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Chiara Garau & Emiliano Ilardi
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The "Non-Places" Meet the "Places:" Virtual Tours on Smartphones for the Enhancement of Cultural Heritage

Chiara Garau and Emiliano Ilardi

ABSTRACT *Because of today's inadequate interaction between tourists, professionals, and citizens, in this paper the simulation of a new form of knowledge management is presented for more effective utilization of cultural heritage sites. The latest technologies allow interaction of previously separate domains of experience: desire, identity, tourism, memory, and marketing. They are the access keys that, starting from the territory, can take the user into other domains, evaluating the entirety of the cultural heritage. In this regard, the paper presents the simulation of a prototype able to go beyond what is currently provided online: tourist paths are offered that are available online and can be downloaded onto mobile devices (smartphones or tablet PCs), thus creating a tour of the local heritage that provides audio-video content. It allows the opportunity to encourage a deeper exploration of cultural heritage.*

KEYWORDS *cultural heritage tourism; augmented reality; cultural heritage*

Introduction

The development of cultural heritage tourism has attracted great interest from international organizations such as ICOMOS, UNESCO, and the World Tourism Organization [WTO]. Until a short time ago, visits to cultural heritages were supported using only traditional means such as tourist guides and paper maps. Recently, however, new communication technology products have given rise to a new city "museum" culture that opens up a new territory where all its buildings can potentially be integrated into one experience (Chesbrough et al., 2006). In a modern society that is gradually becoming increasingly liquid (Bauman, 2000), the culture assumes strategic characteristics that respond not only to globalization, but also to the growing need for innovation and entrepreneurship.

In order to overcome the traditional nineteenth-century idea of the museum, a new model is necessary for evaluating cultural heritages through the association of the terms *city* and *museum*. Products for visitors should be developed in ways that include more cultural offerings such as art galleries, museums, historical routes, and even theme parks (Prentice, 1993; Swarbrooke, 1995; Walle, 1998; Yale, 1991).

Correspondence Address: Chiara Garau, University of Cagliari, DICAAR - Dipartimento di Ingegneria Civile, Ambientale e Architettura - via Santa Croce, 67 - 09124 Cagliari, Italy. E-mail: cgarau@unica.it

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This approach increases the visibility of the cultural heritage. As a result, the physical assets are integrated synergistically with virtual objects (Lazzeretti, 2005).

Smartphones and tablet PCs can be used as new tools for learning about cultural contents in an engaging way. In fact, urban spaces become places where technologies can determine the course of development, heavily influencing communicative configurations (Mattelart, 1997). In these situations, networks take on a double function. On the one hand, cities, as pointed out by Levy (2002), provide opportunities for participation in economic and political life. On the other hand, cities support activities that are activated between the network communicators and traditionally have been studied in the field of connective intelligence (De Kerckhove, 2001; Granieri, 2006; Siemens, 2004, 2005; Tagliagambe et al., 2008)[1].

The complexity of the encounter between a city and its communications network is established by the fact that communications in cities through the web have, over time, taken on a different meaning. In fact, until a few years ago, it was believed that Information and Communication Technologies (ICT) virtualized physical space, but today it seems that the latest digital technologies have started a process of "re-functionalizing" the territory. In light of this, the intent of this paper is to restrict the study of the vast field of cultural heritage to an analysis of what happens when people use smartphones to interact with cultural heritages. It is organized into three main sections. The first section focuses on the "neo-places" of culture. The second offers a brief review that links cultural heritages to the latest mobile technologies such as smartphones and tablet PCs. The third part of the paper describes simulations from three different case studies in Barcelona (Spain), Marseille (France), and Cagliari (Sardinia, Italy) that are useful for clarifying the potential of the system that is described. Finally, the results of the case studies are discussed. The phrase "cultural heritage" is used frequently in this study. In its broadest sense, this phrase refers to the tangible and intangible aspects of culture, the processes of cultural practices, the development and understanding of particular sites, and locations and the intangible factors that are associated with them.

The Neo-Places of Culture: New Frontiers for the Enhancement of Cultural Heritage

The transition from the Web 1.0 of the 1990s to the current Web 2.0 has led to radical changes not only in technology and content, but also in users' habits while using technology to interact with and share information (Tkacz, 2010). Today, the Internet and the new tools that are associated with it continue to evolve. Researchers are pushing forward and experimenting with Web 3.0 (semantic web) and Web 4.0 (tridimensional web) applications. This evolution is aided by multimedia, the rapid development of informational ubiquity via latest-generation mobile devices, and digital social tools such as social networks (Black et al., 2010), content sharing platforms (blogs, wikis, newsletters, RSS feeds), and virtual alter egos that are edited by the user (as in *Second Life* [Faggioli, 2010]).

New technologies have made it possible to overcome restrictions that are associated with the physical places and materials that are found in museums, archives, cultural institutions, and safeguarded historical centers. New technologies have also made it possible to overcome restrictions that are based on identities, paths, and modes of experience that have been imposed from above for the

purpose of establishing processes of socialization. They also make it possible to overcome stable and long-term relational bonding strategies that are based on poor theming. They also provide new paradigms for narrating and interpreting the common cultural memory.

Traditional museums have often been considered the appointed sites for cultural communications. The transmission model has been characterized by an authoritarian and unidirectional approach that has divided the experts, who are seen as the owners of knowledge and critical interpretations, from members of the public, who are seen as passive receptors, and has not provided any means for dialogue. In addition, the media environments in these places have been based on typography. In other words, the media have been based on books and writing with linearity and stability built in for the purpose of transmitting memories.

Researchers have started studying completely different environments that have been referred to as "non-places" (Augé, 1993). These environments are based on consumption and transactions in a market. Today, the non-place of consumption smashes the linear screenplays, imposing a potentially infinite number of narratives that have as their unique aim the stimulation of desire and personalization of experience. Individuals, and not the community, are the targets that form short-lived social connections that are characterized by instability. The common memory is reduced to pieces and is only reused based on wishes and contingencies. The media environment is immersive, connective, and impermanent, and produces a memory that is reduced to a mere association of images. The old places focus on citizens. Non-places, on the other hand, focus on the consumer. The old places are places like a city square or a museum. The non-places are places like a mall, an amusement park, an airport, or a train station.

The neo-places that are produced by the new digital media environment should represent a compromise between these two types of places that are indispensable for postmodern societies. They should be places where personalization (consumerism) and enduring social connections (of citizenship) find a balance, a junction where individual memories can connect to broader historical narratives so that the "old places" can be rediscovered as heritage to reuse, protect, complete, and contextualize.

For these reasons, the applications of Information Communication Technologies (ICT) and emerging (now ubiquitous) mobile technologies allow communities (digital or otherwise) to perceive neo-places, not only through conversations and informal contacts (oral, multimedia, etc.), but also through the construction of collective memories, that are reconstructed, in a creative and permanent way, from fragments of a shared past, as an expression of contemporary art. In other words, cities and their cultural heritages are being projected into neo-places that are taking on missions that were formerly fulfilled by museums. These missions include offering information and knowledge to visitors, exhibiting artifacts, and simulating environments and artifacts that are not immediately present.

Thanks to multimedia and the latest mobile technologies, cultural heritages are being enhanced. The geographical and material boundaries of cultural artifacts are being broken and the cultural artifacts are being projected into socio-cultural platforms that integrate learning, play, and simulation.

Mobile technologies play the roles of facilitators that enable connections to history and the future, thereby giving expression to concepts that have been widely discussed in the literature, such as identity and belonging, cultural

diversity and intercultural dialogue, popular beliefs and traditions (Doratli et al., 2004; Gabrielli, 2010; Leask and Fyall, 2006; Rössler 2005; Tweed and Sutherland, 2007).

Creating the conditions that ensure broad participation and sharing requires a different approach to the management of these changes (Fairclough, 2009). First, it is necessary to design interactions so that they include the actors from civil society that are involved in the various activities that are related to cultural heritage (Faro Convention [Council of Europe, 2005]; Council of Europe, 2009, 2011). Visitors, qualified professionals, and general users must all be able to participate spontaneously and continuously. All of these groups of people must be able to create, manage, and disseminate spatial data (Sui, 2008; Sui et al., 2013) and share knowledge via mass collaborations that depend on wikis or crowdsourcing (Howe, 2006, 2009) or co-creative productions (Goodchild and Janelle, 2010).

This is the first precondition for the development of a bottom-up model where museums and cultural heritage are conceived of as open and participatory institutions, and experts are able to find a balance in the virtual neo-place, between material cultural heritages and local wisdom (Fairclough et al., 2008).

Smartphones as a Support for Cultural Heritage

The process of involving the population in cultural heritage has matured gradually over time, causing an evolution in thinking and the continued development of the concept of the museum. The latter concept correlates today more and more to territory. It emphasizes the fact that something more complex and richer than the sum of many museum buildings, archaeological areas, parks, archives, and libraries is being considered. Many cities and towns have sought to market their cultures and their cultural heritages (Moreno et al., 2012). On the one hand, they build territorial marketing policies in order to promote themselves and on the other hand, they enact other processes in order to become a source of pride for the local inhabitants.

The city becomes a place of exciting opportunities and curiosity, a point of common interest that pervades the user experience, and a system of systems. The smartphone, on the other hand, becomes a real-life "pocket guide" to an interactive outdoor museum. The opportunities for interaction and participation in the culture are made possible by the applications that are available on mobile digital devices such as smartphones and PC tablets of various types. This is especially true in Web 3.0 environments.

Originally, audio guides were able to fill the need for a guide, allowing the visitor the opportunity not only to choose what to see, but also to focus entirely on getting the most out of the visit. Now, the developments in technological tools allow us to think even bigger. Visits turn into open-ended experiences with alternative paths to choose from. The tools accompany the visitor and integrate the functions of a navigation system with varying levels of information about the attractions that the visitor is passing that are based on the user's level of curiosity.

The social dynamics extend beyond the interactions between similar users, pervading the relationship with the institutions and organizations that protect cultural goods and touristic attractions. In other words, the experiences of different communities of visitors turn into semi-permanent social traces due to crowdsourcing and co-creative productions. On the one hand, ideas, opinions, physical

trajectories, and collaborative practices identify the presence, activity, movements, and actions of different users. On the other hand, their territorial permanence is made perceptible: mobile devices have made it possible for visitors to comment in public forums about the good or the attractions that they have seen. These comments are typically permanent, accessible, and focused on particular sites. They represent the attractions as they appear to the general population, rather than to just the experts. As a result, these comments dispel the obscurity that has frequently been associated with sites, attractions, and historical heritages in the past.

This allows the local government to choose and adjust the criteria that are used to manage the scheduling of local initiatives and interventions, including economic ones, for the enhancement of the territory. Experiments have been carried out by using Wikitude and Layar in 2009 (for both, see Choi et al., 2011), SmartMuseum in 2009 (Ruotsalo et al., 2009), and Tuscany + in 2010 (Linaza et al., 2012). Once a smartphone camera is pointed in a certain direction, it is possible to view layers of information on the screen that overlap with the reality. The information content is created using points of interest (POIs). These new technologies, which have been integrated with services like the Google Art Project (http://www.googleartproject.com), may lead to new cultural "museums" for cities. These services can be exploited, for example, by integrating the information that is suggested on the Google Art Project site with other useful services for general users, whether they are tourists or residents.

As a result, it is possible to move beyond mere information and start the processes of cultural learning (Lee and Wicks, 2010) that are aimed at the development of collective knowledge (Balram and Dragicevic, 2008).

It should be emphasized, however, that Web 3.0 technologies are important, but not sufficient tools for accomplishing these goals (Jenkins et al., 2006). In fact, mobile applications often cater to the interactive fun of the user, rather than the enrichment of the intellect.

For this reason, this paper will compare the current realities in three urban centers that vary in their dimensions and their cultural offerings. It is assumed that smartphones (or PC tablets) are capable of offering the user different paths (SP: Start Path or IP when translated from the Italian *Inizio Percorso*), that are in online and downloadable formats and offer information about the historical and cultural heritage and are correlated with audio-video content. However, this work will attempt to go beyond the technical descriptions of the applications and will attempt to provide a strategy for capturing the imagination and attention of users with the aim of encouraging a deeper exploration of cultural heritages.

Case Studies: Different Virtual Paths towards a Common Goal

The case studies took place in three European cities that offer consolidated and differentiated identitarian values: Barcelona (Spain), Marseille (France), and Cagliari (Italy). As a result, they serve as excellent examples for demonstrating the simulated virtual paths along the urban tourist–cultural axes (See Figure 1). Barcelona (Spain's second largest city with 1,619,337 inhabitants in 2010) is known for its rich cultural heritage. The Sagrada Familia (the Basilica and Expiatory Church of the Holy Family) is one of the most important cultural icons in Barcelona. Marseille, on the other hand, is recognized as a center of entertainment and culture. It was the European Capital of Culture in 2013. It was also the largest city in southern France with 850,726 inhabitants in 2010.

Figure 1: Cases studies.

Cagliari (with a population of 156,951 inhabitants in 2010) is an important city because of its educational functions. It is also applying for the role of the European Capital of Culture in 2019. Thanks to cruise ships and flights that are available at low costs, many visits are characterized by their shortness. As a result, visitors must choose from the available informational materials in a conscious way in order to satisfy their needs and enjoy the area and its local heritage. For these reasons, the application that was studied offers the user a plurality of paths or IPs (Start Path translated from the Italian phrase *Inizio Percorso*).

The system allows the suggestion of a set of tangible culture heritage locations like museums, churches, etc., and intangible goods like exhibitions that are inserted into a route. Landscapes and views are contextualized based on user preferences. However, the case studies give the opportunity for reflection on the importance of having a device that is able to describe (1) a single tangible good such as the Sagrada Familia in Barcelona, (2) sets of tangible and intangible attributes that, through their union, make it possible to understand and interpret a city as a whole as in the case of Marseille, and (3) the cultures, traditions, and the intangible pieces of heritage that are subject to the risk of extinction unless they are evoked and connected to the "material" city. Examples include the music, songs, sounds, rhymes, spoken dialect, and oral tales and histories from Cagliari, Italy. For example, on a visit to the Sagrada Família, the device provides a view of the route during the visit. When the user arrives at a point on the path and frames it with his device, the image is displayed with overlapping data from a multichannel, multi-lingual platform that provides information, guidance, support, assistance, infotainment, broadcasting, and interactive storytelling. The smartphone not only describes what is being framed in the screen, but also offers an external perspective of the church. While the user is focusing on a narrow flight of stairs, the smartphone may allow the user to see a view from the top of the tower that the stairs are in. In this way, the application may challenge some users to continue on the path toward additional experiences of the cultural heritage, even if they were not willing and excited about it at first. The Sagrada Familia is an unfinished masterpiece of Antoni Gaudí. One way to bring the user additional experiences of the cultural heritage is to display augmented realities in real time on a smartphone. For example, displaying ideas about the final design and construction of the Sagrada Familia could give the users a chance to

imagine the finished work, thereby encouraging them to come back again (See Figure 2).

The case of Marseille is rather different. This city is multicultural, multiethnic, and populated with many art galleries. An application needs to be capable of systemizing and creating various personalized virtual paths that present and merge different types of cultural heritage (documentary, nature, painting, sculpture, construction, etc.) that only make sense when they are considered as a whole. An advanced virtual tour of the cultural heritage of Marseille should include the entire city and should integrate the entire cultural system, thereby introducing the visitor to the overall complexity of the cultural character of this city.

At first sight, Cagliari and the surrounding region of Sardinia do not seem to have as much to offer as other regions of Italy. However, upon closer examination, it becomes clear that there are many interesting goods (both material and immaterial) and complex elements in this region. The tangible and intangible points of interest include a large number of libraries and archives, the university, the historical center, and the social behaviors that are expressed by local communities. The city has, therefore, built a reputation as a place to visit not only for its material value, but also for its cultural traditions, its people, and its folk festivals. The latter are in fact an expression of local values, both emerging and anthropological, that are not reproducible. Cultural heritage, in general, is becoming assimilated with common goods and public goods. The enhancement of the cultural heritage of this city must be based on the construction of paths that highlight both its material heritage and its immaterial and cultural heritage (See Figure 3).

The latter is represented by a sense of unique identity that is more evident than in other locations. This sense of identity is based on a close relationship between the people and unwritten memories from past millennia that serve as a basis for the culture. Cagliari is rich in these unwritten memories. The cultural heritage, which is read in this sense, not only becomes an irreplaceable part of

Figure 2: La Sagrada Familia

Figure 3: Virtual paths of tangible and intangible cultural heritage (Cagliari)

the "identitarian body" of the city, but also forms a strategic connection between the past and the future. This cultural heritage requires a constant monitoring by the public administrators and conscious attention from the residents, and thanks to the latest mobile technologies these efforts can be enjoyed by other city users.

The different experiences in these case studies can be shared with other users, making the system usable for both experts and for general users. The experts can make improvements to the system based on feedback from the user community. The general users also enrich the quantity and quality of information by posting feedback and comments. Other users may decide to take one path rather than another as a result of the feedback and comments that were left by their predecessors. Knowledge does not have an expiration date, but as suggested by Simon (1957), bounded rationality grows incrementally. The application follows this principle and acquires information through an actual process of knowledge construction. After a visit, the device allows the user to submit judgments about the quality levels of the services that were offered at the POIs. The scale of values ranges from "poor" to "excellent". Figure 4 displays feedback from users.

Users can also insert tags, images, and comments. They can also promote knowledge of the territory using means that are different from the logic of "conventional heritage" (Giaccardi, 2012). This feedback is modulated based on a participatory and inclusive approach (Ciappei and Surchi, 2010). Figure 5 displays paths with star ratings and possibilities for adding comments, tags, and ratings. This approach does not present an innovative model in the context of urban planning tools (Balducci, 1991; Comerio, 1985; Davidoff, 2001; Garau, 2011, 2013; Moatasim, 2005). However, it does show how interest has been renewed and can continue to be renewed by new technologies. Recommended applications are found in Bailey et al. (2011), Hanzl (2007), and Murgante et al. (2011).

The paths from the case studies that are described above are useful, because they allow us to go beyond technology. Because of the differences between their spatial dimensions and their cultural products, these cities make it possible to think in terms of a broader perspective. They allow us to focus on more than just a unique single good such as Sagrada Família in Barcelona or a set of material locations that, in an integrated and widespread manner, constitute the historical and artistic heritage, as in the case of Marseilles. They allow us to also focus on the intangible and cultural aspects of heritage that are composed of traditions, oral expressions, social practices, rituals, festive events, and folklore as found,

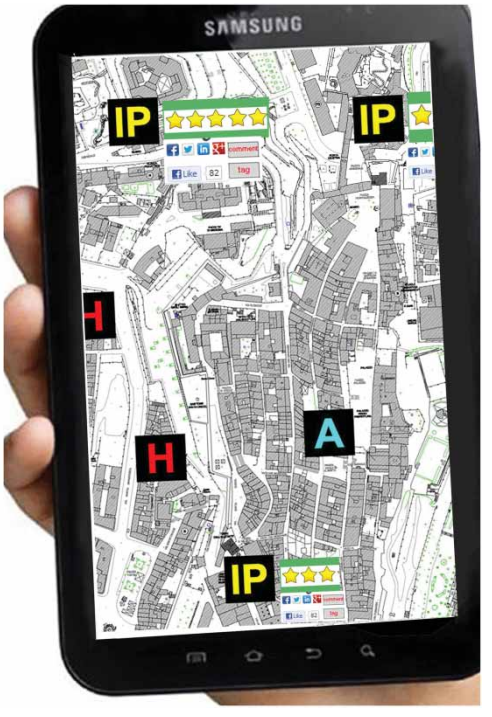

Figure 4: Feedback from users

Figure 5: Paths with star ratings, comments, and tags (Barcelona)

for example, in Cagliari.[2] The latest mobile technologies, augmented realities, and applications will provide information and experiences with a higher level of quality if they are driven from this conceptual perspective.

Conclusions

The international revaluation of cultural tourism, developed in recent years, has led to the spread of innovative solutions aimed at promoting and spreading the culture of a territory. In this sense smartphones play a central role not only because they are now accessible to all,[3] but also for their vast possibilities of application and development.

The first one concerns the expansion of educational opportunities: the immersive environments allow the creation of classes for remote multi-users, and the organization of seminars can be integrated with traditional e-learning sites. A second important possibility is related to the extension of the system in the territory, capable of creating a real circuit of which the various "suppliers" of cultural heritage (museums, archives and documents, libraries, etc.) represent access points. In this way, they increase their visibility and fully become hubs of the network of finally integrated cultural heritage (Anderson, 2006). The third potential concerns integration with next-generation systems such as augmented reality. The elements that "augment" the reality may be added through a mobile device, allowing the simultaneous use within the museum site of the physical cultural heritage and virtual information of the virtual museum.

A fourth aspect is related to foreseeable technological implications in the field of cultural and socioeconomic multimedia content management, as it is one of the fastest growing data sectors in the macro-analysis of the market evolution.

This work has shown, with some evidence thanks to the three different case studies, that it is now possible to offer multiple solutions which involve the visitor, giving him the opportunity to contribute to the development and transmission of cultural heritage and to share content of interest with other users who do not identify exclusively with museum institutions. The visitor is treated as a real protagonist in the complex processes of construction of cultural memory, one who acts equally with the rest of the public (Simon, 2010). However, it should be noted that pervasive technological innovation alone cannot guarantee a network logic, dialogue, and reconciliation between the public and private sectors. Network management, developed and constantly monitored by all city users, can instead exploit all the cultural resources of an area. In this perspective, it would be desirable to create a network of cultural heritage which merges together into a single information channel, so as to allow the composition of paths (virtual or not). This could be a great opportunity for the promotion of local tourism, for multidisciplinary integrated planning (the exchange of information and know-how allowing immediate information of all cultural heritage in the territory), or for development of regional marketing and tourism (integrated advertising campaigns, the creation of paths and integrated itineraries, cumulative tickets and single tickets, etc.).

Notes

1. The concept of connective intelligence is preferred rather than that of collective intelligence used by Lévy (2002). In fact, with this concept, forms of intelligence supported by the network are the focus

of development, as well as human-computer relationships and the centrality of the human rather than the mechanical connections allowed on the network.

2. However, it should not be underestimated that any experimentation that is new and innovative or that becomes a driving force for the economy may collide with governments, citizens, and city users that sometimes may not appear excited because they are dedicated to traditional culture.
3. Their steady growth is documented: by the end of 2014 almost half of all mobile devices in use worldwide will be smartphones. This has led many web developers to a constant rush to develop applications designed to meet the needs of each client (Rizzo and Mignosa, 2013).

Notes on Contributors

Chiara Garau is currently a postdoctoral researcher at the DICAAR–University of Cagliari. She has a PhD in Land Engineering and had a postdoctoral fellowship in the Department of Architecture of the University of Cagliari.

Emiliano Ilardi is a tenured assistant professor in sociology of cultural and communicative processes at the Department of Pedagogy, Psychology, and Philosophy at Cagliari University, Sardinia.

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