World Bank (2011) *Rising Global Interest in Farmland: Can It Yield Equitable and Sustainable Benefits?* Washington D.C.: World Bank

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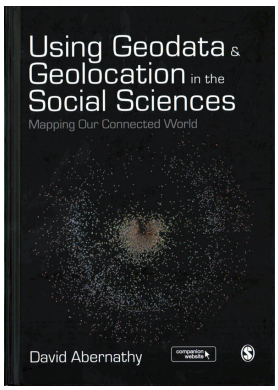
GENERAL BOOKS

USING GEODATA AND GEOLOCATION IN THE SOCIAL SCIENCES: MAPPING OUR CONNECTED WORLD, by David Abernathy. London: Sage, 2016.



> "As our tools for collection and managing data have evolved, we have learned how to acquire, store and visualize vast amount of data. Yet we are only now beginning to understand how we might ask new questions of these data as we seek to better understand ourselves and the world around us" (p. 30).

It is hard to imagine that Eratosthenes, the Greek astronomer best known as the "father of Geography", thought about "Big data", "Geoweb", "Mashups" or "Fusion tables". Yet the fundamental desire of human beings to "think spatially" and understand how people and objects are organized in space have not changed much since Eratosthenes first used the term "Geographika" (or "writing Earth") around 250 BC. Centuries later, the science of geography continues to evolve. New theories in mathematics and astronomy helped to improve the accuracy of maps, while new printing techniques and technology allowed reducing the cost of map production and distribution. But in the past few decades there is a big change in the way we organize, categorize and map Earth. The invention of computerized Geographic Information Systems (GIS) in the 1960s revolutionized how we collect, map and analyze spatial data and give meaning to the world around us. With advances in computer processing power and data storage, increased availability of personal computers, the invention of the internet (the World Wide Web) and the growing popularity of mobile and "smart" phones, the volume of data we generate and consume began to grow exponentially. In today`s "information age", a vast amount of different types of data is being generated and stored faster than ever. Much of this data has a spatial component ("big geodata") which is the focus of this book.

The book focuses on the concepts of geodata (i.e. data that has a spatial or locational component) and "geoweb" (which the author define as "a distributed digital network of geolocated nodes that capture, produce, and communicate data that include an explicitly spatial component", p. 316). It provides a wide range of real-

world examples of geodata (such as social media geolocation, crowdsourced mapping platforms, GPS devices and "smart cities" sensor data) with the aim to "help you incorporate geodata into your research… [and to] provide you with the necessary background and introduce you to many of the tools being used to collect and visualize geodata today" (p. 7). As clearly illustrated throughout the book, the concepts of space and place are fundamental to almost any academic discipline across the arts and sciences. Not only does spatial data tell us "where" things happen, it is also fundamental to our understanding of "why" and "how" they happen and related to each other.

The book is divided into two main sections: the first section puts the concept of geoweb in a broader context, while the second provides "hands-on" examples, tools and techniques to identify, collect and visualize geodata. As also noted by the author, the book is not about data analytics nor about big data. It is also not about GIS and can`t replace existing GIS tutorials. However, it puts the domain of geospatial analytics in a very interesting context. It illustrates how geography has developed to be an integral part of an era of "big data" and provides practical tools that can be used to extract meaningful information from spatial data.

The book begins with a conceptual context of geodata and geoweb, and provides an interesting summary of the history and emergence of on-line mapping and spatial analytic tools (chapters 2). It continues with a description of "big geodata", i.e. "big data" with a spatial dimension and a conceptual framework for making sense of geodata in an era of "information age" (chapter 3). The author then looks in chapter 4 at the emergence of "neogeography" and "volunteered geographic information" – new forms of "citizen democratized science" that were developed thanks to new tools and techniques that allow citizens to share and create geospatial information online (OpenSrteetMap is a good example of an online map which, similarly to Wikipedia, is a product of millions of individuals who voluntarily contribute geodata). Chapter 5 describes some of the challenges that we, as a society, face as location-based data become near-ubiquitous. Some of these challenges are the accuracy of the generated (and consumed) data, and issues related to privacy and surveillance. As described in the chapter, much of our location information is often shared without our explicit intent. Geodata is being collected on unknown individuals in many different ways, while our digital behavior is intensely monitored and analyzed and apps and websites are tailored to specific users. Self-driving cars that use geodata for navigation also raise some moral dilemmas. For example, if an imminent crash is unavoidable, how will the vehicle`s algorithm choose how to behave? The first section of the book concludes with chapter 6, which introduces concepts and definitions related to geodata, including absolute and relative location, topological space, time-series analysis and structured and unstructured data. These concepts are also used in the second section of the book.

The second section focuses on different techniques and tools that are designed to capture, analyze and map "big geodata". Throughout the section, the reader is intro-

duced to many tools for analysis and visualization of geodata, primarily open source and free (some are online and some are downloadable). The examples use data from public-available datasets that can be downloaded (each exercise includes links to download the dataset). The section begins in chapter 7, which provides tools to collect and map GPS data (absolute location and tracks). Chapter 8 deals with a variety of geospatial information we produce, that has not traditionally been structured in a format of geographic coordinate pairs. It provides tools for geocoding (i.e. assigning geographic coordinates to geographic locations stored as geographic nomenclature), geotagging (i.e. adding geographic coordinates to metadata) and geoparsing (i.e. the extraction of geodata from unstructured text). In the following, chapters 9 and 10 present tools for analysis of geodata extracted from a widely used social media platform (Twitter) and from weather stations, transit systems and sensor monitors (data that is collected in "smart cities" and that is available in the emerging "internet of things"). The next three chapters (chapters 11 -13) focus on GIS and provide basic applications for analysis and visualization of geodata in three open-source software tools: QGIS (the reader will learn to perform basic tasks such as viewing and querying vector and raster data, joining tabular data with a shapefile, basic vector and raster processing and creating maps), GRASS (primarily working with vector and raster data, doing 3D raster visualization, performing time-series analysis and converting data from different formats) and R statistical programming language (including introduction to Rstudio, mapping vector data, geocoding, creating an interactive webmap and more). These chapters also provide methods to combine multiple programs and utilize the strengths of each software (e.g. working with GRASS in conjunction with R, or with QGIS and GRASS). Section 2 concludes with an introduction to several online applications for geo-mapping (e.g. Google Maps, Google Maps API, Google Fusion Tables, OpenStreetMap, CartoDB, Leaflet and more). These tools will allow the user to view and edit maps on the internet and create interactive online maps.

Each chapter in section 2 ("hands-on" exercises) includes practical examples and exercises, including instructions on how to download and use each tool. The exercises are presented in a clear way, and include colored screenshots and very detailed instructions, that will even satisfy the most technophobic reader (e.g. "Close the properties dialog box and then right click on your brownfields layer again. Select "Save As" to open up the "Save vector layer" dialog box. Enter a name for your projected brownfields layer...Make sure the "Add saved file to map" box is checked and click "OK""). In addition, each exercise includes a screenshot of the desired result, making it very easy to follow the rationale behind each exercise. In general, the instructions are very clear and many of the examples rely on the context that was given in section 1. Each chapter begins with an overview of the covered topics and concludes with a "chapter summary" which clarifies the rationale of the chapter and summarizes its main conclusions.

The author`s choice to use free and open-source analytical tools is clever. There are many books that describe how to work with ESRI`s ArcGIS products. Some tutorial books also cover QGIS. Yet to the best of my knowledge, this is the first book that presents under one umbrella a wide range of (online and downloadable) geospatial analytical tools. The analytical techniques are very basic and will not teach a student or a researcher how to conduct in-depth geospatial analysis. The book is not designed for GIS specialists or to geospatial researchers. As the author indicates, it is assumed that "your academic training falls outside these areas and that you are looking to identify ways in which the geoweb and basic forms of basic analysis can supplement research in your own area of expertise" (p. 74). I think that the book achieves this goal. While it does not provide advanced tools for geospatial analysis, nor more than (very) basic applications for each software, the book does expose the reader to the potential value for adding a spatial dimension to data and provides practical tools for visualization of spatial data. The division of the book into two sections also makes sense and does not seem artificial. The flow of the book as well as the relations between the two sections are clear.

One caveat relates to the title of the book ("Using Geodata & Geolocation in the Social Sciences"). I am not sure whether the book focuses on social science; the social dimension and the social theories in the book are quite minor. Having said that, a social scientist or a social science student will find the book practical.

To summarize, this book provides a clear and interesting overview of existing tools that allow a researcher to add a (necessary) spatial dimension to data. The relatively short overview that is provided on the evolution of geospatial big data is interesting and exposes students and researchers who have never worked with spatial data to many practical and relatively easy-to-implement techniques to map and share geodata. The balance between theory and technical instructions is good and the book will encourage students and researchers to explore more available tools to create and communicate spatial data.

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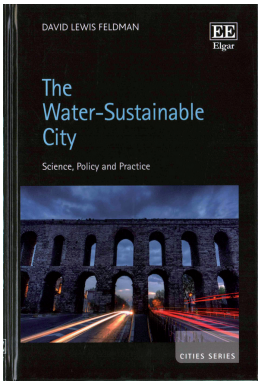

THE WATER–SUSTAINABLE CITY: SCIENCE, POLICY AND PRACTICE**,** by David Lewis Feldman. London: Edward Elgar Publishing Limited, 2017

In the 21th century, more than half of the human population lives in cities. This state of affairs makes sustainable water use by cities a very important issue. Feldman's book examines this issue in a wide range of aspects such as historical, technological, legal, economic, and political. He