

level, differences are found at the subnational level especially the North-South divide.

Ch. 11 is the only paper in the volume that examines the urban-neighborhood scale. Using data from Canada (Toronto, Montreal and Vancouver), the study finds difference in attraction of knowledge-based industries to particular urban form settings. Whereas creative industries tend to locate in dense mixed use inner neighborhoods where inter-firm networks flourish, science-based industries that rely on intra-firm interaction and learning prefer to concentrate in low-density single-use suburban neighborhoods.

As the reader may well understand, there is very little common thread across the different chapters, thus as I mentioned above, the book heavily maintains the style, form and allure of the original special issue. In this sense the editor and authors I believe missed a remarkable opportunity to attract new and unfamiliar readers to this exciting field.

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COMPUTATIONAL APPROACHES FOR URBAN ENVIRONMENTS,
 Edited by Marci Helbich, Jamal Joker Arsanjani & Michael Leitner. Berlin: Springer
 International Publishing, 2015.

In the past few decades, with the advances in computers and their applications, the field of geography has become significantly more "computational" in its approach. Today, Geographical Information Systems (GIS) is, in most cases, considered a fundamental and vital tool for current research. Nonetheless, increased availability compounded by the complexity of geospatial and spatiotemporal data demand ever more complex methods. This book provides novel geo-computational examples and methods used in recent research providing a better understanding of the complexity of urban environments.

The book contains 16 chapters divided into five sections, each presenting a different area of research that deals with urban environments: Section 1 is dedicated to spatial planning and decision-making; Section 2 focuses on housing and real estate; Section 3 deals with urban transportation and mobility; section 4 is focused on remote sensing; and Section 5 is devoted to urban sensing and social networks. The editors rightly claim that, while the book is divided into sections, the boundaries are not rigid and, in some cases, overlap. While one can question the editorial choice in this partitioning, in most cases I found it helpful. I further believe it can provide an easy starting point for readers that are interested in a specific field. The main concern in approaching such a mixed set of studies is that the reader will, most

likely, be unfamiliar with some of the research fields' terminology or methods. I believe the editors were aware of this and most (but unfortunately not all) chapters are structured with a sufficient introduction to allow adequate understanding of the specific field of study.

The book opens with an editorial that presents the editors' main objectives and the structure of the book. The first section is devoted to spatial planning and decision making and includes three chapters. The first chapter in the section (Chapter 2 by Pierre Frankhauser), utilizes fractal geometry in suggesting better urban planning that can satisfy social demands while reducing car use and preserving natural resources. The chapter provides a good review on fractal geometry and its possible uses in urban planning. Chapter 3 (Martin Behnisch & Alfred Ultsch.) suggests methods for knowledge and patterns discovery in multidimensional spatial data. The chapter is coherent and well written with excellent infographics, but it seems that the results displayed are mostly achieved by prior knowledge of the area rather than being a good example of knowledge discovery based on spatial data. The last chapter in this section (chapter 4 by Julian Hagenauer) discusses algorithms for clustering of spatial planning. The chapter lacks a proper introduction to the field but does provide an interesting theoretical and real-life example of its possible uses.

Section 2 deals with housing and real estate and includes three chapters. The first chapter (Chapter 5 by Alexander Razen et al.) opens this interesting section with a spatially oriented hedonic pricing model that uses a three level spatial resolution: an individual house level; a municipal level that allows access to socio-demographic data; and, a district level that provides spatial analysis between neighboring districts. In Chapter 6 (Shipeng Sun & Steven Manson) a simple, but interesting, agent-based model on intra-urban migration is presented. The chapter is well written and provides a good introduction to intra-urban migration dynamics. The authors validate the model using migration origin-destination pairs collected using tax parcel data and show that a simplistic agent-based model can provide accurate insights. Chapter 7 (Timothy Rosner & Kevin Curtin), the last chapter in this section, focuses on urban diversity. The authors' attempt to quantify four generators of urban diversity described in the book *The Death and Life of Great American Cities* by Jane Jacobs: Dwelling density, block length, mix of building age, and mix of uses. The authors provide an additional generator, the "Livability Index", that, perhaps a bit too simplistically, sums the four generators. While I do think the chapter is an important step in shifting from pure theoretical concepts to a more quantitative approach, I think that a validation of the generators, to show the validity of the indexes, would have been an important addition. Overall the second section of the book is quite good and, as a non-expert in real estate, I found it enlightening.

The third section deals specifically with urban transportation and mobility. This short section includes two chapters. The first, Chapter 8 (Godwin Yeboah, et al.), deals with cycling in urban environments. The chapter investigates a 7-day GIS data log from 79 utility cyclists around Newcastle, England. The chapter focuses

its analysis on the differences between male and female subjects and route choice analysis. The chapter provides some interesting methods to determine route choice, however the small sample sizes can provide significant bias if the cyclists selected for the study have different origin-destination distribution or different activity patterns. Chapter 9 (Rashid A. Waraich, et al.), the second and last chapter in the transportation section, is dedicated to performance improvements in MATSim (Multiagent Transportation Simulation). While personally I found the chapter informative, I believe that unless the reader is a transport simulation expert he/she will not find any specific interest in it. In general I found the transportation section to be the weakest section in the book. I believe transportation is a well-developed research area, specifically in a computational urban approach, I would have preferred to see some more interesting or novel approaches in this section.

Section 4 is dedicated to remote sensing and includes three chapters. Chapter 10 (Konstantinos Karantzalos), the first chapter in the section, reviews advances in detection of changes to urban environments using remote sensing data. The review is well written and provides an excellent introduction to the section. Chapter 11 (Christian Berger et al.) presents a study about the use of hyperspectral and LiDAR (Light Detection and Ranging) remote sensing data for constructing a microclimate model. The study includes three main steps (i) data collection, (ii) material classification in the study, and (iii) microclimate modeling. The chapter goes on to show the use of the model in predicting microclimate changes with different fabricated construction scenarios, demonstrating the potential uses and importance of the model in planning. Chapter 12 (Junmei Tang) closes the section with a study that integrates socioeconomic data with remote sensing data for land use change detection using cellular automata (CA) modeling. The chapter compares two CA models, one has only remote sensing data and the other is a CA model with added socioeconomic data. The study and its results demonstrate the strength of prediction of some parameters while using socioeconomic data and the strength of prediction of other parameters when excluding the data. Overall, the remote sensing section is an interesting one that can provide insight even to non-remote sensing readers.

The last section is dedicated to urban sensing, social networks and social media and includes three chapters. The first chapter (chapter 13 by Yaoli Wang et al.) demonstrates the use of cellular call data and locations to identify overlapping activity spaces between cellphone contacts of first second and third degree. The results show interesting social and geographic findings such as users with a high number of contacts that tend to use the city center more frequently or that friends tend to use the same activity spaces more than random pairs. Chapter 14 (Emily Schnebele, et al.) presents an approach for using non-authoritative information sources to assess the damage from floods. The chapter uses Hurricane Sandy as an example of utilizing crowdsourced imaging assessment and available online data (mostly pictures and videos) to provide a damage classification of flooding. While this part of the chapter provides an understanding of the importance of non-authoritative informa-

tion sources, the chapter continues with a somewhat unrelated discussion about the importance of allowing access to cellphone data in an emergency. Chapter 15 (Sebastian Grauwin, et al.), the last chapter of this book, analyzes mobile phone usage patterns collected from London New York and Hong Kong. The chapter is a nice closure to the book describing, on one hand, the almost endless availability of high-resolution temporal-spatial data and, on the other hand, a simple intuitive way to compute the data into a coherent and informative analysis of inner-city heterogeneity.

In summary, I find this book to be an important addition to the growing shift towards a more computational approach. I believe that most readers will find some if not all sections interesting and informative.

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