Augmented Reality and Storytelling in Cities: 
An Application to Poet Fernando Pessoa in Lisbon/Portugal City

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Abstract – Cities are spaces of memory with several places with their own history and culture. Some of these places are marked by unique characters that inhabited, lived and created their works or used them as imagination for that purpose. These places can be seen as intangible cultural heritage that attracts visitors to the places but also to trigger their imagination to create a proper engagement with the city. To link these realities and create a personal user interaction with this cultural heritage is important to capture the story and aesthetics, and find alternatives to immerse the visitor in these spaces of memory. To that end, this article presents a project which combines Augmented Reality technologies and concepts of Transmedia Storytelling applied to places of memory of the poet Fernando Pessoa in Lisbon, Portugal City as markers in a framework of digital media-art.

Index Terms — Cultural heritage; Augmented reality; Transmedia storytelling; Digital media-art; Socio-museology; Archography

I. INTRODUCTION

Cities are spaces of memory with several places with some form of relation with its history or cultural events. Some of these places are related to unique characters that marked the city with his presence, according to where they inhabited, lived and work, or used the places as inspiration for their work. These places are today a life memory to people that visit these places to understand and feel the work and these characters, creating in this way a form of engagement between the people and the city. This is the case of the poet, writer and thinker Fernando Pessoa in Lisbon (Portugal). The city marked some of these places with explanatory plates and created a form of museum (Fernando Pessoa House) to keep his memory in the city. These places become an intangible cultural heritage or a cultural identity of the city, related to Fernando Pessoa.

This concept of cultural identity is also used in Socio-Museology [1] applied to museums and heritage, where it combines archaeology, sociology and museology focusing on the need to strengthen this cultural identity and memory of places. In the case of a city relation with a poet/writer, this cultural identity and memory of the places, in the form of narratives, is based on the location of the places and the history behind each place. But this form of signage is not enough. It is needed a form of personalized interaction and immersion in addition to the visit by the spacerwalker, to capture the essence of places, trigger the imagination and to allow to record the visit to the future, in digital forms. This process depends not only on passive information (signage with information on plates), but also active information, focused on the aesthetic concept associated with history of places linked to the poet’s work, to create user engagement. Our research attempts to answer a question about the usage of user digital narrative and interaction with cultural and natural heritage, using the concept of Transmedia Storytelling “Fan Fiction” ([2] and [3]). As research methodology we use digital media-art and archography, because is a methodology for digital artists which are most of the time engaged (re)-thinking process about the concepts behind the artefact being created and allows a practice where the artist-author can experiment to improve results in terms aesthetic quality [4].

In this paper we apply this research using Transmedia Storytelling concept, Augmented Reality technology and forms of digital media-art, as techniques for this purpose, applied to the places of Fernando Pessoa in Lisbon, Portugal. This paper is part of a series of publications, which began with the presentation of the paper “I-Place (Augmented Reality and Transmedia in Museums and Cultural Heritage)” in Artech2015 [5] and practical application to a Garden and Natural Heritage in Digital Heritage 2015 [6].

II. TRANSMEDIA STORYTELLING

The world today is dominated by the use of Internet communications and devices access to multimedia content, which allow ubiquity, interaction, immersion and randomness (in the sense of customization) as never before possible [3]. However, it is necessary to frame and relate these contents based on the same narrative arc, but allowing additional collaborative and user-creator narrative using Transmedia Storytelling. Henry Jenkins [2] defines “Transmedia Storytelling” as the art of creating a universe and a process of dispersion of the story in multiple channels, guided by a goal of creating a unique entertainment experience, but coordinated so that each part can contribute to the story. Henry Jenkins also refers to the concept of “Fan Fiction” as the possibility of users...
to adapt and create their own content, such as stories within the main narrative arc story [2].

The possibility of users being able to choose a channel or character of the story is critical to allow for dynamic interactivity and personalization. Its applicability gains a new dimension when combined with technologies like augmented reality (AR), to create personalization, interactivity and virtualization as a mean of exploitation of digital narratives, as part of the enjoyment of an artefact.

III. AUGMENTED REALITY (AR)

AR allows juxtaposing multimedia content (e.g. 3D models, animation, video, audio, and websites) on a real image captured by a video camera in real-time ([7] and [8]). This operation depends on an object that can be recognized to trigger an action, usually for presentation of multimedia content. AR is positioned between the real world and virtual world [9]. The difference between augmented reality and virtual reality is that in AR the computer adds information about the image while maintaining the real view of the surroundings captured, while in virtual reality the user is immersed in a world that simulates the real. Currently, mobile computing devices have decreased in size, increased computational and graphical power, and decreased in price, allowing its wide use for AR in terms of access and interactivity [10]. These devices can be complemented by the usage of GPS (Global Positioning System) to align real image, its geographical position and juxtaposed 3D object in outdoor, or infrared or WPS (Wi-Fi Based Positioning System) in indoor ([10], [11] and [12]).

AR can be seen as a form of mediation using interaction and customization that supports forms of narratives where the user himself can be the narrative creator.

IV. FERNANDO PESSOA: POET AND WRITER

Fernando António Nogueira Pessoa, born on June 13, 1888 and died November 20, 1935. Was buried in the Prazeres Cemetery but in 1985 his remains were transferred to the Monastery of Jerónimos. He lived between 1896 and 1905 in Durban (South Africa), but spent the rest of his life in Lisbon where he lived between rented rooms and the family house with his mother and half-brothers. In Lisbon, mainly in downtown, there are several places marked by his presence. Places where he lived, places he attended (e.g. “Martinho da Arcada” and “Brasileira” coffee shop/restaurants) with contemporary artists, as well as places where he worked as editor, advertising and commercial correspondent.

Despite having few publications in life in volume format, as is the case of the "35 Sonnets" in 1918, "Antinous" in 1918, "English Poems I-II-III" in 1922 and "Message" in 1934, however, his life and work is a landmark of Portuguese literature, and recognized as one of the greatest Portuguese poets. Fernando Pessoa is now an icon of Lisbon, with several films, publications and articles of merchandising with his typical hat, glasses and moustache, in several real images or illustrated.

V. RELATED WORK

We have been working with Aurasma and WordPress Blog to create a combination of Blog complemented by augmented reality APP, in Gardens as natural heritage (Caloust Gulbenkian Foundation Garden) [6] and to create the memory of city places using Street Art as markers to these places in Lisbon City as intangible heritage https://istreetartlisbon.wordpress.com. In any of the projects, we use animation in Blender and applied contents of poems and quotes from well-known writers to link to images to trigger the animation. Augmented Reality and Transmedia Storytelling have been used also with innovation in heritage related to cities in several projects, like the London Street Museum (UK)\(^1\), Rewind Cities (Lisbon)\(^2\), Architip (Greece)\(^3\) and Sintra (Portugal) Talking Heritage\(^4\) or in the case of InStory where used Storytelling and Gaming Activities in Physical Spaces [13]. Without Augmented Reality features and Transmedia Storytelling but using Mobile APP we can find several city guides with routes, places to see and also with options to create user own routes or capture user own images. This is the case of PocketGuide, Triposo or even the case of Storyo APP that allows the user to use his captured images to create a story. We can find also several web sites as city guides, and because of the usage of Internet in mobile devices, this information can be used with mobility by the user.

These trends inspired the design of intervention in the Fernando Pessoa Lisbon project, where we have an ongoing creative process of research. The first phase now completed is based on AR application Aurasma and WordPress Blog based on a concept of media-art artefact called "I-Place" [5].

VI. IFERNANDOPESSOA PROJECT

Based on the study of Fernando Pessoa’s work, history, places and the book “Places of Fernando Pessoa”, we created the “iFernandoPessoa” media-art artefact based on our I-Place concept [5] as presented in Figure 1, based on the following:

- Definition of a narrative about how the city “is linked” to Fernando Pessoa and keeps his memory in the city, and communicates these memories with people using the “iFernandoPessoa” media-art artefact as a dialogue portal. This portal has plates that mark the places, but also some architectural components in the places like a place façade;
- Development of Google Map to be integrated in the Blog with places of Fernando Pessoa and categories according to places where he lived, worked and coffee shops he attended, with additional information about the address and indication if there are some prepared interaction;
- Identification of citations (short phrases) or poems according to each place using the Fernando Pessoa digital archive http://arquivopessoa.net/. For instance, the places where he lived were linked to citations or poems;
- We created a graphic illustration for 28 places with the artefact image, with some possible identifiable point to be

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1 http://www.museumoflondon.org.uk/Resources/app/you-are-here-app/home.html
2 https://www.facebook.com/rewindcitieslisbon
3 http://www.architip.com/
4 http://www.talkingheritage.com/
used as trigger, and a citation or poem coming from the artefact with a dialogue balloon;

- Blog creation with Word Press to publish contents about Fernando Pessoa’s history, each heteronym, his work, his places and the map location and a specific dialogue page with 28 posts by each place we chose to illustrate;
- We captured for each of the 28 illustrated places a trigger image to create auras animations in Aurasma AR APP studio, using as overlay the place illustration.

As a result, we created an integration view of Fernando Pessoa places with a Blog iFernandoPessoa⁵ and Augmented reality mobile APP Aurama, based on the same contents, as a dialogue concept between the city of Fernando Pessoa and the people, as presented in Figure 1.

Fig. 1. iFernandoPessoa Artefact

A. Illustrations

We created a basic illustration of Fernando Pessoa and one for each of 4 main heteronyms to be used in several illustrations. The places illustrations were created according to its categories (where he lived, where he worked and places he attended) and also specific illustration for Fernando Pessoa objects and characters in exhibition in Fernando Pessoa House.

All the illustration used a citation or poem of the poet related to the category, with a link to original text in Fernando Pessoa digital archive. In the House of Fernando Pessoa, in Figure 2, the illustration includes the citation or poem and the artefact in the house, like a bed, a coat, a panting or some characters of Fernando Pessoa exhibited in the house.

Fig. 2. Illustration framework for objects in Fernando Pessoa House

In the street, for the places like coffee shop and restaurants he attended, in Figure 3, the illustration includes images in the time of Fernando Pessoa and today. It includes also a related citation or a poem according to poet work.

Fig. 3. Illustration framework for coffee shop attended by Fernando Pessoa

Also in the street, but in places where he lived or worked where the plates exist, in Figure 4, the illustration includes the plate, the citation or poem.

Fig. 4. Illustration framework for street places where he lived or worked

B. Blog

The Blog, presented in Figures 5 and 6 was developed to be responsive in any device dimension. We publish contents to detail the Fernando Pessoa life and work history with description of each heteronym in the “Fernando Pessoa” group of pages. The narrative page corresponds to the story created for this intervention, where we place the iFernandoPessoa artefact as a mediator between the city and visitor. The city is as story character that uses this way to communicate is memory of Fernando Pessoa to the visitors.

In the Artefact group of pages, we detailed the literary work. In the places page, we integrated the Google Map of the places. In dialogue page, we published a post for each place with the illustration and allowing user comments. In the about page we detailed the project concept and included also a description about Aurasma installation and usage.

Fig. 5. Blog page “Places”

Fig. 6. Blog page “Dialogue”

C. Mobile AR APP usage in Fernando Pessoa House

In Fernando Pessoa House, we considered some objects (bed, coat, paintings) and some Fernando Pessoa’s image

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⁵ http://ifernandopessoa.wordpress.com
characters in an exhibition room to be used as iteration, as presented in Figures 7 and 8.

![Fig. 7. Mobile AP Aurasma in the Fernando Pessoa House - bedroom](image)

![Fig. 8. Mobile AP Aurasma in the Fernando Pessoa House - exhibition room](image)

**D. Mobile APP usage in street places of Fernando Pessoa**

In the street, we considered some places with plates that can be recognized by Aurasma as trigger images (the plate itself as an image and not the tag in the plate, as an idea for reuse of this kind of marker) and some place façade like the Brasileira Coffee Shop/Restaurant, as presented in figure 9.

![Fig. 9. Mobile AP Aurasma in the street places](image)

**VII. CONCLUSION**

This paper addresses the usage of Augmented Reality and Storytelling in a city, using the poet Fernando Pessoa’s work as a point of access to the city memory in his places in the city, to create an engagement between the visitor, the city and the poet, using a concept named I-Place [5]. To design the intervention, we considered the concept of digital media-art and arthography [4] which enables us to make a conceptual thinking about a place of memories and its relation with people.

The result is a look to the places of Fernando Pessoa in the city as intangible cultural heritage, using two different channels, a blog and an Augmented Reality APP, with same contents, but with an alternative way of interaction per channel. To create an engagement with the people, we created a narrative (Storytelling) that justifies the concept as a city place of memory of the poet that needs to communicate with people using some plates as a channel and the I-Place concept as medium.

The plates in the street, other marker (e.g. façades) in some buildings and images in Fernando Pessoa House were possible to be recognized as trigger images, creating the proper identification as marker to activate the animations in Aurasma. In terms of the Web site, the Blog concept was a good option because created the concept of “talking with”, reason why we created a central page called dialogues with several posts as contents reused also in the Augmented Reality APP.

For the users, this I-Place artefact with a Blog and an APP allows an immersion in Fernando Pessoa’s world, and allows to trigger the user imagination as a dialogue with the places using comments and having a better understanding of the poet work in the context of the poet environment projected to today’s status, but with his memory always present.

**ACKNOWLEDGMENT**

This work is being carried out using several information regarding the Fernando Pessoa places and work available at House of Fernando Pessoa place and web site.

**REFERENCES**


