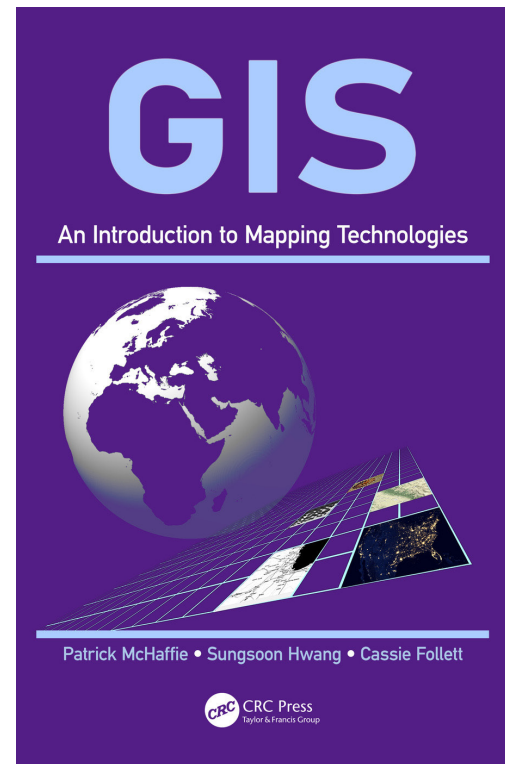


This book is a wide-ranging and wide-open introduction to geographic information systems technology appropriate for undergraduate and graduate courses or for professionals interested in getting started with this technology or broadening their knowledge of the field.

This book is organized into twelve chapters and covers a wide variety of material that quickly brings a student up to speed on the most important GIS ideas and concepts. Most chapters include exercises in a section at the end that illustrates the concepts covered. The chapters were written by different authors, which is evident in some organizational and style inconsistencies, but this is more than made up for by the amount and depth of included content. The chapters are not all purely technical content, the text is bookended by Chapters 1 and 12, which provide context for students and professionals about the why and how of working with geospatial technology.

Chapter 1—*Making Sense of Geotechnology* provides a vision of the purpose of GIS technology, the role of the GIS professional, and the purpose of the content of this book. Chapter 2—*Georeferencing* covers the basics of coordinate systems and how they are applied to geospatial data. Chapter 3—*Getting the World into Your GIS* discusses how data are acquired, including digitizing, GNSS, and remotely sensed data. Chapter 4—*Geospatial Analysis: Introduction* introduces the topic through operations of selection, proximity, and interpolation. Chapter 5—*Thematic Mapping* introduces cartography and the display of quantitative geospatial data. The sixth chapter, “*Data Models*” digs into the details of spatial data representation seen in Chapter 1 and an introduction to linking spatial and tabular data. Chapter 7—*Web GIS* has some interesting examples of how web maps actually work but also introduces higher-level applications, including Esri’s ArcGIS Story Maps. Chapter 8—*Open-source GIS* introduces common open-source platforms such as QGIS and GRASS. Chapter 9—*Introduction to Remote Sensing and GIS* covers the basics of remote sensing, from the physics to the platforms, and how remote sensing data is used in GIS. Chapter 10—*Introduction to Health GIS Applications* exposes the reader to public health and emergency management applications and touches on map accessibility. “*GIS and Digital Humanities*” is the title of Chapter 11, describing what the authors mean by the term with some applications of GIS technology to historical and cultural analysis and provides some examples of special challenges of getting essentially non-spatial data into a form that lends itself to GIS analysis. The final chapter, “*Organizational GIS*” talks about how GIS can be used across an organization. This includes discussions of real-time data, data sharing, and integration that is commonly known as “Enterprise GIS.”

The book emphasizes Esri’s ArcGIS platform in its discussion



## GIS: An Introduction to Mapping Technologies, First Edition

Patrick McHaffie, Sungsoon Hwang, and Cassie Follett.

CRC Press, Taylor & Francis Group, Boca Raton, FL. 2019. xiii and 347 pp., diagrams, maps, photos, images, index. Hardcover. \$39.98-105.00. ISBN-13 978-1-4987-4023-4 (hardbound, also available as e-text).

**Reviewed by** Curtis V. Price, Lecturer, Department of Geology and Geological Engineering, South Dakota School of Mines & Technology, Rapid City, South Dakota.

and examples, but it also provides information about other desktop, server, and cloud-based platforms. Surprisingly, although this book was published in 2019, the exercises and tutorials use Esri’s ArcMap 10.5 desktop software and the book has no mention of Esri’s newest desktop application,

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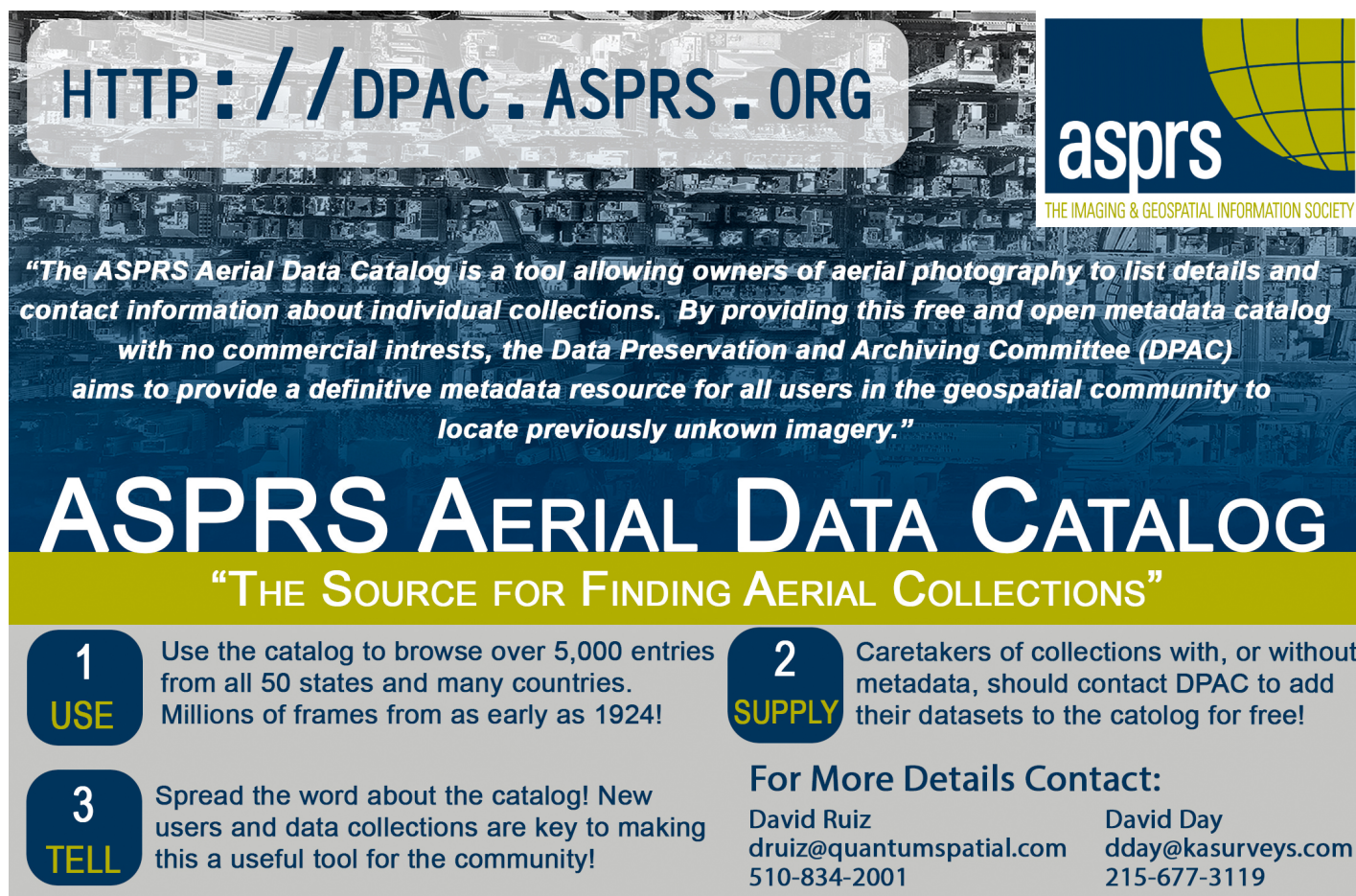
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and Remote Sensing  
doi: 10.14358/PERS.87.4.229

ArcGIS Pro, released in 2015 and quickly gaining adoption. However, an instructor using this book could easily adapt the short and illustrative exercises to whatever software they are using and the content earlier in the chapter would successfully provide the context the student would need to connect the concepts to the user interface (what I call “buttonology”), which can change with every software update. The universal concepts of geography and database management that are the underpinnings of all complete GIS systems are well covered, which makes the book much more “software-agnostic” than it appears at first glance.

The greatest strength of this book (and maybe its biggest weakness) is the ambitious amount of material included. The scope of this small-format (7.5” x 9.5”) book is a little overwhelming; and yet there are a variety of useful treasures that one would not expect in a comprehensive survey of the GIS field. For example, there is a valuable deep dive into a web browser’s HTML source view demonstrating how tiled map services work, a chapter devoted to open-source GIS software, including QGIS and its links to GRASS tools, and another chapter that covers remote sensing in much more

detail than one would expect in a book about GIS. Although though the overall discussion is broad, the exercises in this book commendably “get into the weeds” of what you have to do to import, interpret, and edit data sets found online to make it useful for analysis. This approach may help the reader build a toolbox of technical hands-on methods that are often glossed over in many GIS texts that use pre-formatted included tutorial data in the interest of limiting the scope and simplifying the discussion. Useful details about file formats and data “street smarts” that are often only learned by hard experience are found everywhere in this book. At the same time, there is much here about the philosophy and purpose of geospatial analysis (the “why” of GIS) that I found very inspiring and thought-provoking reading. This book is very hard to classify and there is something here for just about everyone.

Because of its wide scope, I believe this book would be an excellent supplementary text used across many geospatial courses and a great source for the professional to broaden their skillsets and background. I personally plan to spend more time with this book, even after 30 years in the field!



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