Multi-Media Archive of Historical Architecture

With funding from the European Union TEMPUS programme, four Universities have been working collaboratively to develop multi-media tools which help us understand the historical development of settlements and plan future developments which enhance rather than diminish the quality of the visual environment. The context taken for the collaboration was the historic region of Split on the Dalmatian stretch of the Adriatic coast.

The Universities involved in the collaboration are the University of Strathclyde, the University of Rome (La Sapienza), the University Polytechnic of Catalunya and the University of Zagreb.

The unique character of Split, catalogued by the University of Zagreb and the Split Institute of Urban Planning, owes much to the decision of the Emperor Deocletia to build his Palace on the coast south of Salona - which in the 4th century was the capital of the Roman province of Dalmatia. The Slav invasion of the 6th century drove citizens from Salonia south to Split to found a new city. After being dominated by the Byzantine Empire, Split then enjoyed free commune status, and subsequently became part of the Republic of Venice. After the fall of the Venetian Republic, the fortifications of the small city were demolished and the development of the modern city of Split began.

The relatively recent history of the development of Split has been dominated by other forces:

- In the period between the World Wars, Split became a major administrative centre and port.
- Since 1945 the nature and vigour of the urban development has been extraordinary - characterised by the prevalent architectural ideologies of each decade.
- At the same time illegal informal squatter settlements became established.
- The deterioration of the urban environment has been accelerated by insensitive industrial development and the pollution which it generates.
- Worst of all, the urban core and the architectural monuments which signify the historical development of Split have been allowed to deteriorate.

The task of recording the extraordinary historical development of the Diocletian Palace was the responsibility of the Polytechnic University of Catalunya. The researchers have uncovered a rich and diverse source of material and a variety of historical hypotheses in relation to the Diocletian Palace. The current authorities on the Palace are the brothers Marasovic, but visual hypotheses date back to the Scot Robert Adam. Earlier schematic representations exist; plans began to emerge in the 17th century. Three dimensional representations were first produced by Fischer von Erlach.

All of these hypotheses deserve to be captured, considered and compared. The problem is that they exist in different documents in a wide variety of formats and at different scales. The contribution of the University of Catalunya has been to deploy multi-media technology to capture the images which currently exist in widely dispersed paper-based sources and catalogue them within a single consistent computer environment.

The advantages of such a multi-media environment are:

- the creation of a virtual laboratory which can produce automatic 'call-numbers' to international library sources
- the ability to correlate and move between different orthographic representations of the same building, simply by clicking on one of the images
simultaneous display, at the same scale, from the same viewpoint of alternative hypotheses for the purposes of comparison.

To help protect the historical, cultural and visual qualities of the environments, the University of Rome has developed a computer-based method for environmental planning. The method, based on a comprehensive analysis of the characteristics of the region, allows all interested parties, professional and lay, to participate in strategic choices for improving the visual environment.

The method has five stages:

- to determine the visual sensitivity of each and every part of the region, separate grid maps, each dealing individually with an aspect of visual value, are compiled and conflated.
- features which detract from the visual environment such as man-made objects, infrastructures, industrial buildings, squatter housing and visual pollution are identified and evaluated.
- for every feature which detracts from the environment, an area of negative visual influence is determined.
- the outcome from these first three stages informs the important on-site photographic analysis of the key viewing parameter.
- the fifth, and most important stage orchestrates the participation of all interested parties in the exercise of 'strategic choice'.

The design options selected by the planning methodology proposed by the University of Rome can then be accurately visualised by computer graphics techniques developed at the University of Strathclyde.

The system known as CAVIA - Computer Aided Visual Impact Analysis - comprises the means for modelling, in a computer environment, terrain, vegetation and buildings in such a way that they can be combined to represent realistic images of planning and design proposals.

Computer aided design software allows the composition of computer generated images and the montage of these images on photographs of the site. Applications include the visual impact of simple structures in the rural environment, highly realistic visualisations of buildings on their site and advanced lighting effects. The Strathclyde software also allows animation of these simulations as a means of communicating the visual impact of the proposals to the general public.

The application of these techniques have been compiled into an animation sequence which attempts to convey to those concerned with the future development of Split how the modern city sits within the topography of the peninsula and how the current state of the Diocletian Palace, and its earlier manifestation locate within it.

The team from the four participating Universities are convinced that the Information Technologies, particularly Multi-media, have a crucial role to play in how we record and protect our architectural heritage. They are actively seeking funding to continue the collaboration.