Preface

ECONOMY, ENVIRONMENT, SOCIETY

The traditional “conflict” between “economy” and “environment” has evolved over time in a “concordance,” due to the arising concept of sustainable development. All actions that dissipates environment are not economically rational.

At the same time the economy has changed, and its measures have taken on different meanings (Stiglitz, Sen and Fitoussi, 2010), especially oriented towards the sustainability of life, rather than towards the traditional welfare theories.

The spatial-economic analysis is not a new disciplinary practice, but is continually renewed in environmental and social sense, representing continually varied descriptions of the world, and new points of view and new methods, as regards their spatial dimension.

The concept of sustainable development is in fact to-date completely inserted into such idea, in terms of its aim at coupling its three pillars as economy, environment and society as parts of a common picture. The definition of a development meeting “the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987) implies a series of concepts as intergenerational and intra-generational equity. The first one refers to the need to manage present resources in order to allow future generations to meet their needs, while the second one aims at reducing differences in resources allocation between people in a same timeframe, thus recalling the need to tackle issues referred to differences in development between industrialized and developing countries. A third element is time, as sustainability involves a care of the future and therefore to plan an evolutionary path of development, that therefore should be inserted in models (Murgante, Borruso and Lapucci, 2011). A fourth element we could add, and that to some extent is already present in the ‘equity’ term, is space, as the evolutionary process above highlighted happens in space, with different characteristics occurring in its different ‘subsets’ as the regions we live in.

The concept includes three legs as ecological protection, economic efficiency and a social dimension or social justness. With respect to the first element, ecological protection, sustainable development initially required natural resources’ stock does not decrease in time (Odum 1989, Pearce 1989, 1990), while in a second more recent time the concept evolved in that of ‘carrying capacity’, that implies considering environmental criteria into spatial development choices, rather than fostering pure protection policies Nijkamp 1990 1994, Nijkamp and Archibugi 1989, Pearce 1991, 2000). Economic efficiency and social dimensions are also relevant, particularly in terms of exploitation of resources, to be managed at intra and inter-generational levels, taking therefore in good care also the social justice connected to
them (Sen 1992, Serageldin et al. 1995, Zamagni 1994). The use of resources must in fact allow reaching economical performances as growth, efficiency and stability, however coupling with poverty, equity and culture. As recalled by Giaoutzi and Nijkamp (1993), a sustainable development is capable to integrate, settle and balance these three factors: social justice, economic utility and environmental integrity.

Who owns the environment? Who has the right to own its resources and manage them? How to inform the owner community of the environment? Answering these questions represents the node to be solved to give a sense to the concept of Environmental Democracy. What has this got to do with the concept of Geographic Information?

Environmental democracy is universally defined in the Aarhus Convention as “the right of all involved parties to participate in decision making affecting the environment.”

This right is exercised through the ownership of information and democracy.

The concepts of ownership of the environment and property information help the analysis of spatial plans in a modern sense, helping to give a spatial meaning to a new system based on actions-economy-environment. Such triple relationship is the crux of a multilevel planning and multi-actor system, in pursuit of sustainable development. The big surprise is that the issue of “rightful ownership” of the environment can not be discounted in a single answer. The description of the environment is not unique, and different descriptions of the environment are not equivalent.

THE CONTRIBUTIONS OF THIS VOLUME

Cultural Heritage

Admitting that there are no equivalent descriptions (Munda, 1997), environment is to acknowledge implicitly that most of these descriptions cannot automatically converge on a single point of view, so multidimensional methods trying to support the convergence of several points of view, or of abundant information, develop. The geographical analysis of property and the environment is necessarily a multidimensional measurement, based on a “complex values” (Fusco Girard and Nijkamp, 1997) that counterbalance the traditionally shaped economic and environmental values. This contrast is discussed in the contributions which refer mainly to the value of cultural heritage, as told by Sepe; Pirlone, Sotgia, and Spadaro; Rocca, Chiabai, and Chiarullo. Sepe proposes the PlaceMaker method for detecting elements that do not fit into traditional mapping and which constitute the contemporary identity resources of the places. Pirlone and her coauthors set specific indicators to knowledge-making about the historic center of Genoa, to simplify a security project to avoid damages caused by hydraulic risks. Finally Rocca, Chiabai, and Chiarullo speak about ISAAC (Integrated e-Services for Advanced Access to Heritage in Cultural Tourist Destinations) that is a research looking for innovative forms of participation by taking advantage of the potential of the New Technologies for Information and Communication (NTIC) to support and promote e-governance processes for managing cultural heritage.

Geosimulation and Sustainable Development

Authors argued for long time on the issues concerning the integration of the different models into the concept of sustainable development. As recalled by Guhathakurta (2003) and recently reinforced by
Murgante, Borruso, and Lapucci (2011), two separate domains of knowledge evolved, on one side these including urban and economical ones, while on the other side environmental ones evolved separately. The two ‘families of models’ have in common the limited capacity to follow the rules of testing and accuracy characterizing the physical models. Social scientists generally rely on models producing initial insights to the objects examined and focusing on a subset of its attributes, while environmental models were mainly focused on non-urban / non-artificial subsets of the environment. To-date such aims become closer and converge, helped also by the debate over sustainability that pushed the two sides to meet and evolve.

In these terms we can consider some of the contributions of this volume. In particular, Alarcon tackles the problem of hydrological modeling by using physiographic and meteorological datasets, derived from remotely sensed imagery from different sources. Andriamasinoro interrogates on how dynamic sustainable development indicators may be spatially represented in a generic spatial-integrated socioeconomic model (SISM), which means trying to spatially representing the temporal evolution of the indicators by itself and also of exporting the temporal evolution of the spatial state of the model as a (new) map in a GIS environment. Imbrenda, D’Emilio, Lanfredi, Ragosta, and Simoniello work is in the direction of highlighting anthropic factors causing land degradation vulnerability. They define an index of land degradation vulnerability based on census data crossed to land cover ones in order to rely on micro areal units to spatially characterize a vulnerable area.

Urban Shape and Sprawl

The debate between urban and social models on one side and environmental ones on the other side of course involved also the urban metaphor. Urban models – particularly in the past - generally rely on elements as economic and spatial interaction with little attention on ecological dynamics, although to-date authors cannot avoid coupling the two sides of such an issue, therefore both focusing over urban shape and functions and on the other side dealing also with environmental issues and dynamics. In such sense, La Greca, La Rosa, Martinico, and Privitera focus on land cover analysis based on land use maps and oriented to assess evapotranspiration degree of the different land uses. This is done considering the city of Catania (Italy) as a case study, where sprawl dynamics affect dramatically the environment in terms of the loss of evapotranspiring surfaces and vegetated soils.

There is still the occasion for a debate over the concept of distance, in terms of the two-dimensional urban sprawl. Martellozzo and Clarke reflects on the definition of urban sprawl, proposing a measure and quantification of the urban spatial dispersion, particularly in terms of the spatio-temporal patterns of urban form in a study area noted for sprawl, focusing on measures that can detect the degree of urban spatial dispersion over time.

Bencardino continues in this line of research activity, proposing an analytical-descriptive method based on the geographical-territorial analysis of the urban fabric identifying clusters of indicators of urbanity, for reaching a definition of the urban shape and space.

Real Estate Values

In general, the volume mainly repeats the logic of the revision of the space through the information that describes it. The revisiting is done through the use of the methods, through the use of guiding concepts that were not present in the past.
The chapter by Torre and Oliva investigates the connections between real estate values, social values and identity, relating that to the concept of distance from some central, reference point. The concept of distance is seen in a two-dimensional space with New York as the chosen arena for such demonstration. At the same time, we try to treat in an innovative way the concept of distance, as in the chapter by Pagliara and Preston who relate the railway distance to the real estate market.

The multiplication of skills in the area means that the outcome of environmental policies is often a mirror of the power relationship between the different makers, all agents in the name of the community; this joint is derived from the “non-equivalence” of different forms of treatment of an environmental problem.

In the environmental field, however, the possibility of treatment according to different forms of environmental conflict may constitute evidence of the explicit forms of “loss of collective economic rationality.” The existence of a unanimous rationality, able to balance efficiency, effectiveness and fairness in collective decisions has been widely denied by Kenneth J. Arrow (1951), in his ancient, famous, so-called “impossibility theorem.”

**Analyses of Geographical Environment**

The analyses of geographical environment, as supporting choices, must somehow reconcile the non-convergence of the visions of many public entities that are operating in the name of the community. Analysts should start from the awareness of a total typical inability, by the same public entities, in reconciling their points of view in a pluralistic context. The effort in this direction is described by Congedo, Baiocco, Brini, Liberti, and Munafo, who talk about the Italian national environmental agency (ISPRA) effort to use Web-GIS in order to disseminate environmental knowledge. Furthemore, the contribution by Fichera, Modica, and Pollino, that - reasoning about effect of earthquakes - use the Remote Sensing in order to discover the linkage between the plurality of human actions and land coverage change.

To broaden the scope of democracy, information must reach the evolution of the concept of “involvement” in the management of public goods: from this point of view a famous article by Garrett Hardin (1968), entitled “The tragedy of the commons,” marked a turning point.

Environmental resources are included in such category, as they are scarce, shared, capable of running out in time, particularly because they are owned by everyone and no one is directly responsible for managing them - as precisely the commons. Among these, the water commons stand out, common good, the energy landscape. The increase of the availability of analysis favors the involvement first invoked.

We talk about welfare stakeholders, as those stakeholders that do not coincide, in the most general case, with that of the entire community. The term stakeholder is a century old, referring to the American pioneers. They were in search of new lands ventured into real events told in movies, in which those who arrived first to plant a stake on the ground acquired the right to own it. The term that translates pole is in fact “stake.” So the concept of stakeholders is linked to that property, however, understood as private property of a soil, a property of a project.

A soil can be seen either as an agricultural landscape, or as a pedological layer, or as a platform of pasture, or as a morphological trait, and so on. The value associated with each of these interpretations depending on the decisions to be taken, and then those who find it difficult to determine, change, but the soil in its environmental identity is always the same.
Landscape

The concept of environmental democracy widens the field: the soil, the property is of stakeholders, but the environment, the landscape representing the environmental description of that property is to the whole community. The consumption of soil and its measures are the sign of the economic trade-offs among urban income and economic environment. The trend of such trade-off is discussed in the contribution of Sdao, Sivertun, Sun, Albano, Pascali, and Giosa. The contribution proposed by Mauro investigates a peculiar category of soil consumption, referring to croplands’ reduction in the external urban belts.

Geostatistics

Next to new issues emerge, new approaches to application experiences consolidated, old and new problems instead are investigated with geostatistical methods. Topics are referring to spatial clustering techniques over large datasets, therefore extending data mining applications to spatial extents (Schoier), and the applications spans from the analysis of migrants and non native distribution over a country (Montrone and Perchinunno), to the analysis of insurance’s choices distribution over space (Millo and Carmeci), to the analysis of health care characteristics from the spatial point of view. In this latter sense, Bertazzon and Underwood compare different spatial statistical methods applied to cardiac disease distribution, while Elikan is focused on population accessibility to health care structures and services.

Frontiers: Wiki, Geovisualization, Real Time Detection

New frontiers deal with some aspects related to participation, multidimensional visualization and (spatial) data structures and characteristics.

Today 2.0 information technologies undoubtedly represent the most important media. Murgante reminds us that the main innovation is the transition from a one-way approach where citizens are only informed, to a two-way approach where citizens can express their opinion in a wiki-way, where a strong interaction among citizens can lead to a production of important ideas and opinions substantially influencing choices. Spatial and economic planning can be heavily influenced by this change in the paradigm.

‘Traditional’ cartographic elements are now being coupled by advanced methods of visualization. This is what Cascelli, Crestaz, and Tatangelo present when they talk about geovisualization groundwater modeling, which is considering both the aspect related to the presentation of 3D data and also to the data structures involved in that.

New data infrastructures are certainly interesting in the first part of the third millennium, in particular in terms of the relationship between web and spatial information, the “real-time detection.” ‘Real time data’ as well as the possibilities offered by data taken ‘from the ground’ continuously and not only by means of statistical, official sources, are of paramount importance and interest. More in detail, the real time detection of mobiles phone sources (processed by Manfredini, Pucci, and Tagliolato) can modify in some way the existing idea of supporting analysis and evaluation, opening new places for continuous monitoring, which can substitute typical spatially correlated models. All these ideas intersect old disciplines and new issues information, applicable in the analysis of flows, behavior and territorial dynamics.
REFERENCES


