MUSEUM ON FIRE

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Abstract

This work is an excerpt from the research originated from Laboratório de Poéticas Fronteriças regarding memory, preservation and cultural heritage, as the field of digital games studies. We present a report on the game art we have developed, called "Museu em Chamas" (Museum on Fire), related to the discussions previously held by the LabFront research group. So, in this work, we will showcase the development of the game and the work that made it possible to carry out a journey that provides us with different degrees of immersion and can even become an anti-immersion, in a 3D environment, at the National Museum, in Rio de Janeiro. The game, in addition to the route within the Museum, presents possibilities for saving artifacts that belong to the museum's collection, which allows the interactor to form their inventory of objects. Furthermore, the application contributes to the discussion regarding the preservation, safeguarding, and memory, as well as the ones in the arts and digital games field. Concerning the field of digital games, the application demonstrates the potential for reflection on memory and cultural heritage, as the application and use of digital technologies, such as digital games themselves, as a tool to assist in preservation.

Keywords

Digital Arts; Rio de Janeiro's National Museum; Digital games; Memory and preservation; Cultural Heritage; Digital preservation.

Introduction

This work is an excerpt from the research originating from the Laboratório de Poéticas Fronteiriças [Lab|Front - http://labfront.weebly.com], regarding memory, preservation, and heritage, as well as the field of digital games studies. Here, we showcase the game art we have developed, "Museu em Chamas" (Museum on Fire), related to the discussions previously held by the Lab|Front research, development, and innovation group.

We intend to briefly report the development of the game and the poetics of the work that made it possible to carry out a journey that provides us with different degrees of immersion, even allowing it to become anti-immersive in a three-dimensional (3D) environment, developed in Unity 3D, at the Museum Nacional, in Rio de Janeiro, Brazil. [1] The work also seeks to contribute to the discussion regarding the preservation, safeguarding, and memory of the Museum, dialoguing with the field of arts and digital games.

Furthermore, we reflect on how the use of digital technologies, commonly used by the industry and entertainment, when applied to a piece of heritage, can impact the memory of such cultural assets, given that the application (app) demonstrates this potential for reflection regarding memory and heritage. We know that, in the mainstream industry, entertainment technologies and games are industry experiments in the mass reception of new technologies. However, the application and use of digital technologies, such as digital games themselves, can become tools to assist in their preservation and safeguarding, in addition to demonstrating other possible uses, such as mediation and education, interaction, documentation, and being able to become an object for future research.

The National Museum in Rio de Janeiro went through a huge fire that destroyed part of the museum's physical structure and numerous pieces from important collections in Brazil. The National Museum had an archive of more than 20 million items , and a large part of it was destroyed. [2] This museum, which belongs to the Federal University of Rio de Janeiro, has archaeological, paleontological, botanical, documentary, and artistic, among countless other collections. It was also a great source for anthropological and ethnological research on original communities that occupy Brazilian territory. From this fatality, we began our research concerning the museum to discuss digital technologies in the face of losing the museum's memory. [3]

Therefore, the fire at the National Museum provoked us to create the game art we present here. The app contributes to the discussion regarding the preservation, safeguarding, and memory of the Museum, as well as the field of arts and digital games. The game, in addition to the route within the Museum, presents possibilities for saving artifacts that belong to the museum's collection, which allows the interactor to create an inventory of objects. Furthermore, the different degrees of immersion developed for the game invokes reflections in the user in different realities that can be presented through digital arts and even more so, reverberates issues related to technological progress, or the lack of it, as an essential element for preservation and safeguarding, as seen. [2]

The game, which takes place in the National Museum, promotes preserving and safeguarding the Museum's memory. In this way, we developed the app based on the information we had access to, such as the museum's floor plan, available on the museum's website, as well as the objects from the museum's collection, which were worked digitally to compose the game and allow collection and inventory formation. In addition, graphic

elements were used to compose the game's scenario. Thus, we understand that progress in both digital games studies and heritage studies, as well as the advancement of technologies, has further allowed these fields to intertwine and benefit from each other in a post-digital context. "Among the possibilities offered by the interaction of digital technologies with heritage, it is possible to observe advantages in planning actions to protect heritage and in creating documentary records to preserve memory". [4]

We draw on the reflection presented regarding the composition of a post-digital cultural landscape created by museums so that cultural landscapes start to add new layers to each other, taking into account cyberspace and immersion provided by games. [5] Beyond that, using digital technologies related to heritage also allows for disseminating, documenting, and expanding access to it, considering remote and immersive experiences. Another point is the development of research related to cultural assets, indirectly linked to the graphics developed in games.

Now, we will discuss the app's technical considerations. Seeing that the app could be accessed via the web (WebGL in HTML5) on mobile devices and computers with basic specifications, it was necessary to employ project performance optimization strategies to be carried out on the development platform and Unity3D game engine.

We chose to use low-resolution models, such as low-poly, simple textures, and low-complexity visual effects that could avoid rendering pipelines with shaders and lighting and camera effects (such as volumetric light, fog, bloom, vignette, tone mapping, motion blur, film grain) of high quality, as seen in figure 1. All of this was a way of prioritizing usability and optimizing performance, considering the inclusion of a higher frame rate or FPS (frames per second) and the smallest possible file size for download.

Figure 1. 3D Modelling of the architectural museum front. Made by the authors.

For modeling, we used the floor plan of the three floors of the National Museum as a basis. The scenario modeling was done considering the damage caused by the fire, especially on the upper floors, so we based the game only on the first floor, by figure number 2.
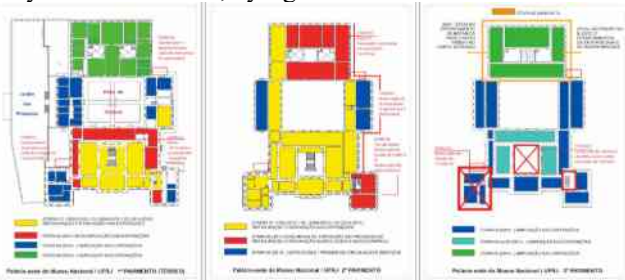

Figure 2. Museum floor plan from the three floors. Museu Nacional.

Still in regards to the 3D modeling, we chose to use Blender's Archimesh Add-on for architectural modeling [figure 3], which allowed the creation of architectural elements in a parameterized manner. The automatic and relative quality generation of maps is seen as advantageous for applying textures, taking the elements into account.
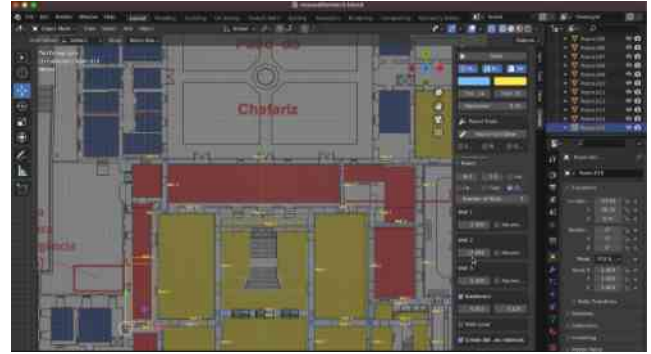

Figure 3. Archimesh Modelling. Printscreen made by the authors.

The museum building has around 60 rooms and galleries on the first floor, so the UV projection speeds up the application of textures, as seen in figure 4. As for the details of the façade, we followed photographic references from the museum. We created, multiplied, and transformed simple 3D objects from arches and cubes, shapes that are present and repeated in architectural elements.
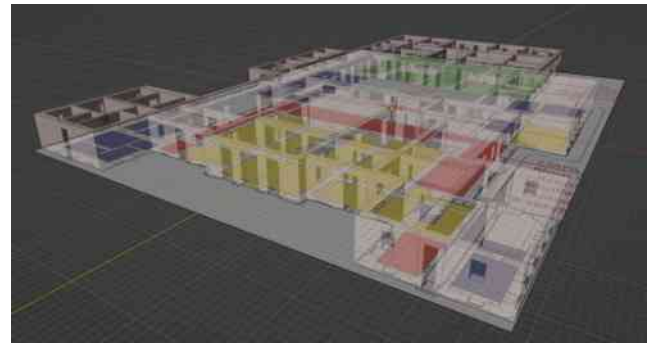

Figure 4. Archimesh Modelling. Printscreen made by the authors.

Regarding creating the illusion of fire, we considered fire and smoke as necessary visual elements for the game. Therefore, we used visual effects (VFX) techniques to generate these two elements, such as particle simulation. Other elements applied to the walls of the museum ruins within the game are projections that tell about the fire, showing the repercussions of the event in the national and international media, and the shock caused in the scientific community. The game presents the user with an immersive experience with different degrees of immersion that are combined with the visual elements applied, as well as sound, by the figure 5.

Figure 5. Visual Effects of fire particle simulation. Printscreen made by the authors.

So, in order to reflect and briefly report on the use of digital technologies, especially those related to the games and entertainment industry, the importance that digital games represent for heritage studies, for safeguarding and preservation, is observed. In addition to performing a function that may be considered a practice of conserving cultural assets by the institution itself. Although there are real gains from the application of digital technology tools in the area of heritage, such as in preventive conservation and access to cultural assets, as highlighted, it is worth considering that the use of these technologies should not camouflage other problems that are related to technologies and heritage, taking into account the different layers that accumulate in this type of institution. [6]

Acknowledgments

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