in the dark ride a replicated one can be placed in its assumed place inside the niche giving the visitor the option of imagining how the tomb looked like when it was built and organized in the first place. The niche is about one meter square, cut into the bench and all its three internal sides are decorated. Narration would explain all that and would start interpreting the images and text that can be seen, represented in red and yellow on a plain white background. Using fluorescent colors can also emphasize these images.

Passing across the chamber from the Western Wall to reach the Eastern Wall, the vehicle would pass by ***the pillars and the central area***. Lights would flash showing the four decorated pillars and narration would signify their function as roof supports and that the scenes on the faces of each pillar, except the sides facing the lower part of the chamber and the sarcophagus, are framed like the walls of the chamber; at the top by a kheker frieze and the base of each has a black dado with a yellow and red band separating it from the actual imagery. These images are framed with the sky symbol at the top and was-scepters [a symbol of well-being and prosperity] mark the edges (Osiris Net, 2014; Tour Egypt, 2014b). All sixteen faces of these pillars form a body of work that is among the finest in the tomb. Their decoration sets out in detail certain main ideas. Again lights would go off and the vehicle would move slowly between the pillars, stopping in front of each, focusing on its scene with light effects and interpretation (Porter & Moss, 1973; Osiris Net, 2014).

Then comes the lower central area specified for the sarcophagus. In the original tomb, remains and pieces from the queen's pink granite sarcophagus were found and fragments from a coffin lid. These remains are currently in the Turin museum. The dark ride can once again offer its visitors an opportunity that cannot be provided when visiting the original tomb, that is giving them the chance to imagine how the sarcophagus originally looked like by replicating its oblong shape and imitating its images and texts produced in a longitudinal and transverse bands like mummy fastenings. Narration would explain these images and text.

The vehicle would continue its journey in the dark and the musical background until it reaches the ***Eastern Wall***, right to the entry. Lights would flash introducing the decoration of the Eastern wall which shows Nefertari's passage through ten portals of the twenty-one portals of chapter 146 of the Book of the Dead. All the portals are represented as a simple door frame topped with a uraeus [the cobra kingship symbol] frieze (Osiris Net, 2014; Tour Egypt, 2014c). Inside each portal is a single keeper, sitting on a green dais, armed by a knife to his knees to stop any access. Behind each portal are several text columns to be read from left to right. Lights would go off again and the vehicle then would stop in front of each scene presenting each portal of the ten depicted on the wall. Spotlights would focus on each scene, one after the other, and the narration would resume,

announcing the name of the portal and its Guarding Keeper and explaining the scene demonstrated in front of the spectators.

The vehicle would then carry on its dark journey heading to the ***Northern Wall*** of the chamber opposite the entry.

The vehicle would stop and lights would focus on the wall, while narration announces Nefertari's success in completing her journey and reaching Osiris (Osiris Net, 2014; McCarthy 2002). Spotlights then would be used to focus on the scenes represented on the wall including Nefertari wearing a long plain white dress and a gold nekhbet headdress, Osiris wearing his white mummiform garment with a long red sash around his waist and the deities seated on cuboid chairs, one slightly behind the other.

Other remains that can be replicated and represented in the dark ride of Nefertari's tomb, beside the sarcophagus and the canopic chest, are: a wooden djed-pillar found in one of the burial chamber wall recesses, a knob from a chest which included a cartouche of the Pharoah Ay, some items of Nefertari's jewelry that have been purchased by the Boston Museum of Fine Arts such as a large silver plaque, a small plaque of embossed gold, a bronze pendant and four figurines of servants. All of which are presumed to have been a part of the queen's burial equipment (Osiris Net, 2014).

All paintings throughout the chamber and its pillars can be demonstrated with 3D paints and fluorescent colors to emphasize their significance and beauty even in the dark. These glowing paintings in the dark atmosphere together with the light and sound effects, audio narration and visual or sign language interpretation and the motion of the vehicle, all this allows the viewer to be drawn into a more complex, interesting world, magically absorbed into the atmosphere and influenced by the surroundings and the whole experience (Rogovoy, 2013). The journey would finally end by leading the vehicle outside the chamber, where lights are bright again.

The visitors could end up their informative, joyful experience by entering a gift shop or a bazaar,that should be located next to the dark ride, to give the visitors the chance of buying a souvenir related to what they have just seen inside, always reminding them of their satisfactory experience in Nefertari's tomb dark ride. The location should also include accessible rest rooms close to the dark ride, this option is not yet available at the location the original heritage site.

Future Work

As mentioned previously, the dark ride can be converted every period of time to demonstrate another heritage site generally or another ancient Egyptian tomb specifically. A suggestion for a future phase would be switching the dark ride journey to feature the tomb of King Horemheb since the tomb is considered a good candidate for applying such project on it.

The entrance to the tomb is down a steep flight of steps passing under an unusually deep overhang leading to an inclined corridor, followed by another steep stairway. Thus, the tomb cannot be accessible to all. Flooding in the Valley of the Kings in 1994 caused water to enter the tomb causing damages in the ceiling, pillars and some chambers; the tomb was closed then for conservation (Van Dijk, 2000; The Theban Tombs Project, 2014).

Furthermore, the dark ride project can be time sequenced, applied according to phases and can be assembled in an infinite variety of ways. For example in applying the project on Nefertari's tomb it can start with one chamber as phase one and be opened to the audience according to time and expenses, then afterwards in a space close to it, phase two would be assembled in another period of time, connected and attached to phase one including other chambers or hallways and so forth until the whole tomb is constructed. All phases should be close to each other and connected to form the entire tomb so that the electric-moving vehicle would have the ability to simply navigate down hallways or other spaces to get to the next available chamber or section that has been newly added. On the long term, if the project proves its success, in a very progressive phase, it can include connecting even two or more tombs to each other and so on forming a whole new accessible replica of multiple tombs located at the Valley of the kings and queens.

Conclusion

This study has discussed accessibility to certain heritage sites as one of the challenges facing cultural tourism. It has concentrated on the heritage sites that cannot be modified to be accessible, such as the ancient Egyptian tombs. At this point, it has proposed the implementation of the dark ride project featuring these tombs and their components, as an alternative solution that would allow tourists to see how these tombs look like without entering the original sites. In-depth interviews have been conducted on a mobility disabled group to explore the opinion of this tourist segment about the idea of dark rides featuring inaccessible ancient Egyptian tombs. All the participants have agreed that it is considered a good solution.

Finally, the study has presented a hypothetical model of a dark ride featuring a section of the burial

chamber in Queen's Nefertari's tomb to explain how the dark ride project can demonstrate and describe an ancient Egyptian tomb in an affective and dynamic manner. Future studies may discuss other alternatives to the accessibility challenge in heritage sites. Others can address the various emerging technologies that can be employed to serve cultural tourism and assist it regain its significance among the other types of tourism.

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