Chapter 8

Renaissance–Style Architecture in El Maestrazgo: From Virtual to Tactile Models

María Jesús Máñez  
Universitat Jaume I, Spain

Jaume Gual  
Universitat Jaume I, Spain

José Teodoro Garfella  
Universitat Jaume I, Spain

Joaquín Ángel Martínez  
Universitat Jaume I, Spain

ABSTRACT

In the north-western part of the province of Castellón, Spain, there is a region called “El Maestrazgo”. This territory belonged to the Order of St. Mary of Montesa, created by King Jaime II of Aragon in 1317, and was to remain so for more than five hundred. During this time Renaissance-style architecture reached this territory, substituting and transforming the old Gothic style. The aim of this work is to survey some of the elements of architectural heritage in the Maestrazgo de Montesa from that period and their enhancement and dissemination through tactile models, as a means of providing access to this information for people with visual impairments. In carrying out this work we have used three main sources of information: historical documentation, manual data collection methods and advanced means of data collection, namely 3D scanner and photogrammetry. This data has been processed and studied to obtain virtual models of the architectural elements, thus allowing their subsequent physical modelling so that they can be made available to people with visual impairments.

INTRODUCTION

This work is framed within the field of conservation and enhancement of architectural heritage in the province of Castellón (Spain). It focuses on a geographical area, the lands of the Grand Master of Montesa, and on one particular period, the Renaissance. This land, which formed part of a mostly rural society, has been poorly documented despite being of great aesthetic, historical, ethnic and societal value.

The study therefore uses the lands of the Maestrazgo de Montesa as a testing laboratory, and examines the transition from the Gothic to the Renaissance periods that took place in religious buildings.
constructed in this geographical area, from the mid-16th to the early 17th century. During this period, between the Gothic and Baroque eras, the Renaissance Style was introduced into this area, although not in a pure form. The Gothic inertia that remained strong throughout all the old Kingdom of Valencia influenced the way of building during this period, giving rise to an architectural phase which combined ornamental and constructive elements of the Renaissance style with Gothic solutions, such as the use of ribbed vaults (see Figure 1). It also addresses an in-depth study of one of the best Renaissance temples from that period: “The Church of Nuestra Señora de la Asunción”, located in Vistabella del Maestrazgo.

With these goals in mind, specific activities in the field of graphic expression were conducted, such as architectural surveys, consisting in both fieldwork and research work, in order to obtain the greatest number of written and graphic documents (drawings, pictures or 3D models), with which to document buildings objectively. Both traditional systems of measurement and state-of-the-art topographic instruments were applied during the fieldwork. The graphic documents were then turned into physical models, which are accessible to and adapted for use by people with handicaps.

The study stretches from the theoretical framework and background to the case study, in which the results obtained in terms of data collection, CAD modelling and production of accessible tactile prototypes are shown.

Moreover, within the theoretical framework of this survey, mention should be made of the need to provide access to cultural heritage in such a way that it can be enjoyed by persons who are blind or have some visual impairment but, at the same time, by all the other members of society, in concordance with the philosophies of Universal Design (Wolfgang & Ostroff, 2003), Inclusive Design (Clarkson et al., 2003) Keates & Clarkson, 2003) or Design for Everyone (Barnes, 2011). In this sense, this study focuses on aspects that go beyond orientation and the understanding of space by people with visual disabilities, one of the main problems this group of users has to deal with. Thus, this paper seeks to demonstrate how it is possible to show the contents of architectural cultural heritage to people who have difficulties to access it.

Inclusive Design, Universal Design or Design for Everyone is a design philosophy that promotes the integration, participation, use and enjoyment of environments, products and services by everyone, regardless of their physical, sensory or cognitive abilities.

Hence, tangible graphics (including cartographic maps, urban development plans, etc.) and tactile models are devices that are primarily used to make it easier for visually impaired people to access graphic and volumetric information, regardless of whether they are blind or have low vision, as is the case of many...