

# GIS Modeling:

## Applying Map Analysis Tools and Techniques

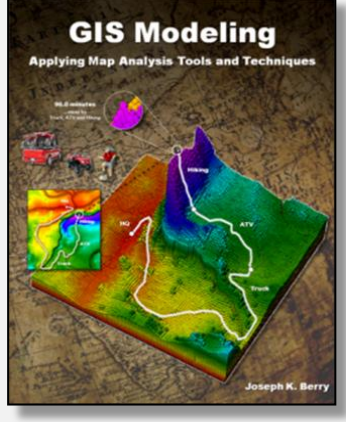


**GIS Modeling: Applying Map Analysis Tools and Techniques** is a collection of selected works from Joe Berry's popular "Beyond Mapping" columns published in GeoWorld magazine from 2007 through 2013.

This compilation extends earlier discussions of map analysis concepts, procedures, approaches, applications and issues affecting contemporary relevance and future potential.

Geotechnology (the spatial triad of remote sensing (RS), GIS and GPS) has "taken to the Internet" and become routine in most workplaces and general users' computers, tablets and mobile devices. As a ubiquitous "technological tool," it has become an indispensable part of daily life and interwoven into the fabric of modern society.

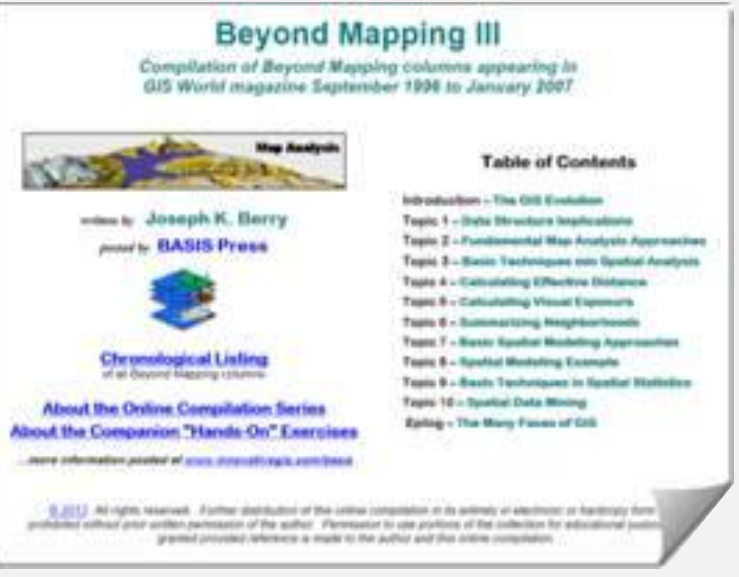
Geotechnology's expression as an "analytical tool" is poised for a similar run and promises to forever change how people perceive geographic space and its intersection with numeric space to understand spatial relationships without the simplifying assumptions previously found in science and practice before the digital map. **This transformative book is sure to alter experienced and novice readers' perceptions and paradigms of "what a map is (and isn't)" and how mapped data can be analyzed for startling new revelations of the world around us.**



[www.innovativegis.com/basis/BeyondMappingSeries/BeyondMapping\\_IV/](http://www.innovativegis.com/basis/BeyondMappingSeries/BeyondMapping_IV/)

# Spatial Reasoning

## for Effective GIS Solutions

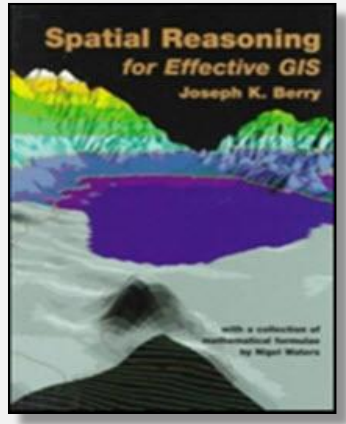


**Spatial Reasoning for Effective GIS Solutions** is a collection of selected works from of Joe Berry's popular "Beyond Mapping" columns published in GeoWorld magazine from 1993 to 1996.

This compilation explores the basic concepts of map analysis and discusses the fundamental elements of GIS that make it different from traditional map structure, content, processing and use.

It is an invitation to consider the expanded capabilities of GIS and relate them to current operations thereby fostering an appreciation of the field as an effective analytical tool in solving many complex spatial issues. GIS is a new technology, and as such, it presents new opportunities as well as new pitfalls.

This book engages the reader (both specialist and general user) through incisive and relaxed discussion that investigates why GIS technology is "as different from as it is similar to" traditional map processing. We are at the threshold of a new era— one that directly incorporates the complexity of geographic space in decision-making instead of simply applying a single solution throughout an entire area. The step isn't so much rocket science as it is a new approach to problem solving. Sure, there are new and initially confusing tools, but the real challenge is in "thinking spatially."



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# Beyond Mapping Compilation Series

...freely distributed online books and materials by Joseph K. Berry



Beyond Mapping columns appearing in GeoWorld magazine from **March 1989** through **December 2013**

[www.innovativegis.com/basis/BeyondMappingSeries/](http://www.innovativegis.com/basis/BeyondMappingSeries/)

Most GIS applications have focused on mapping and spatial data management for viewing and geo-query of mapped data. Map analysis and GIS modeling involve entirely new spatial reasoning concepts and procedures that are not reflected in our paper map legacy. The books in the Beyond Mapping Compilation Series are based on Joe Berry's popular "Beyond Mapping" columns in GIS World/GeoWorld magazine that discuss the new breed of map analysis tools, how they can be used to better characterize and communicate spatial relationships, be organized into effective GIS model solutions, and spark entirely new spatial paradigms. The topics covered in the series are written for novices, as well as GIS professionals, in a witty style that entertains as well as informs.

The real estate axiom of "location, location, location" has moved to the forefront of understanding and interacting with our world. Prior to the digital map, spatial information was constrained to the "precise placement of physical features" primarily for navigation, inventory and recordkeeping. Today, the historical objective of "Where is What" has been expanded to "Why, So What and What If..." investigations of the spatial patterns and relationships driving our physical, ecological, economic, social and political systems. Geotechnology (RS, GIS, GPS) has ushered in an bold new era of mapped data visualization, interactive geo-query and quantitative analysis of mapped data supporting spatial communication, reasoning and dialog— "thinking with maps."

The columns forming the Beyond Mapping Compilation Series are organized into **Four Online/Electronic/Hardcopy Books** each with Introduction, Ten Topics, Epilog and Further Readings

...with links to online support materials including additional Online Readings, Color Graphics, Instructor Materials and Software for "hands-on" exercises in grid-based Map Analysis and Modeling that are cross-referenced to many of the topics in the series

The nearly 1000 pages and more than 750 figures in the Beyond Mapping Compilation Series provides a comprehensive and longitudinal perspective of the underlying concepts, considerations, issues and evolutionary development of modern Geotechnology.

Navigation within this tsunami of information about geospatial technology's evolution is aided by **five separate organizational listings of the individual Beyond Mapping columns**—

**Chronological Listing** of the nearly 300 individual Beyond Mapping columns

**Application Listing** that organizes the columns by application areas

**Operations Listing** that organizes the columns by topic/theme discussed

**Interactive Listing** that can be searched/sorted by any word or phrase, topic, theme and application area (Word .doc)

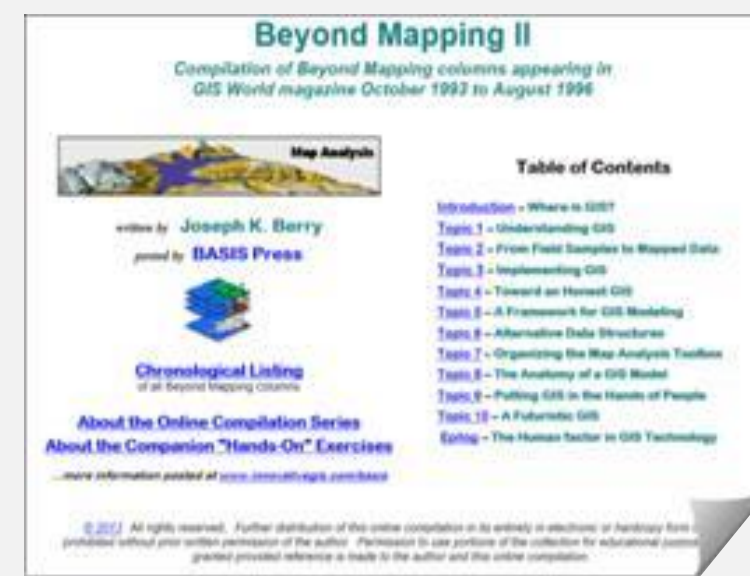
**Combined Index** of keywords and phrases covering all four books (...in progress; Fall 2014)

Permission to use text and graphics of the **Beyond Mapping Compilation Series** collection of columns

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# Map Analysis:

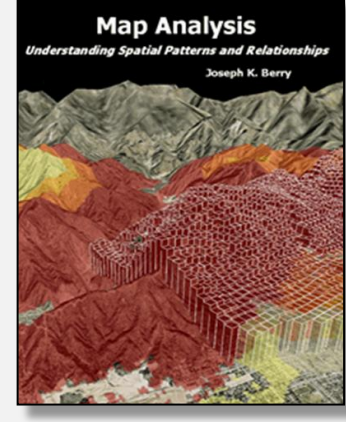
## Understanding Spatial Patterns and Relationships



**Map Analysis: Understanding spatial Patterns and Relationships** is a collection of selected works from of Joe Berry's popular "Beyond Mapping" columns published in GeoWorld magazine from 1996 to 2007. This compilation develops a structured view of the important concepts, considerations and procedures involved in grid-based map analysis and modeling.

While numerous books focus on Geographic Information Systems (GIS) capabilities of computer mapping and spatial database management, few provide an understanding of its analytical potential and practical realities in a non-technical manner. The unique character of the Map Analysis book draws from the author's ability to convey seemingly complex concepts of spatial data and GIS operations in words that resonant with others less technically versed.

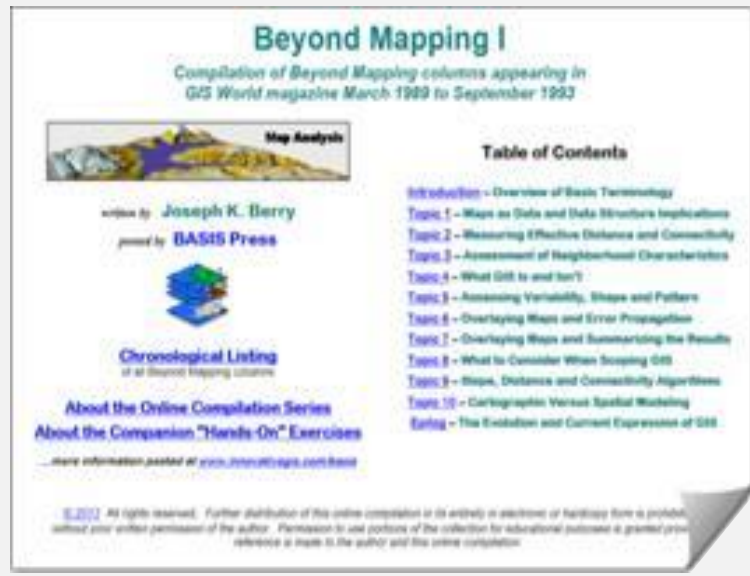
**The result is a book that engages readers to "think spatially" and formulate innovative solutions to complex spatial problems.** Key to this process is a paradigm shift that extends the traditional paper map perspective of "Where is What" to the modern perspective of "Why, So What and What If." Within this context, maps become data and map analysis becomes the means to derive information about spatial patterns and relationships within and among map layers.



[www.innovativegis.com/basis/BeyondMappingSeries/BeyondMapping\\_III/](http://www.innovativegis.com/basis/BeyondMappingSeries/BeyondMapping_III/)

# Beyond Mapping:

## Concepts, Algorithms and Issues in GIS



**Beyond Mapping: Concepts, Algorithms and Issues in GIS** is a collection of Joe Berry's popular "Beyond Mapping" columns published in GIS World from 1989 to 1993.

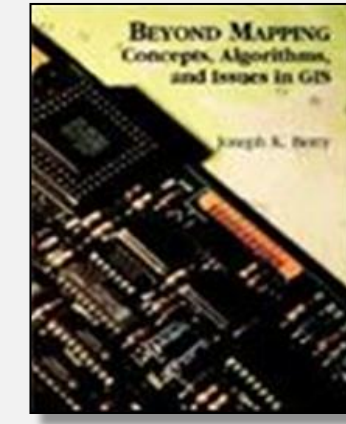
In this early compilation, Berry explores the underlying concepts of Geographic Information Systems (GIS) technology and discusses the issues involved as GIS moves

from the researcher to the specialist and general user.

However, the current user community tends to define GIS in comfortable terms of computer mapping and spatial database management. While these basic activities are the cornerstones of GIS and automate our historic map analysis procedures, this "paper map" perspective severely limits the full potential of the new digital map technology.

This emerging technology goes beyond traditional mapping and spatial database management to new concepts and procedures for modeling the complex interrelations among spatial data of all kinds.

This book is designed so the general user can read about broad issues and then delve into more detail, even to the algorithm level. Berry's witty writing style is sure to inform as it entertains both the GIS professional as well as the novice who is beginning a journey in this new technology.



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