The remains of Morro do Castelo: locative gaming and digital heritage in Rio de Janeiro

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Abstract. This paper describes a research studying the tactical appropriation of location-based informational media in urban space. More specifically, we are concerned with using these techniques as a ludic tool to shed light in the processes of urban transformations and preservation of heritage in the city of Rio de Janeiro, using Morro do Castelo as a case study. This research is divided in three parts: the first comprises a historical review of the demolition of Morro do Castelo; the second consists in the elaboration of a set of points of interest related to the theme downtown Rio; the third involves the creation of a proof-of-concept prototype using the Actionbound platform, conducting a few field tests to evaluate the consistency of the itinerary. The results indicate the potential of location-based games as a tool for cultural heritage education, as well as the inherent difficulties in designing such experiences.

Keywords: Digital Heritage, Location-based games, Morro do Castelo, 20th century Rio de Janeiro

1 Introduction

This research was developed as a graduation project in Architecture and Urbanism, in the larger context of a research project on augmented urban spaces in the city of Rio de Janeiro, conducted in LAURD – Laboratory of Urban Analysis and Digital Representation – Graduate Program in Urbanism PROURB – Faculty of Architecture and Urbanism – Federal University of Rio de Janeiro. It seeks to study ways of tactical appropriation of location-based informational media in urban space. More specifically, we are concerned with using these techniques as a ludic tool for reflection on the processes of urban transformations and preservation of heritage in the city of Rio de Janeiro in Brazil, using Morro do Castelo as a case study.

In this paper, we describe the conception of a location-based game prototype that invites the players to discover the processes that led to the demolition of Morro do Castelo and its remains in the today city. Location-

based games use urban space as a space of play, merging digital mobile technologies and geo-locating systems (Lemos, 2010).

The methodology used is divided into three stages. The first stage comprises a historical review of Morro do Castelo and the processes related to its demolition, such as the construction of the Avenida Central and the urban reforms for the celebrations of the centenary of independence of Brazil. This review was supplemented by chronicles of authors like João do Rio and Machado de Assis and newspaper and magazine articles dating from the beginning of the 20th century. The second stage consists in the elaboration of a set of points of interest in the Castelo region in downtown Rio de Janeiro, based on the historical review. We then created location-based challenges for each point, therefore forcing users to actually be there to solve them. They were organized into a three-act itinerary (three linked itineraries of approximately seven points of interest each), according to different themes and proximity, so each one would not be a too long distance to walk.The third stage involves the creation of a proof of concept prototype.

Our technical tools review pointed to the Actionbound platform in order to achieve that, which we then used to conduct the experiment. It consisted, therefore, mostly of multiple choice and full text questions, using photos and sounds as part of the questions. The game prototype was then published on the platform so we could conduct a few field tests in order to evaluate the consistency of the itinerary, the difficulty of the questions, the overall length and duration of the walk and the general impression of the surroundings while performing the activity.

2 Morro do Castelo

“Morro do Castelo” (Castle Hill) was a hill in downtown Rio de Janeiro directly related to the foundation of the city in 1567 by Portuguese colonizers. It was the first colonial urban centrality, at first occupied by government buildings, the Jesuitic building complex and residences of the colonial elite (Sisson, 2008; Vilas Boas, 2007). In the beginning of the 17th century, urban activities extended into the plains, which provided an easier access to the littoral of the city. However, the residential use remained on the hill until the beginning of the 20th century, but now most of its inhabitants were low income tenants (Paixão, 2008).

In the beginning of the 20th century, the city of Rio de Janeiro was the capital of the recently proclaimed Republic, and there was the urge to build a new public image apart from its colonial past (Abreu, 1987). The mayor Francisco Pereira Passos undertook a series of large urban reforms, the largest being the construction of Avenida Central (Central Avenue, today Rio Branco Avenue) in 1905. To accomplish this, circa 2.000 popular residences

were demolished, old streets were significantly reduced or completely eliminated, and part of the land of Morro do Castelo was extracted.

The presence of the hill (and its poorer inhabitants) right next to the new avenue brought discontentment to many. Newspapers depicted the hill as an obstruction to the city progress, referring to it as an urban “cyst” that should be removed entirely, even if that represented a sacrifice of memory for the city. The definitive dismantling of Morro do Castelo took place during the 1920s, as part of the works for the Brazilian Independence Centennial Exhibition. The inhabitants of the hill were displaced to other parts of the city, and the land extracted was used as landfill for the creation of new areas for the Exhibition and other modernizing urban developments.

In spite of its historical importance, there were public outcries in favor of the hill’s demolition from as early as the 17th century, mostly alleging that it obstructed the circulation of air within the city. During the 18th century, with the expulsion of the Jesuitic order from Brazil (and consequently from their buildings in the hill), a rumor started to spread among the townspeople that the religious order left behind a hidden treasure (Kessel, 2008). As the demolition started, in the beginning of the 20th century, there was great excitement whether the legendary treasure would finally appear (Lima Barreto, 1905/1997).

The only physical remnant of Morro do Castelo today is the beginning of Ladeira da Misericórdia (Misericórdia Slope), one of the old accesses to the hill (Figure 1). In addition to the slope, some fragments of important buildings such as the Jesuit Church were rescued from the demolition and moved to different parts of the city. Although the presence of Morro do Castelo is no longer part of the landscape, it remained as a flickering part of the image of the city, as noted in popular culture and even in the use of the toponym “Castelo” as a reference for the area it once stood.

Figure 1. Misericórdia Slope and the Nossa Senhora de Bonsucesso Church. Source: Google Street View.

3 Location based games

As pointed out by Zeffiro (2012), the term “locative media” was coined by Karlis Kalnins in the context of the Art+Communication Festival in Riga, and it encompassed a set of emergent artistic practices based on mobile and location-aware technologies (Leorke & Wood, 2019). Location based games are therefore gaming experiences that profit from those practices and technologies to use diverse daily spaces as playful spaces. According to Lange (2009, p. 56), location-based mobile games are *games whose outcome depends not only on the events on the screen but also on the player's positions in the physical world*, involving *the player’s interactions with particular locations as part of the game*.

In this paper, playful spaces refers to spaces where play takes place, using Huizinga’s (1938/2007) concept of “play” as an activity apart from daily activities, within its own limited time and space. This means that a user/player is from the start in a state of mind that considers his or her current space as a place where new representations can be enacted. This work considers the premise that the player is therefore open to new interpretations of space.

It is quite clear that some games, and entire game types, as pervasive games, ARGs (alternate reality games), LARPs (live-action role playing games) and location based games - and perhaps it is no coincidence that these concepts that tend to overlap -, tend to challenge or actively blur such boundaries of time and space, especially when it comes to the actual playing field as distinct from the non-playing space surroundings. As Ejsing-Duun puts it:

Location based games affects players perception of and behavior in everyday spaces, as the games reside on the boundaries between the continuums of play and ordinary, authentic and fictional, and as they merge physical and digital media, and the intention of the player [from the very decision to play, we could add] *has a key role in this process of spatial reinterpretation.* (2011, i)

We consider that these games can be an important tool in creating awareness and fostering the creation of new meanings for urban heritage places. In fact, when it comes to how location based games deal with space, it is possible to identify their different approaches with general spatial categories of territory and place, respectively dealing with the control of space and the association of narratives (fictional and non-fictional) to space. From

“ARQuake” (Thomas et al., 2000) to “Wizards Unite” (Niantic, 2019), those two aspects coexist in different proportions across these games.

Games based on place exploration include “WHAVSM?” (Budziski & Isermann, 2005) - German acronym for “Who Is Afraid of The Man in Black”, a reference to architects’ usual choice of color for their clothes -, a QR code based game developed by the Stuttgart School of Architecture to help new students get acquainted with the school’s premises and the surrounding city. Another example is “Frequency 1550” (Waag Society, 2005), where young students in Amsterdam play around the city center to learn about its medieval history.

Using a device to uncover stories or see what is hidden or invisible in a given space is a physical enactment of the attribution of meaning to a place, helping the player to visualize different narrative layers related to a given space. It induces, therefore, the reinterpretation of ordinary spaces, as they are transformed - and ressignified - by the act of playing. The use of location based games, therefore, helps anchor narratives to the ordinary spaces of the city.

4 Game structure

The research aims to give users a sense of the original presence of the hill and its inhabitants by means of a location based game that also helps users to map those spaces in the current city. While playing, the user will be conducted around the original site of the hill while solving riddles that depict the importance of this original space and of those who lived there.

The game invites the players to discover why Morro do Castelo is no longer physically present. In order to achieve this, they must find the “pieces of the treasure” of Morro do Castelo, in a reference to the popular legend about the Jesuit treasure. In our case, the pieces of treasure are fragments of the hill and its buildings that are still present in the city. The structure of the game follows a three-act itinerary (Figure 2). Each act covers a different theme and has a set of location-based challenges that the players must solve in order to progress to the next challenge. At the end of each act, players are rewarded with information about the remnants of the hill.

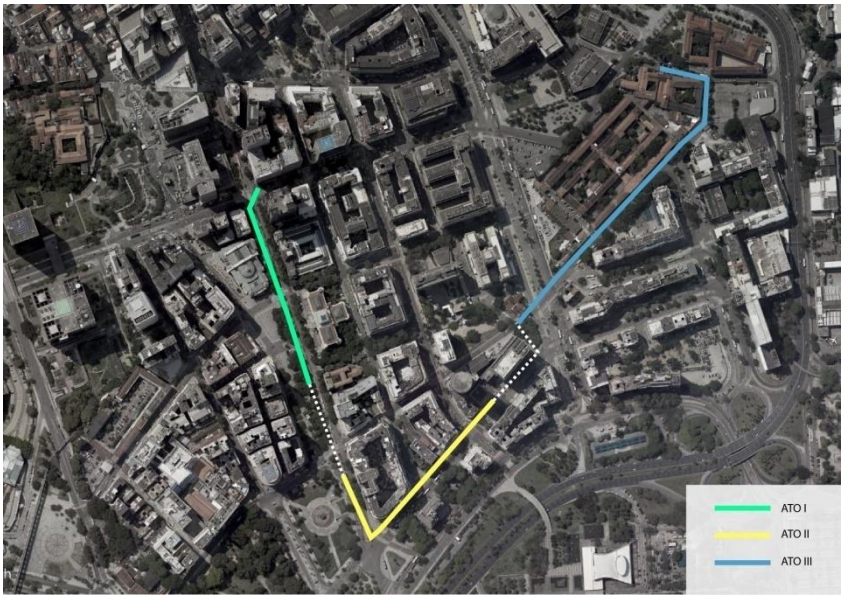

Figure 2. Itineraries of the three main acts of the game in the Castelo region downtown Rio de Janeiro. Source: Author's production.

The first act covers the construction of Central Avenue, introducing players to the political and social context of the beginning of the 20th century Rio de Janeiro, as well as drawing attention to the architectural and urban models fostered by the republican society of that time. The itinerary starts at Almirante Barroso Avenue, where once stood the entrance to the hill's popular village called Chácara da Floresta, and ends next to the building of the National Library, where was found during the demolition of the hill what many believed to be an entrance to a subterranean gallery. When the players complete each challenge, they receive excerpts of local newspapers from the beginning of the 20th century debating the proximity of Morro do Castelo to the recently built Avenue. Upon completing the itinerary, the players receive the first fragment of the treasure, a drawing of the altarpieces and the pulpit of the Jesuit Church of Morro do Castelo.

The second act covers the celebrations of the centenary of the Independence of Brazil, and invites the players to visit the pavilions' locations of the Centennial Exhibition and observe the urban transformations that took place after it. The itinerary starts at Mahatma Gandhi Plaza, where Monroe Palace once stood, and ends in front of the building of the Brazilian Academy of Letters, originally the French Pavilion of the Exhibition. When the players complete each challenge, they receive pictures of the demolition of the hill, reinforcing that this process and the Centennial Exhibition happened simultaneously. Upon completing the itinerary, the players receive the second

fragment of the treasure, a drawing of the pediment of the Jesuit Church of Morro do Castelo.

The third act invites the players to discover current urban fragments of the city that were contemporary to the hill. The itinerary starts at Santa Luzia Church, and ends at Ladeira da Misericórdia, which was part of the Hill and is the final reward, the last piece of Morro do Castelo's treasure. As players solve each challenge, they receive pictures and excerpts of narratives written by chronists like Machado de Assis, João do Rio and Luis Edmundo, describing their memories of how the city and Morro do Castelo were like at the beginning of 20th century. We chose to use chronicles and memorial narratives over more academic texts from historians or urbanists in order to give players the chance to be in touch with first-hand, subjective and emotional accounts of the city and its processes. Based on them, players might become witnesses themselves as they add their own interpretation of these events and their perceptions about the city as it came to be in the present.

The epilogue works as a conclusion whose objective is to lead the players to the current locations of the fragments of Morro do Castelo, gathered along the past acts. The itinerary starts at the Misericórdia Slope, goes through Nossa Senhora de Bonsucesso Church (the current location of the altarpieces and the pulpit), and ends at the Museu Histórico Nacional (where the pediment is currently exhibited). Upon completing the challenges related to each fragment, players receive more information about them, such as pictures of its original state and location.

5 Assembling the game

Based on the historical review, we conducted a curatorial process of photographs, testimonials, chronicles and newspaper articles related to the themes of the acts and its objectives. In addition, based on photographs and maps from imagineRio (El-Dahdah & Metcalf, 2016), we were able to compare the present city with its historical layers and evaluate how these urban processes of the past present themselves nowadays - buildings, monuments, streets, and so on. We then established a set of points of interest, with an average of seven points per act.

To create the script structure of the narrative, we used Twine (Klimas, 2009), an open source online tool for creating interactive stories. In spite of the game having a linear structure, the map-like visualization of the interactions provided by the software (Figure 3) helped build the relationships between the interactions and the media featured in the game, giving a clearer view of the narrative as a whole.

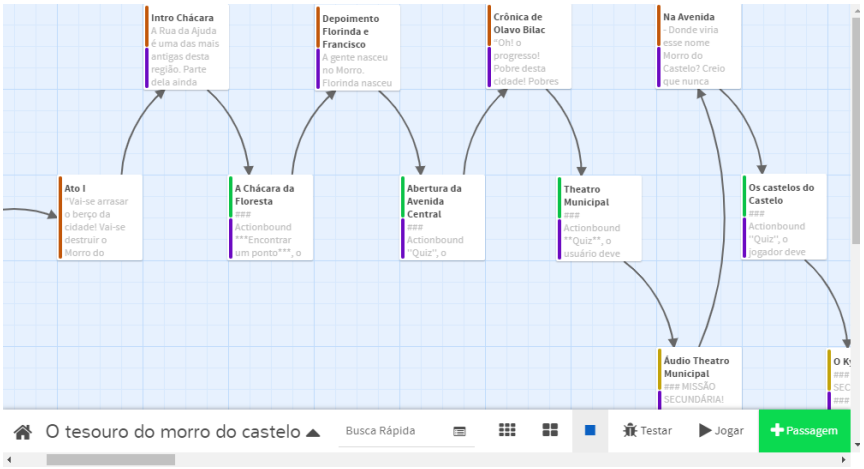

Figure 3. Visualization from the narrative creation interface of Twine. Source: Twine, screen capture

The gameplay follows as such: players receive a question involving a location. To answer it, they must move towards the location and search for the solution in the surroundings: it can be in a street sign, pavement pattern, in a detail on a building facade or even in a specific view from a given coordinate. When they successfully answer the question, they receive another one and repeat the process. Questions are intercalated with pictures and texts, which are related to the themes of the respective act they are inserted in.

In order to build a proof of concept prototype and conduct a few field tests, we used the Actionbound application. Actionbound (Actionbound, 2012) is a platform for creation and distribution of personalized treasure hunting games and interactive guides (called “bounds”). It is a freemium service: the free version allows for most of the features, with a non-customizable interface. It provides a series of elements, such as quizzes (multiple choice or full texts questions where answers are automatically checked by the system), missions (which support media input from the user, and do not count with an automated correction system), information screens (that only display additional information but have no quest attached) and “Find a Spot” (where users must find a specific coordinate). There is also an “if-else” structure named Switch, used to show specific screens or quests when certain conditions are met. All of these elements were used in the prototype. It allows the users to explore a certain territory through a descriptive and illustrated path, encouraging observation of the surroundings and comparison. The game is built in the desktop management version of the platform, and is played on smartphones (Figure 4). We used the free version of the platform, in which it is not possible to customize the interface of the bound.

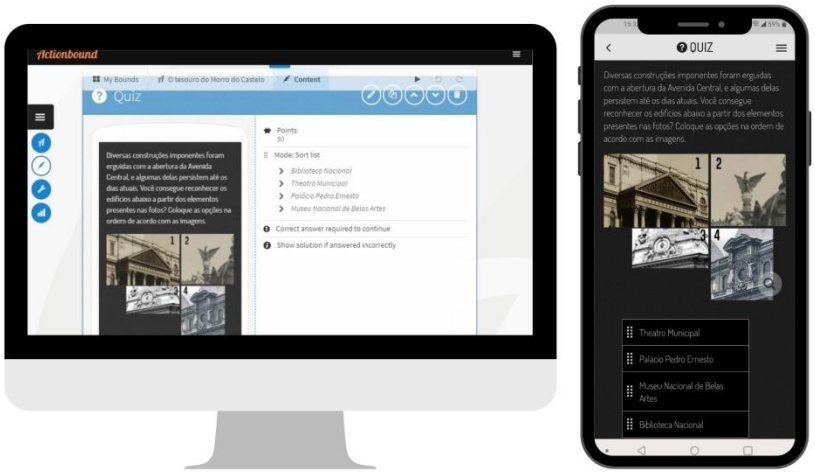

Figure 4. Screens from the bound creation desktop interface and the playable smartphone version. Source: Actionbound, screen capture

Questions involve searching for a reference in urban space, comparing elements of the present city with the past, taking a photo based on an angle of a 20th century picture and recording an audio based on a description from the past. At this point, the game has a total of 26 quests (most of them multiple choice or text-based questions). We used quizzes for the main activites, as they have a correction system. We also experimented with creating side questions, using elements that do not require a correction, such as missions. They promote small deviations from the main path, delving deeper into the subjects addressed within the acts of the game.

Figure 5. An example of a “take a picture” quest and the approximate solution location at México Street. Source: Actionbound, screen capture; Google Street View

However, there are some limitations. Quizzes that require full text input need to have a precise match to the registered answer in order to be considered, meaning that typos or missing and extra words are deemed wrong by the software. As mentioned before, the system also does not check media uploaded by the user, like pictures or audios. Actionbound also works with a ranking scoring system and the definition of a score for the activities is mandatory. Because of this, even if the experience intended by the game does not focus on player scores, we attributed points for the questions.

6 Results

Beta field tests done by our research team showed that the three-act itinerary structure was significantly easier to complete by walking than a single itinerary format, taking approximately 30 to 45 minutes to complete each act. It also provided greater clarity to the themes addressed in the game, focusing users’ attention to the subjects in each challenge.

The overall difficulty of the quests was considered average. Quests that required taking a photo mimicking an early 20th century picture were considered quite challenging to solve, as the city has heavily changed. GPS signal worked fine for “Find a Spot” activities as expected, since downtown Rio is well covered by mobile phone networks. However, our researchers experienced some difficulties with the full text questions, most of them being related to the correction system of the application. Scores helped motivating them to complete challenges, in spite of it not being the main focus of the experience.

We observed that the users experienced increased attention to aspects of the city, like buildings, street signs and landmarks. This was achieved due to the game format which helps create a detachment from the daily use of urban space (Huizinga, 1938/2007). Based on the photos and chronicles depicted in the game, users should be able to reflect on the transformations that took place, its influence on the present-day city and the processes behind them.

7 Discussion

The research experiments with digital devices as auxiliary instruments in navigating the historical layers of the city. Mobile phones are already widely used for spatial navigation, reconfiguring our perception of the city and its territoriality (Souza e Silva, 2013). We propose its use to navigate in time; anchoring in present space to perceive its symbolic layers and the physical

remains of historical processes, raising awareness about the changes that take place in the city and how they affect its inhabitants.

The decision of using a game to convey this subject was to create a detachment from the daily use of urban space (Huizinga, 2007). The project therefore also discusses games as media in the context of urban heritage, that is, how game design - its materiality and its rules - can create engagement that equally fosters interest in historical knowledge and raises heritage awareness.

The use of Actionbound provided an efficient way to build a prototype and test some of our ideas. Apart from some improvements to Actionbound itself, such as a better text interpreter to correct full text answers, it would be interesting to develop our own version with other layout options and research the possibilities of image recognition for pictures and visualization of 3D objects in Augmented Reality, for example.

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