Introduction

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Papers included in this work come from research directly or indirectly related to the XIX ECTQG (*European Colloquium on Theoretical and Quantitative Geography*) biennial Conference, which took place in Bari, Italy, from September 3 to 7, 2015. The event was organized by the Technical University of Bari at the Italian CIHEAM (*Centre International de Hautes Etudes Agronomiques Méditerranéennes*) Institute in Valenzano, involving about 120 participants who presented nearly 150 papers written by more than 300 authors worldwide.
The Bari Colloquium was originally aimed at exploring aspects of quantitative geography particularly relevant to scholars of urban and environmental planning and management. The human, anthropological dimension of geography has always aroused interest and convergences for planning studies and activity (Hall and Barrett, 2012). Moreover, the economic dimension, especially in regional science, allowed the exploration of aspects more and more oriented to mathematical-formal and quantitative elements in the geographical milieu (Fotheringham *et al.*, 2000). Today, also boosted by environment complexity awareness, quantitative geography studies are attracting widespread interest to many domains of knowledge and areas of management and decision support, in which planning scholars are particularly involved (van Leeuwen and Timmermans, 2006). From multi-agent, GIS-based interaction processes, to the formalization of models of

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spatial behaviors and relations, to simulation processes, to the reflections on spatial cognition and axiomatic of living environment, the evolution of the disciplines related to planning is definitively influenced by the research on quantitative and theoretical geography.
The colloquium proved to be particularly prolific and interesting from this point of view, raising interest and success perfectly consistent with the path of all the previous editions of the important event. As a matter of facts, it was a new success for which the Italian and European geographic schools are particularly tributary to dear friend and colleague Giovanni Rabino, excellent, stimulating and passionate scholar of quantitative and theoretical geography. Unfortunately, Giovanni died recently without being able to see the publication of this work, which he strongly desired to help launch an independent arena of reflection and discussion on quantitative and theoretical geography. We will try to continue pursuing his perspective with the same passion that Giovanni has shown us, hoping to contribute, even in an inevitably partial way, to build his vision.
This work is dedicated to his memory.

Papers collected here are short contributions emerged after presentations and discussions developed in ECTQG2015 by each author. Despite their extension, papers are scientific reflections of good interest altogether. Some of them move along traditional research paths, enriching them with novel additions and interpretations, whereas others explore new and often innovative themes and formalizations, rich of interesting ideas and perspectives. The large majority of contributions is strikingly never reticent in front of a growing, embedded awareness of environmental complexity. Structurally built on remarkable transdisciplinary efforts, papers enhance the inter-domain research vein typical of the best geographical tradition, in Europe as well as worldwide

(Baerwald, 2010; Skole, 2004). In this context, reflections, considerations and results are in particular a rich patrimony of intriguing interest to scholars of spatial planning and management, structurally engaged in the *Friedmanian* process of transposition of spatial knowledge into action -to which such patrimony is fairly able to assign added value and significance (Friedmann, 1987). This geography-in-planning circumstance is then able to help participants to meet the major objectives of the Bari Colloquium original mission.
Following the above, it is clear that in a context of interdisciplinary reflection, any attempt at partitioning is adventurous and possibly ineffective. As happened during the Colloquium, also in this collection the division into sections was deemed necessary for mainly ordinative and contingent, not substantive reasons. In the present case, papers are collected in sections built on prevalent issues and themes, but with the sole purpose of facilitating the reading of greatly assorted and varied contributions. The reader is therefore advised to remember this reading key, so as to avoid running into artificial interpretative partitions that might diminish the significance and value of the reading.

Book one

A first group of papers focuses on the issues of mobility and transportation networks, with a particular interest on quantitative modeling. The opening paper of this section, by Cutini, Rabino *et al.*, uses Space Syntax theories and tools, in order to verify parking sites, in the Leghorn case study. Subsequently, Jacobs-Crisioni and Koopmans deal with Transport Link Scanner, a GIS-based model for transport modelling applied in a Dutch case study. Next, Bouzouina *et al.* analyse how the mobility can shape territories, using graph analysis and geovisualisation methods on mobility Census

data in Lyon. The final paper of this section, by Langford *et al.*, describes how public transport availability and frequency can be incorporated into floating catchment area (FCA) models to evaluate the access to health care facilities within South Wales, UK.

The second section includes contributions dealing with spatial economics, with some emphasis on urban contexts. Vavatsikos *et al.* propose a GIS-based methodological framework that allows both private and public sector organizations to obtain property price estimations in the case-study of Xanthi, Greece. In the second paper of this section, Manika and Gospodini investigate the driving economic forces and the negative impacts of urban shrinkage in Greece and especially in the case study of Larissa. Finally, Lennert's paper shows the results of ongoing experimentations on the economic specialization and openness to trade of regions, using point data instead of the classic regional aggregations.

The third section deals with spatial cognition subjects, particularly in terms of modelling attempts. The paper written by Omer aims at clarifying the perception of various street network effects on aggregative movement patterns, through agent-based simulations. Next, Pluchinotta *et al.* focus on collective decision processes on water issues and develops a system dynamics model exploring how policies can influence interactions in agricultural water management of Apulia (Italy). The third paper by Esposito *et al.* looks at space ontology as an approach to model human agents' spatial cognition to shape and characterize an urban street, in the case study of Bari (Italy). The paper by Bordogna *et al.* discusses the role of spatial data infrastructures for creating and sharing volunteered geographic information on the Internet, thus achieving interoperability among different information sources. The final paper of this section, by Gerundo and Grimaldi, aims to strengthen the

understanding of the spatial and temporal dynamics of urban form, using GIS-based fractal analysis, in the case study of Naples hinterland, in Italy.

The fourth section focuses on different perspectives of urban geography. The starting paper by Frémond aims at defining and assessing different scenarios of residential growth in Luxembourg toward 2030, simulated through MUP-City software, using accessibility and daily mobility indicators, obtained via the LUTI platform MobiSim. Subsequenlty, Gerundo *et al.* deal with the organization and spatial distribution of facilities and services, by developing a GIS-based spatial index built on population and influence area indicators, applied to the case study of the Ancient Volceij planning process (South Italy). The third work by Santini and Pecori aims to implement a KDD (knowledge discovery in databases) analysis performed with data mining tools able to find some relationships between quantity and quality of produced waste and different characteristics of population, for educational actions. The purpose of the final paper by Toure *et al.* is to develop and test land use and land cover change techniques when only Landsat imagery is available for the first date and high spatial resolution imagery is available for the second, in the case study of Accra, Ghana.

The concluding section of this volume is named Intersections, following Plurimondi's tradition to grasp works that are somehow at the crossroads of approaches, themes and/or disciplines. In the first paper, Piccoli Neto and Perez Filho discuss the creation of isobases to reconstitute paleolandscapes, to understand geomorphological, climatic, environmental processes using the case study of a watershed reconstruction in Brazil. Therefore, Doignon *et al.* aim to study the spatial dimension of the convergence of population aging, using Markov chains in some southern Europe case studies (Portugal, Spain, France, Italy) from 1998 to 2013. In the third paper,

using broadband remote sensed satellite imagery, Tuholske *et al.* map and measures the change of landscape in Roatán, Honduras, during recent decades of massive growth of tourists and population, to show the serious implications for the island's marine and terrestrial ecosystems, tourism sustainability, and public health. Beauguitte's paper examines States and non-govermental organizations geopolitical strategies at the Human Rights Council (resolution sponsorship, statements). Finally, Partanen carries out an epistemological discourse on complexity and its relevance to city phenomena and organization, aiming at proposing a coherent epistemological frame, substantial structural realism, for complexity studies.

Book two

In the second volume, a first group of papers focuses on the issues of mobility and transportation networks, with a particular interest on quantitative modeling. The opening paper of this section, by Fusco *et al.*, analyses the mobility of the city of Nice (France), in order to single out morphological parameters to explain the observed distribution of small and medium retail activities. Subsequently, Lunardi tries to understand individual stakeholders' mobility strategies, using game theory modeling and simulation. Next, Giannopoulou *et al.* explore parking supply and demand in a rapidly changing urban environment, using GIS technology. In the fourth paper, Casini and Cutini present data from a survey carried out on Italian port authorities testifying a huge backwardness in the collection and organization of data, which prevents effective processes of spatial planning or strategic environmental assessment. The final paper of this section, written by Raimbault's, uses an algorithmic systematic approach to

analyse territory-network interactions in literature devoted to urban and transportation growth models..

The second section includes contributions dealing with spatial economics, with some emphasis on urban contexts. Harchaoui's article tries to highlight how geography can assist the geopolitical researcher while analyzing modern war issues. In the second and last paper of this section, Lopez-Carr *et al.* compare spatial, econometric and statistical models to figure out food security patterns in Accra, Ghana.

The third section deals with spatial cognition subjects, particularly in terms of modelling attempts. The paper written by Lai and Lombardini explores the connection between the loss of agriculture, natural and semi-natural land generated by human development ("land-taking" processes) and spatial planning at the regional scale, in a policymaking perspective. Next, Lai and Zoppi analyse land-taking processes over two time periods, 1960-1990 and 1990-2008 in Sardinia (Italy), so as to investigate if the main drivers of land take bring about similar, or different, effects in the two periods. In the following paper by Lombardini, the system of high values of coastal landscapes (quality landscapes, ecosystem services, concentrated presence of resources) is compared with the conditions of risk and degradation, in order to build up maps of vulnerability and resilience. The final paper of this section, by Stufano Melone *et al.*, tries to interpret places through place perception, by looking at the work of spatial agents in geographical places, using different paradigms, through an ontological approach for modelling purposes.

The fourth section focuses on different perspectives of urban geography. In the starting paper by Fusco *et al.*, a Bayesian network and a possibilistic network are used to compare trend scenarios of social polarization in the metropolitan area of Marseille (France). Subsequently, Calafiore and Dansero show the case study of the University

of Turin, whose initiatives and policies aimed at strengthening its role in the city are evaluated, by particularly looking at the role of VGI systems in University crowd mapping. The third work by BinTouq and Ijeh assesses the spatial and location-based online client services access to public participation and provision of voluntary geographic information, in the case study of Dubai (United Arab Emirates). The paper by Lucchini *et al.* is an attempt to understand the scale of change in the city, the citizens' appropriating space and their sociability parameters in the city, via a study of the deployment of major sporting and cultural events, using data provided by mobile phones. Then Agbossou proposes a fuzzy cognitive maps (FCMs) driven approach for geocomputing urban dynamics (social, spatial and temporal) as a complex system. The final paper by Pontrandolfi and Cartolano explores possible regional scenarios of stability for management and planning actions, through the identification of supra-municipal areas where strategies can be inherently connected with the local development in such a way that planning policies can really take place.

The concluding section of this volume is named *Intersections*, following Plurimondi's tradition to grasp works that are somehow at the crossroads of approaches, themes and/or disciplines. In the first paper, Mwenda *et al.* explore how population estimates in three Tanzanian districts might vary with the utilization of fine-scale population estimates, benefiting from the application of multiple realizations of gridded population instead of using coarse values. Therefore, Queyroi *et al.* investigate the relevance of community detection methods from a thematic and a geographic perspective when applied to a network of co-citations in newspapers international RSS flows. In the third and final paper, Caradonna *et al.* discuss methods for collecting raster data by processing open satellite data aimed

toward retrieving indicators for desertification, then a prototype is created for disseminating geospatial raster results through an interactive WebGIS.

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This Plurimondi issue with its original ECTQG2015 event are the inestimable result of a serious and relentless work carried out by a number of volunteers, against all inevitable adversities and obstacles that unpredictably end up affecting such initiatives.

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