

GUEST EDITORIAL PREFACE

Special Issue on Using Technologies to Preserve and Promote Cultural Heritage and Landscape

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INTRODUCTION

Landscape concept evolved considerably over the years and today is considered as the interaction between human activity and the environment in their mutual evolution in time and space. For this reason it appears as a living organism, with its own history and specific identity.

Landscape contains “footprints” left by past generations which lived and modified it, and it can be considered as a sort of huge living archive of our past. At the same time it can be viewed as the basement where daily actions of people living there take place building the future environment of the same populations. From another perspective, landscape can be considered as a synthesis of socio-cultural identity and natural resources of an area.

Consequently anthropic factors play a crucial role in landscape analysis and can be clas-

sified in two main classes: cultural heritage and recent artefacts produced by anthropic pressure.

While the former represents a strength for a region, the latter is undoubtedly a threat for the same area and it is the main cause of urban sprawl.

Land use conversion from rural to urban is one of the indicators that the European Union considers crucial to determine the quality of a territory, especially of landscape.

Phenomena which accompanied the transition to post-industrial society have occurred through socio-economic changes, which have strongly influenced urbanization processes.

Urban transformations have gone through different phases, alternating growth and reduction of settlement development.

In 1970s the theory of Counter urbanisation was formulated by Brian Berry (1977), interpreting and analyzing spatial components

of the reduction of concentration of population in cities and the increasing of peripheral areas.

In many European regions, abandonment of agricultural land produced a high concentration of people in densely populated urban areas. This phenomenon has been observed throughout the world. In 1950, only 30% of the world's population lived in urban areas. By 2000 that proportion rose up to 47%, in 2005 it reached 3.17 billion out of a total urban population of 6.45 billion (UN-Habitat, 2007) and by 2030 the estimated number will be around 60% (United Nations Population Division, 2001).

The process of suburbanization is considered as a process of decentralization of residences, businesses and other urban functions, outside the perimeter of the physical consolidated city (Fishman, 1987).

A very rapid industrialization and expansion of urban areas caused strong and sharp land cover changes and significant landscape transformations, which significantly impact local and regional environmental conditions. Nowadays, the increase of people concentration in densely populated urban areas is considered as a pressing issue in developing countries. For example, following land reform initiated in 1987, vast areas of China have been involved in a rapid urban expansion and a growth of new urban settlements (Cheng & Masser 2002), so that in a range of few years, several cities rapidly became big centres or regional nodes.

The analysis of city size distribution deals with different disciplines, such as planning geography, economy, demography, ecology, physics, statistics, etc., because the evolution of a city is a dynamic process involving a number of different factors. An issue of great importance in urban growth modelling is including spatial and temporal dynamics, scale dynamics, and man-induced land use changes. Although urban growth is perceived as necessary for a sustainable economy, uncontrolled or sprawling urban growth can cause various problems, such as loss of open space, landscape alteration, environmental pollution, traffic congestion, infrastructure pressure, and other social and economical issues. To face such drawbacks, a

continuous monitoring of urban growth evolution in terms of type and extent of changes over time is essential to support planners and decision makers in order to define a Sustainable Urban Development (Zhang & Yeh 2011).

This special issue deals with the use of spatial information and communication technologies to preserve landscape and promote cultural heritage. Great part of papers are based on landscape analysis, adopting quantitative methods or integrating spatial information with ICT (Information and Communication Technology), in order to promote sustainable management and governance of territories.

SPECIAL ISSUE CONTRIBUTIONS

Landscape is a central topic in several papers presented in this issue. The definition of landscape is not unique, neither among different disciplines, nor comparing international contributions. Authors of this publication are well aware of such an issue and therefore they interpret the concept in its broader and shared sense, as the meeting point between natural elements and the set of human actions and interactions. In this line we can highlight different contributions, addressing landscape as attributed to different spatial features and contexts, as well as cases. Furthermore, landscape is here often related to spatial planning, a common thought of the authors, being the fact that a better landscape knowledge can lead to more proper and efficient spatial analytical policies.

Environmental issues are tackled by Formosa *et al.*, in "Spatial Information Preparedness for Environmental Enforcement in the Maltese Islands". Here a Maltese system integrating the transposition of legislative measures, as well as ensuring free dissemination through the launching of an initiative based on Shared Environmental Information System (SEIS) is presented. The initiative appears very interesting in allowing in its most complete implementation the dissemination of spatial environmental data to a variety of potential users.

The paper “Open access to historical information for landscape analysis in an SDI framework” by Brumana *et al.*, features the potentials of geospatial data to access a historical digital atlas for landscape analysis and territorial government. Here an historical point of view is considered, as the portal developed allows the comparison of different data sources, from historical maps to ancient cadastral maps, to modern topographic maps, as well as the most recently acquirable UAV derived imagery.

Landscape is also addressed in its urban component, particularly in terms of urban margins, always a not easy topic to address. In “A complex values map of marginal urban landscapes: an experiment in Naples (Italy)”, Cerreta and Poli apply spatial indicators trying to represent the “third landscape” and the mapping of tangible and intangible changes. This is applied to Naples as a case study, and a Dynamic Spatial Decision Support System has been implemented to help the identification of complex values characterizing a marginal urban landscape.

Paolillo *et al.* present the paper “Classification of landscape sensitivity in the territory of Cremona: finalization of indicators and thematic maps in GIS environment”, where the attention is particularly drawn to analytical systems based on multidimensional analysis, synthesizing phenomena with a local interaction. The case of Cremona’s Urban Variant is presented together with a set of thematic maps realized to produce a set of six synthetic indicators, as i) insularisation of non-built spaces, ii) morphological / structural values, iii) perceptual aspects of the landscape, iv) permanence of the urban system, v) degree of imperativeness of environmental constraints, vi) integrity of land use.

As a support to landscape evaluation, although not explicitly stated in the paper, Romano and Zullo focus on “Models of Urban Land Use in Europe Assessment tools and criticalities”, where they examine available homogenous data on land urban conversion in Western European countries and determine

whether they are suitable to make an international comparison between land policies and management behaviour at the local level. The paper is valuable as it highlights criticalities in the uniformity and completeness of data at international level, particularly in terms of data production, which risks affecting the reliability of statistical analyses performed in such datasets at European level.

The paper by Peixoto and Moreira deals with the “Human movement analysis using heterogeneous data sources”. In this sense the paper is quite different from the previous ones; however it presents a cutting edge topic, such as that of analyzing human movements by means of a set of sensors that today allow tracking and tracing people and their behaviours in different spatial domains. A combination of sensors is analysed, in this allowing also indoor positioning, to-date one of the main limits of positioning given by satellite technologies of GNSS. The paper proves that coupling GNSS systems with other ones, usually available on smartphones or portable devices, allows a good approximation of individual movements, opening new scenarios for spatial analysis and business applications.

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