

AN INSPIRED SYNTHESIS. "ECOLOGY & SUSTAINABILITY OF TERRITORIAL SYSTEMS: CONCEPTS & PRINCIPLES"

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Ecology & Sustainability of Territorial Systems: Concepts & Principles

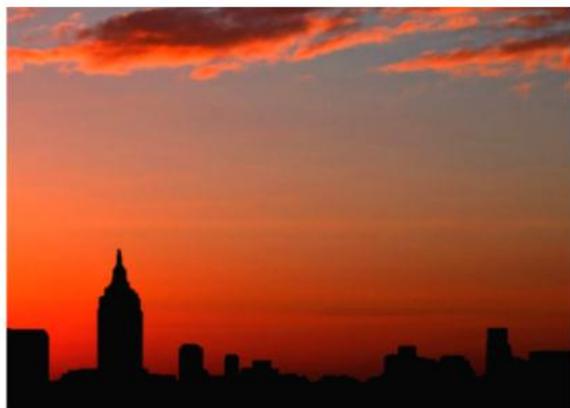
Alexandru-Ionuț PETRIȘOR; Ars Docendi, 2016, 140 p.

ISBN 978-973-558-905-9

DOI: <http://doi.org/10.23740/TID220176>

INTRODUCTION

In an increasingly complex and highly connected world, more and more exposed to globalized challenges, there is an obvious need for a holistic perspective on territorial systems that should transpire in the process of decision-making in both territorial administration and spatial planning. It was stated, by many authors, that systems thinking is a comprehensive framework for the complexity of economic, social and ecological systems (Holling, 2001; Bănică, 2010; Petrișor & Petrișor, 2014).



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In this context, dealing with territorial transformations means addressing the challenges induced by the inherent complexity and multidimensionality of these systems that requires an integrated approach, in order to obtain both concise and comprehensive final judgments (Ferreti *et al.*, 2014). One should apply a multidisciplinary systemic perspective in order to be capable to assess the interconnectivity of ecological, social, economic and consequent policies issues across temporal and spatial dimensions (Williams *et al.*, 2017). By applying systems thinking, sustainability management researchers are able to identify the points at which a system is capable of accepting positive change and the points where it is vulnerable (Holling, 2001). Here, a fundamental role is played by the social-economic subsystem that can induce qualitative and quantitative modifications of the

environment and take conscious appropriate/inappropriate actions of spatial planning in order to tackle and diminish natural and human induced disorders (Ungureanu, 2005; Bănică, 2010).

This is the general framework for the multitude of topics introduced by the book "Ecology and Sustainability of Territorial Systems: Concepts and Principles" written by Alexandru-Ionuț PETRIȘOR. Often used instead of "sustainable development" – a very much debated concept even today, 30 years after the Brundtland Report (WCED, 1987), sustainability is a conceptual instrument to reconcile social and economic activities with the long-term resilience and regenerative capacity of ecological systems (Sneddon, 2000). Both 'ecology' and 'sustainability' are able to provide for spatial planning, at any scale, a well-rounded systemic perspective. Therefore the volume presents a broad interest especially in the context of the seldom narrow vision and limited sectoral approaches of territorial assessment and planning in Romania and in many other countries.

Originally specialized in ecology and later, complementary, in geo-statistics, spatial planning and geography, the author, Alexandru-Ionuț PETRIȘOR is a well-known university professor and researcher with an extremely fruitful activity which resulted in a high number of articles, books, participation in conferences, etc., also holding managerial position in different academic institutions and professional associations. Many of his achievements are related to the study of environmental issues seen from a systemic perspective.

This approach is not new and it is linked to the fundamentals of general systems theory. Although the book is in English and has a very broad, international perspective, it also relates to Romanian backgrounds by citing the works of Angheluță Vădineanu or Ioan Ianoș from Bucharest University. Meanwhile, if only taking into account the geographical literature, one could have added many other references that founded the systemic thinking in territorial assessment, starting, in a preparatory stage, from the founder of Romanian modern geography, Simion Mehedinți, to George Vâlsan and Vintilă Mihăilescu, and continuing with the more applied (operationalized) approaches of Irina Ungureanu and Ioan Donisa from "Alexandru Ioan Cuza" University of Iași, or of I. Ujvari and Ion Mac from "Babeș-Bolyai" University Cluj-Napoca, etc. Such a review, also including the more recent approaches of younger researchers, can and should be done, but this is not the purpose of the current book that is reviewed here. In fact, a comprehensive critical assessment of the more recent literature regarding the integration of systems theory within the concept of sustainable development has been already published, in collaboration, by the author (Petrișor & Petrișor, 2014).

Nevertheless, the terminological discussions within the book highlight a certain "conceptual competition" between ecological and geographical approaches that could also be seen as a possibility of transferring knowledge by interdisciplinary approaches, which results in improvements and other real benefits for both disciplines and, generally, for the society. The common purpose is to promote an integrated vision highly necessary in order to understand and manage the present environment.

The book written by Alexandru-Ionuț PETRIȘOR has an essential function: to inform at a basis level and to state conceptual milestones based on numerous references. In fact, the bibliography listed at the end of the volume is highly consistent, multidisciplinary, and shows a very high level of information and a thoroughgoing study of the proposed topics.

One can consider the volume as a synthetic handbook, extremely useful to scholars and practitioners from various fields. It is structured in four chapters followed by conclusions, references, and an appendix.

STRUCTURE AND CONTENTS

The 1st chapter introduces systems theory from the viewpoint of an ecological approach. Nevertheless, the discourse broadens afterwards and it is expanded towards social-ecological systems. Basically, ecology refers to the various fields of study of the relationships between organisms and their environments (Lejano & Stokols, 2013). One of these fields is systems ecology that has become an important ecological sub-discipline. It applies ecological models, uses ecological engineering and ecological indicators, and quantifies ecosystem services (Jørgensen *et al.*, 2016). Moreover, including society and the anthropic environment in its area of interest and assessment, and explaining their structure, functions and behaviour by ecological principles, has given to ecology a very large space for development, leading to impressive results that are underlined by the author.

The 2nd chapter applies the systemic theoretical background in a brief but comprehensive analysis of settlements seen as ecosystems. It is a compendium that shows the terminological evolution from ecology in cities to ecology of cities, to human ecology and urban ecology, the latter being now considered mainstream in ecology (Wu, 2014; Pickett *et al.*, 2011). Cities are simplified ecosystems with lower biodiversity, but, meanwhile, they are much more complex if also having in view the social-economic environment. Paradoxically, although seen as simplified environments, they are also adding new components that increase complexity, but that are operating according to laws which are different from those of the natural environment (being coordinated by human decision-making centres, whose resorts are determined by different principles that are more difficult to predict).

Finally, the transition towards urban planning theories and spatial analysis highlights a certain difference between social and ecological systems (e.g. the dissimilarities between urban fringe and ecotone).

The 3rd chapter is complementary to the previous as it introduces new themes, such as environmental crises and sustainable development that affect social-ecological systems. Certain aspects linked to environmental awareness of degradation processes are discussed (pollution, loss of biodiversity, fragmentation of habitats, and introduction of allogenic species, genetic manipulation, and large water infrastructure works). Further, the concepts of sustainable development and, consequently, sustainability are introduced. An interesting individual contribution is provided by the author when defining spatial sustainability as "development providing for a territorial balance of satisfying at the same rate the economic, social and environmental needs of present and future generations" (WCED, 1987).

Even though such a balance is difficult to be achieved, aiming at socio-economic coherence while maintaining ecological and cultural functions, it becomes an important objective for territorial decision-makers at all spatial scales. At the European level, aiming at sustainability is reflected by two concepts well discussed in the book: polycentricism and territorial cohesion. After a short excursion through the topic of protected areas, the chapter also introduces the issue of human impact and ecological restoration by two short but comprehensive insights showing the types of impacts and techniques of (sustainable) restoration.

The last chapter is distinct from the others as it also introduces numerous case studies in order to exemplify different drivers of change in the contemporary world. The examples of methodological approaches are based on the author's experience in the research field and in planning practice. Climate change challenges are the first complex issues to be addressed,

having in view especially the impact on natural biodiversity and agriculture. Vulnerabilities and the induced risks are discussed in the case of the Romanian territory and of the Romanian part of the Tisza River Basin. Secondly, land use changes and the following consequences are analysed in five case studies at different spatial scales. In addition, the effects on energy flows are discussed in a different sub-chapter in an integrated manner. Finally, the utility of Geographic Information Systems (GIS) both in research and as a planning tool is addressed in a theoretical and also in a methodological approach, taking into account a simple indicator (population) and different representation techniques in GIS.

FINAL REMARKS. CONCLUSION

The volume as a whole is rather heterogeneous, as a collection of different topics, not always directly linked. But that was also the author's intention: enabling a certain modularity – as all chapters were designed to be readable as autonomous studies. The volume is the result of an extensive work on several distinct research areas, being, in this regard, a summary and including excerpts from the author's various papers.

The fact that it is written in English makes the work more accessible and visible at the international level. Meanwhile, one could suggest a translation into Romanian (or a bi-lingual version of the book), so that the Romanian authorities and public could have direct access to the conceptual framework discussed above.

The book is well illustrated by a number of 30 figures, some of them made by the author. Each sub-chapter is preceded by a short summary that highlights the main ideas. There are also conclusions at the end of each chapter that point out the outcomes, relevance and implications of the ideas that were put into discussion for the use of practitioners in the planning field.

"Ecology & Sustainability of Territorial Systems: Concepts & Principles" by Alexandru-Ionuț PETRIȘOR is a good synthesis and theoretical/conceptual introduction into environmental planning, therefore a highly necessary book in the Romanian and international context, that aims at and succeeds in contributing to accomplishing the author's goal of "developing an integrated, systemic approach in both territorial research and planning" (Petrișor, 2016, p. 122).

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