Chapter VII
Learning Cultural Heritage Through Information and Communication Technologies: A Case Study

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ABSTRACT

This chapter aims at illustrating how Information and Communication Technologies (ICT) could be used to exploit and disseminate Cultural Heritage, providing enriching learning experiences for different targets of users, especially young people. In fact, by the immersion in virtual museums or reconstructed worlds, users can build different paths of fruition interacting with 3D objects as in a videogame. In this way, a superimposed and interchangeable view of the real find and its virtual reconstruction for a global vision is allowed. Particularly effective for arising interest and curiosity in the users are mobile devices (i.e. Personal Digital Assistants, pocket PCs, smart-phones) integrated with GIS and GPS, which can provide combined real and virtual information based on users’ location by a Virtual Navigation System. The case study of Calabrian Magna Graecia (Italy) is presented, with particular reference to the projects “Virtual Museum Net of Magna Graecia” and “NETConnect”.

INTRODUCTION

In recent years, the integration and the massive use of multimedia technologies, computer graphics and Virtual Reality (VR) in Cultural Heritage have lead to the creation of the new idiom Virtual Heritage. This expression refers to the use of three-dimensional computer modelling in order to digitally reconstruct monuments, buildings, and finds: these models can be visualized by interfaces
allowing a specific level of immersion and/or interaction to the user (Roussou, 2002; Drettakis et al., 2005). In particular, these reconstructions support the traditional instruments for the learning and dissemination of Cultural Heritage, offering a new kind of experience that is formative and engaging at the same time, especially for young people (Petric et al., 2003; Mason & McCarthy, 2006). This new kind of learning (called “edutainment” thanks to the mixture of the two terms “education” and “entertainment”) is not dependent on static 2D images, which are usually photographs of ruined buildings or drawings, and on fragmentary information. In fact, Information and Communication Technologies (ICT) allow the visualization of a find in its original state through the recreation of missing parts, and of the historical context in which it was integrated through the detailed reconstruction of buildings, cities, and landscapes. In this view, the process of learning implies less mental effort: these virtual reconstructions are, by their “nature”, visually based, and the immediacy of the image is prevalent in relation to the nature of texts and sounds (Antinucci, 1998). Furthermore, the interactivity implies an active user who is interested by anything that can be virtually manipulated as in the use of mobile and Geographical Information Systems (GIS) technology for the fruition of onsite archaeological ruins. Hence, the present work illustrates how new technologies linked to Cultural Heritage (virtual museum, digital reconstructions, navigation systems) can be applied in a real case (Lokroi in Calabrian Magna Graecia, Italy) for the learning of the history of an almost unknown and surely underestimated territory.

BACKGROUND

The concept of Virtual Heritage is strictly linked to the field of VR, a technology that can provide a convincing experience of environments and objects which existed in the past and are lost nowadays. Anything that has been present in ancient daily life can be virtually realized on a computer through the interpretation of the remaining tangible evidences: cities, specific buildings and squares, houses and the objects in them. In this way, ICT are employed in the process of displaying “intangible heritage”, that is “the practices, representations, expressions, knowledge, skills — as well as the instruments, objects, artefacts and cultural spaces associated therewith — that communities, groups and, in some cases, individuals recognize as part of their Cultural Heritage” (UNESCO, 2005). A great number of associated information (i.e. archaeological data, aerial photos, texts) can be available at the click of a mouse.

In recent years, a number of large-scale projects dedicated to archaeological site modelling or museum collection digitization have emerged as an important driving force for contributions in the field of learning Cultural Heritage (Van Gool & Sablatnig, 2006). In particular, 3D digitalization and scanning techniques have been used for the reconstruction of historical finds (3D-MURALE, http://dea.brunel.ac.uk/project/murale/), Virtual and Augmented Reality technologies for the interchangeable visualization of the archaeological site and its reconstruction, as well as mobile devices for an intuitive and personalized access to information from archaeological sites (ARCHEOGUIDE, http://www.archeoguide.it/), and the Web navigation in 3D scenarios (Nu.M.E. project, http://www.cineca.it/sap/teatrcultherit.htm) (Febbraro et al., 2008). Moreover, the creation of the European Network of Excellence EPOCH (http://www.epoch-net.org) has given to this specific domain of research an additional impetus in Europe, but also beyond. In fact, in EPOCH ICT are used to “enhance preservation and scholarship, providing tools for large collections to be preserved, catalogued and searched effectively, or producing high-quality digital representations of cultural artefacts that can be accessed and investigated worldwide. Digital reconstructions and applica-