Beyond Mapping Compilation Series

by Joseph K. Berry

…Beyond Mapping columns appearing in GeoWorld (formally GIS World) magazine from March 1989 through December 2013.

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 four books in the Beyond Mapping Compilation Series are based on Joe Berry's popular "Beyond Mapping" columns in GIS World/GeoWorld magazine that discusses 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 are written for novices, as well as GIS professionals, in a witty style that entertains as well as informs.

(click for a hardcopy version of this document posted at http://www.innovativegis.com/basis/BeyondMappingSeries/)

Chronological Listing

with hyperlinks to individual Beyond Mapping columns

The following Chronological Listing contains all of Beyond Mapping (BM) columns appearing in GeoWorld from 1989 through 2013 organized by descending date into four online/hardcopy books—

Beyond Mapping Book IV (2007 to 2013) — **GIS Modeling**: *Applying Map Analysis Tools and Techniques*
Beyond Mapping Book III (1996 to 2007) — **Map Analysis**: *Understanding Spatial Patterns and Relationships*
Beyond Mapping Book II (1993 to 1996) — **Spatial Reasoning** *for Effective GIS*
Beyond Mapping Book I (1989 to 1993) — **Beyond Mapping**: *Concepts, Algorithms and Issues in GIS*
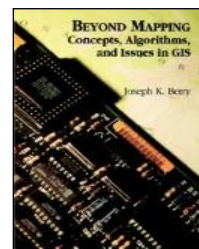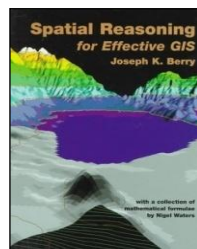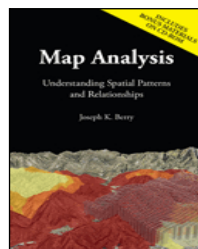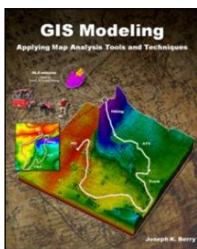
Navigation within this tsunami of information is aided by four additional organizational listings of the nearly 300 individual Beyond Mapping columns (each column is approximately 1200 words; 2½ pages)—

Application Listing *that organizes the columns by application areas (.html and .pdf): alphabetically sorted into the twenty-three major application groupings*

Operations Listing *that organizes the columns by topic/theme discussed (.html and .pdf); alphabetically sorted into ten General themes, fifteen Analysis groupings and twelve Statistics groupings*
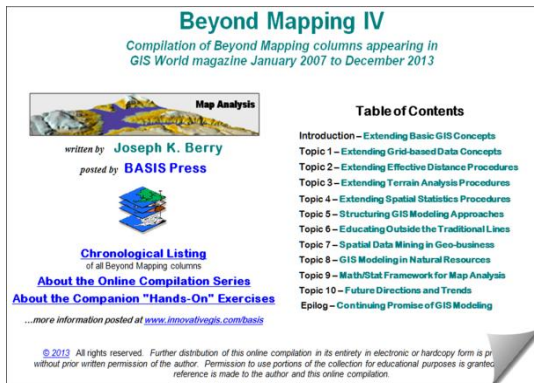
Interactive Listing *that can be searched/sorted by word, phrase, topic, theme or application area (.doc)*

Combined Index *of keywords and phrases covering all four books (.html and .pdf …in progress)*
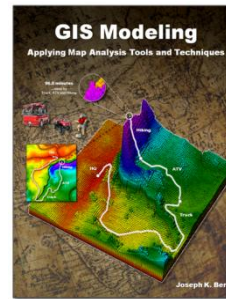
GIS Modeling: *Applying Map Analysis Tools and Techniques*

Online Book

Beyond Mapping IV: *A Compilation of Beyond Mapping Columns …is an online book organizing the Beyond Mapping columns first published in GeoWorld (formally GIS World) from 2007 to 2013 into 10 Topics, Introduction and Epilog.*
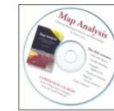
Hardcopy Book/CD

Not published in hardcopy form

…users can download and print .pdf files of each Topic

…uses same support materials as the Map Analysis book

Download **free** electronic version of the GM book/CD

GIS Modeling: *Applying Map Analysis Tools and Techniques …is an electronic book (Basis Press, 2013) of selected columns from 2007 to 2013 organized into 10 Topics, Introduction, Epilog, Index and a companion CD-ROM containing Additional Readings, Color Graphics files, Instructor Materials and software for hands-on exercises cross-referenced to the topics.*

< click> on the hyperlinks below to access the columns compiled into the Beyond Mapping IV online book

Date Code			…Beyond Mapping columns **below** were published in the **GIS Modeling** book/CD *(February, 2007 to December 2013)*	GIS Modeling book *Topic/Section*
2013.12	*December*	*2013*	Where Do We Go from Here? — *Swan Song after 25 years of Beyond Mapping columns*	**Epilog, S2**
2013.11	*November*	*2013*	The Good, the Bad and the Ugly Sides of GIS — *discusses the potential of geotechnology to hinder (or even thwart) societal progress*	**Epilog, S1**
2013.10	*October*	*2013*	Laying the Foundation for SpatialSTEM: *Spatial Mathematics, Map Algebra and Map Analysis — discusses the conceptual foundation and intellectual shifts needed for SpatialSTEM*	**Topic 9, S6**
2013.09	*September*	*2013*	The Spatial Key to Seeing the Big Picture — *describes a five step process for generating grid map layers from spatially tagged data*	**B4, Topic 9, Further Reading3**
2013.08	*August*	*2013*	Generating Mountains and Molehills from Field Sampled Data — *creating an elevation surface from field sampled data*	**B4, Topic 3, S4**
2013.07	*July*	*2013*	In Search of the Elusive Image — *describes extended geo-query techniques for accessing images containing a location of interest*	**B4, Topic 2, Further Reading3**
2013.06	*June*	*2013*	Setting a Place at the Table for Grid-based Data — *describes the differences between individual file and table storage approaches*	**B4, Topic 1, S4**
2013.05	*May*	*2013*	Mixing It up in GIS Modeling's Kitchen — *an overview of map analysis and GIS modeling considerations*	**B4, Topic 5, S1**
2013.04	*April*	*2013*	Spatially Evaluating the T-test — *illustrates the expansion of traditional math/stat procedures to operate on map variables to spatially solve traditional non-spatial equations*	**B4, Topic 4, S5**
2013.03	*March*	*2013*	Depending on Where is What — *develops an organizational structure for spatial statistics*	**B4, Topic 9, S5**
2013.02	*February*	*2013*	Recasting Map Analysis Operations for General Consumption — *reorganizes ArcGIS's Spatial Analyst tools into the SpatialSTEM framework that extends traditional math/stat procedures*	**B4, Topic 9, Further Reading4**

2013.01	**January**	**2013**	[Optimal Path Density is not all that Dense (Conceptually)](#) — *uses Optimal Path Density Analysis to identify "corridors of common access"*	***B4, Topic 8, Further Reading3***
2012.12	**December**	**2012**	[Bringing Travel and Terrain Directions into Line](#) — *describes comparison procedures and route evaluation techniques*	***B4, Topic 8, Further Reading2***
2012..11	**November**	**2012**	[Just How Crooked Are Things?](#) — *discusses distance-related metrics for assessing crookedness*	***B4, Topic 2, Further Reading1***
2012.10	**October**	**2012**	[To Boldly Go Where No Map Has Gone Before](#) — *identifies Lat/Lon as a Universal Spatial Key for joining database tables*	***B4, Topic 9, S4***
2012.09	**September**	**2012**	[Organizing Geographic Space for Effective Analysis](#) — *an overview of data organization for grid-based map analysis*	***B4, Topic 1, S1***
2012.08	**August**	**2012**	[Altering Our Spatial Perspective through Dynamic Windows](#) — *discusses the three types of roving windows— fixed, weighted and dynamic*	***B4, Topic 3, S5***
2012.07	**July**	**2012**	[Narrowing-In on Absurd Gerrymanders](#) — *discusses how a Narrowness Index (NI) can be applied to assess redistricting configurations*	***B4, Topic 2, S5***
2012.06	**June**	**2012**	[Questioning GIS in Higher Education](#) — *describes thoughts and notes from a panel discussion on "GIS in Higher Education"*	***B4, Topic 6, Further Reading***
2012.05	**May**	**2012**	[Infusing Spatial Character into Statistics](#) — *describes a statistical structure for spatial statistics operations*	***B4, Topic 9, S3***
2012.04	**April**	**2012**	[Simultaneously Trivializing and Complicating GIS](#) — *describes a mathematical structure for spatial analysis operations*	***B4, Topic 9, S2***
2012.03	**March**	**2012**	[Paint by Numbers Outside the Traditional Statistics Box](#) — *discusses the nature of Spatial Statistics operations*	***B4, Topic 9, Further Reading2***
2012.02	**February**	**2012**	[Map-ematically Messing with Mapped Data](#) — *discusses the nature of grid-based mapped data and Spatial Analysis operations*	***B4, Topic 9, Further Reading1***
2012.01	**January**	**2012**	[SpatialSTEM Has Deep Mathematical Roots](#) — *provides a conceptual framework for a map-ematical treatment of mapped data*	***B4, Topic 9, S1***
2011.12	**December**	**2011**	[VtoR and Back!](#) — *describes various techniques for converting between vector and raster data types*	***B4, Topic 1, S3***
2011.11	**November**	**2011**	[Contour Lines versus Color Gradients for Displaying Spatial Information](#) — *discusses the similarities and differences between discrete contour line and continuous gradient procedures for visualizing map surfaces*	***B4, Topic 1, S4***
2011.10	**October**	**2011**	[The Universal Key for Unlocking GIS's Full Potential](#) — *outlines a global referencing system approach compatible with standard DBMS systems*	***B4, Topic 7, S6***
2011.09	**September**	**2011**	[Assessing Wildfire Response (Part 2): *Jumping Right into It*](#) — *describes map analysis procedures for determining initial response time for alternative attack modes*	***B4, Topic 8, Further Reading5***
2011.08	**August**	**2011**	[Assessing Wildfire Response (Part 1): *Oneth by Land, Twoeth by Air*](#) — *discusses a spatial model for determining effective helicopter landing zones*	***B4, Topic 8, Further Reading4***
2011.07	**July**	**2011**	[Extending Information into No-Data Areas](#) — *describes a technique for "filling-in" information from surrounding data into no-data locations*	***B4, Topic 2, Further Reading1***
2011.06	**June**	**2011**	[Breaking Away from Breakpoints](#) — *describes the use of curve-fitting to derive continuous equations for suitability model ratings*	***B4, Topic 4, Further Reading3***
2011.05	**May**	**2011**	[Correlating Maps and a Numerical Mindset](#) — *describes a Spatially*	***B4, Topic 4, S4***

			Localized Correlation procedure for mapping the mutual relationship between two map variables	
2011.04	*April*	*2011*	[Comparing Apples and Oranges](#) — *describes a Standard Normal Variable (SNV) procedure for normalizing maps for comparison*	**B4, Topic 4, Further Reading2**
2011.03	*March*	*2011*	[A Dynamic Tune-up for Distance Calculations](#) — *describes the algorithms for dynamic effective distance procedures involving intervening conditions*	**B4, Topic 2, S2**
2011.02	*February*	*2011*	[Advancing the Concept of Effective Distance](#) — *describes the algorithms used in implementing Starter value advanced techniques*	**B4, Topic 2, S1**
2011.01	*January*	*2011*	[Which Direction Are You Headed?](#) — *describes four perspectives on the trailing "S" in the GIS acronym from a GIS'ers Perspective*	**B4, Topic 6, S1**
2010.12	*December*	*2010*	[GIS's Supporting Role in the Future of Natural Resources](#) — *discusses the influence of human dimensions in natural resources and GIS technology's role*	**B4, Topic 8, S6**
2010.11	*November*	*2010*	[A Suitable Framework for GIS Modeling](#) — *describes a framework for suitability modeling based on a flowchart of model logic*	**B4, Topic 5, S5**
2010.10	*October*	*2010*	[Putting GIS Modeling Concepts in Their Place](#) — *develops a typology of GIS modeling types and characteristics*	**B4, Topic 5, S4**
2010.09	*September*	*2010*	[Comparing Emergency Response Alternatives](#) — *describes comparison procedures and route evaluation techniques*	**B4, Topic 8, S5**
2010.08	*August*	*2010*	[Extending Emergency Response Beyond the Lines](#) — *discusses basic model processing and modifications for additional considerations*	**B4, Topic 8, S4**
2010.07	*July*	*2010*	[E911 for the Backcountry](#) — *describes development of an on- and off-road travel-time surface for emergency response*	**B4, Topic 8, S3**
2010.06	*June*	*2010*	[A Twelve-step Program for Recovery from Flaky Forest Formulations](#) — *describes a spatial model for identifying Landings and Timbersheds*	**B4, Topic 8, Further Reading1**
2010.05	*May*	*2010*	[Extending Forest Harvesting's Reach](#) — *discusses a multiplicative weighting method for model extension*	**B4, Topic 8, S2**
2010.04	*April*	*2010*	[Harvesting an Understanding of GIS Modeling](#) — *describes a prototype model for assessing off-road access to forest areas*	**B4, Topic 8, S1**
2010.03	*March*	*2010*	[Fitting Square Pegs into Round GIS Educational Holes](#) — *discusses the need to engage non-GIS students in developing spatially distributed solutions*	**B4, Topic 6, S4**
2010.02	*February*	*2010*	[GIS Education's Need for "Hitchhikers](#)" — *establishes the need for engaging "domain experts" in moving geotechnology to the next level*	**B4, Topic 6, S3**
2010.01	*January*	*2010*	[A Quick Peek Outside GIS's Disciplinary Cave](#) — *discusses future directions of geotechnology with particular emphasis on career outlook and GIS education*	**B4, Topic 6, S2**
2009.12	*December*	*2009*	[From a Map Pancake to a Soufflé](#) — *continues the discussion of concepts and configuration of a 3D GIS*	**B4, Topic 10, Further Reading1**
2009.11	*November*	*2009*	[Thinking Outside the Box](#) — *discusses concepts and configuration of 3-dimensional geography*	**B4, Topic 10, S4**
2009.10	*October*	*2009*	[Visualizing a Three-dimensional Reality](#) — *uses visual connectivity to introduce and reinforce the paradigm of three-dimension geography*	**B4, Topic 10, S3**
2009.09	*September*	*2009*	[GIS and the Cloud Computing Conundrum](#) — *describes cloud computing with particular attention to its geotechnology expression*	**B4, Topic 10, S2**

2009.08	*August*	*2009*	[Use Spatial Sensitivity Analysis to Assess Model Response](#) — *develops an approach for assessing the sensitivity of GIS models*	*B4, Topic 5, Further Reading2*
2009.07	*July*	*2009*	[Melding the Minds of the "-ists" and "-ologists"](#) — *elaborates on the two basic mindsets driving the geotechnology community*	*B4, Topic 6, Further Reading2*
2009.06	*June*	*2009*	[A Narrow-minded Approach](#) — *describes how Narrowness maps are derived*	*B4, Topic 2, S4*
2009.05	*May*	*2009*	[Identifying Upland Ridges](#) — *describes a procedure for locating extended upland ridges*	*B4, Topic 3, S3*
2009.04	*April*	*2009*	[What's Missing in Mapping?](#) — *discusses the need for identifying data dispersion as well as average in Thematic Mapping*	*B4, Topic 4, S1*
2009.03	*March*	*2009*	[What's in a Name](#) — *suggests and defines the new more comprehensive term "Geotechnology"*	*B4, Intro, Further Reading2*
2009.02	*February*	*2009*	[Is it Soup Yet?](#) — *describes the evolution in GIS definitions and terminology*	*B4, Intro, Further Reading1*
2009.01	*January*	*2009*	[Follow These Steps to Map Potential Sales](#) — *describes an extensive geo-business application that combines retail competition analysis and product sales prediction*	*B4, Topic 7, Further Reading4*
2008.12	*December*	*2008*	[Can We Really Map the Future](#)? — *describes the use of "linear regression" to develop prediction equations relating dependent and independent map variables*	*B4, Topic 7, Further Reading3*
2008.11	*November*	*2008*	[Discover the "Miracles" in Mapping Data Clusters](#) — *describes the use of "clustering" to identify inherent groupings of similar data patterns*	*B4, Topic 7, S5*
2008.10	*October*	*2008*	[Get "Map-ematical" to Identify Data Zones](#) — *describes the use of "level-slicing" for classifying locations with a specified data pattern*	*B4, Topic 7, Further Reading2*
2008.09	*September*	*2008*	[Use Map Analysis to Characterize Data Groups](#) — *describes the use of "data distance" to derive similarity among the data patterns in a set of map layers*	*B4, Topic 7, S4*
2008.08	*August*	*2008*	[Interpreting Interpolation Results (and why it is important)](#) — *describes the use of "residual analysis" for evaluating spatial interpolation performance*	*B4, Topic 7, Further Reading1*
2008.07	*July*	*2008*	[Myriad Techniques Help to Interpolate Spatial Distributions](#) — *discusses the basic concepts underlying spatial interpolation*	*B4, Topic 7, S3*
2008.06	*June*	*2008*	[Linking Numeric and Geographic Distributions](#) — *investigates the link between numeric and geographic distributions of mapped data*	*B4, Topic 7, S2*
2008.05	*May*	*2008*	[Shedding Light on Terrain Analysis](#) — *discusses how terrain orientation is used to generate Hillshade maps*	*B4, Topic 3, Further Reading1*
2008.04	*April*	*2008*	[Twisting the Perspective of Map Surfaces](#) — *describes the character of spatial distributions through the generation of a customer density surface*	*B4, Topic 7, S1*
2008.03	*March*	*2008*	[Contiguity Ties Things Together](#) — *describes an analytical approach for determining effective contiguity (clumped features)*	*B4, Topic 2, S3*
2008.02	*February*	*2008*	[How to Determine Exactly "Where Is What"](#) — *discusses the levels of precision (correct placement) and accuracy (correct characterization)*	*B4, Topic 5, S2*
2008.01	*January*	*2008*	[Explore the Softer Side of GIS](#) — *describes a Manual GIS (circa 1950) and the relationship between social science conceptual frameworks for understanding/judgment in GIS modeling*	*B4, Topic 5, Further Reading1*
2007.12	*December*	*2007*	[Lumpers and Splitters Propel GIS](#) — *describes the two camps of GIS (GeoExploration and GeoScience)*	*B4, Topic 6, Further*

				Reading1
2007.11	November	2007	Throwing the Baby Out with the Bath Water — *discusses the information lost in aggregating field data and assigning typical values to polygons (desktop mapping)*	B4, Topic 4, S2
2007.10	October	2007	Get a Consistent Statistical Picture — *describes creation of a Standardized Map Variable surface using Median and Quartile Range*	B4, Topic 4, Further Reading1
2007.09	September	2007	Normally Things Aren't Normal — *discusses the appropriateness of using traditional "normal" and percentile statistics*	B4, Topic 4, S3
2007.08	August	2007	GIS Innovation Drives Its Evolution — *discusses the cyclic nature of GIS innovation (Mapping, Structure and Analysis)*	B4, Topic 10, S1
2007.07	July	2007	The Long and Short of Slope — *investigates longitudinal and transverse slope calculation*	B4, Topic 3, S2
2007.06	June	2007	Segmenting Our World — *discusses techniques for segmenting linear routes based on terrain inflection*	B4, Topic 3, S1
2007.05	May	2007	Getting the Numbers Right — *describes a classification scheme for map analysis operations based on how map values are retrieved for processing (Local, Focal, Zonal)*	B4, Topic 5, S3
2007.04	April	2007	Geo-Referencing Is the Cornerstone of GIS — *describes current and alternative approaches for referencing geographic and abstract space*	B4, Intro,S3
2007.03	March	2007	Understand Resolution to "Think with Maps" — *discusses the factors that determine the "informational scale" digital maps*	B4, Intro, S2
2007.02	February	2007	Finding Common Ground in Paper and Digital Worlds — *describes the similarities and differences in information and organization between traditional paper and digital maps*	B4, Intro, S1

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Permission to use portions of the Beyond Mapping Compilation Series collection of columns for educational and non-commercial purposes is granted provided reference is made to the author and the URL of the Beyond Mapping Compilation Series Topic of the online book containing the materials—

For example… Figure is from Berry, Beyond Mapping Compilation Series, Book I, Topic 4 "What GIS Is and Isn't" posted at: **www.innovativegis.com/Basis/BeyondMappingSeries/**

Map Analysis: *Understanding Spatial Patterns and Relationships*

Online Book

Beyond Mapping III: *A Compilation of Beyond Mapping Columns* …is an online book organizing the Beyond Mapping columns first published in GIS World/GeoWorld from *1996 to 2007* into 10 Topics, Introduction, Epilog and Further Readings.
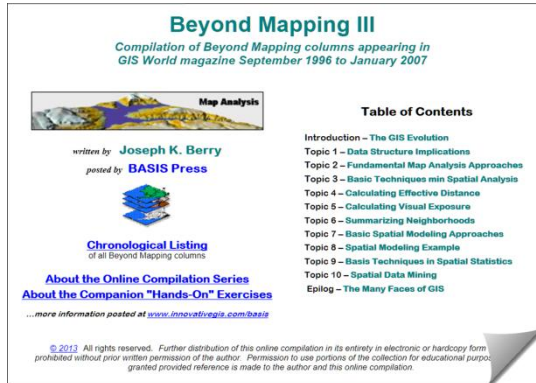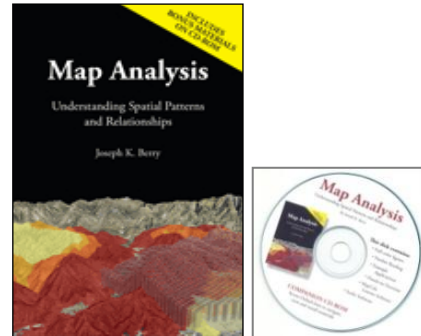
Hardcopy Book/CD

Map Analysis: *Understanding Spatial Patterns and Relationships* …is a hardcopy book (GeoTec Media, 2007) of selected columns from *1996 to 2007* organized into 10 Topics, Introduction, Epilog, Index and a companion CD-ROM containing Additional Readings, Color Graphics files, Instructor Materials and software for hands-on exercises cross-referenced to the topics.

Note: click on the hyperlinks below to access the columns compiled into the Beyond Mapping III online book.

Date Code			…BM columns **below** were published in the **Map Analysis** book/CD *(September 1996 to January, 2007).*	Map Analysis book Topic/Section
2007.01	*January*	*2007*	A Multifaceted GIS Community — *investigates the technical shifts and cultural impacts of the rapidly expanding GIS tent of users, application developers and tool programmers*	**B3, Epilog, S2**
2006.12	*December*	*2006*	Pathways to GIS — *explores different paths of GIS adoption for five disciplines (Natural Resources, Facilities Management, Public Health, Business and Precision Agriculture)*	**B3, Epilog, S1**
2006.11	*November*	*2006*	Contemporary GIS and Future Directions — *discusses contemporary GIS and probable future directions (Multimedia Mapping and Spatial Reasoning/Dialog)*	**B3, Intro, S2**
2006.10	*October*	*2006*	Early GIS Technology and Its Expression — *traces the early phases of GIS technology (Computer Mapping, Spatial Database Management and Map Analysis/Modeling)*	**B3, Intro, S1**
2006.09	*September*	*2006*	Statistically Compare Continuous Map Surfaces — *discusses procedures for comparing continuous map surfaces*	**B3, Topic 10, S2**
2006.08	*August*	*2006*	Spatial Data Mining "Down on the Farm" — *discusses process for moving from Whole-Field to Site-Specific management*	**B3, Topic 10, S6**
2006.07	*July*	*2006*	Statistically Compare Discrete Maps — *discusses procedures for comparing discrete maps*	**B3, Topic 10, S1**
2006.06	*June*	*2006*	Under the Hood of Spatial Interpolation — *investigates the basic concepts in IDW and Kriging interpolation procedures*	**B3, Topic 9, S3**
2006.05	*May*	*2006*	The Average Is Hardly Anywhere — *discusses the difference between spatial and non-spatial data distributions*	**B3, Topic 9, S2**
2006.04	*April*	*2006*	Key Concepts Characterize Unique Conditions — *describes a technique for handling unique combinations of map layers*	**B3, Topic 3, Further Reading1**

2006.03	**March**	**2006**	[Use LCP Procedures to Center Optimal Paths](#) — *discusses a procedure for eliminating "zig-zags" in areas of minimal siting preference*	**B3, Topic 8, Further Reading2**
2006.02	**February**	**2006**	[Nearby Things Are More Alike](#) — *use of decay functions in weight-averaging surrounding conditions*	**B3, Topic 6, Further Reading2**
2006.01	**January**	**2006**	[Spatially Aggregated Reporting: The Probability is Good](#) — *discusses techniques for smoothing "salt and pepper" results and deriving probability surfaces from aggregated incident records*	**B3, Topic 6, S3**
2005.12	**December**	**2005**	[Filtering for the Good Stuff](#) — *investigates a couple of spatial filters for assessing neighborhood connectivity and variability*	**B3, Topic 6 , Further Reading3**
2005.11	**November**	**2005**	[Milking Spatial Context Information](#) — *describes a procedure for deriving a customer density surface*	**B3, Topic 6, S2**
2005.10	**October**	**2005**	[Computer Processing Aids Spatial Neighborhood Analysis](#) — *discusses approaches for calculating slope and profile*	**B3, Topic 6, S1**
2005.09	**September**	**2005**	[Connect All the Dots to Find Optimal Paths](#) — *describes a procedure for determining an optimal path network from a dispersed set of end points*	**B3, Topic 8, Further Reading3**
2005.08	**August**	**2005**	[Taking Distance to the Edge](#) — *discusses advance distance operations*	**B3, Topic 4, Further Reading3**
2005.07	**July**	**2005**	[Calculate and Compare to Find Effective Proximity](#) — *describes how effective proximity is calculated*	**B3, Topic 4, Further Reading2**
2005.06	**June**	**2005**	[Extend Simple Proximity to Effective Movement](#) — *discusses the concept of effective distance responding to relative and absolute barriers*	**B3, Topic 4, S4**
2005.05	**May**	**2005**	[Use Cells and Rings to Calculate Simple Proximity](#) — *describes how simple proximity is calculated*	**B3, Topic 4, Further Reading1**
2005.04	**April**	**2005**	[Measuring Distance Is Neither Here nor There](#) — *discusses the basic concepts of distance and proximity*	**B3, Topic 4, S3**
2005.03	**March**	**2005**	[Making Space for Mapped Data](#) — *investigates the link between geographic space and data space for mapping data patterns*	**B3, Topic 2, S4**
2005.02	**February**	**2005**	[Use Spatial Statistics to Map Abnormal Averages](#) — *discusses surface modeling to characterize the spatial distribution inherent in a data set*	**B3, Topic 2, S3**
2005.01	**January**	**2005**	[Bending Our Understanding of Distance](#) — *uses effective distance in establishing erosion setback to demonstrate spatial analysis*	**B3, Topic 2, S2**
2004.12	**December**	**2004**	[Moving Mapping to Analysis of Mapped Data](#) — *describes Spatial Analysis and Spatial Statistics as extensions to traditional mapping and statistics*	**B3, Topic 2, S1**
2004.11	**November**	**2004**	['Straightening' Conversions Improve Optimal Paths](#) — *discusses a procedure for spatially responsive straightening of optimal paths*	**B3, Topic 8, Further Reading1**
2004.10	**October**	**2004**	[Logic and Extent Elevate Suitability Models to New Levels](#) — *extends Rating discussion to include additional habitat considerations and model weighting*	**B3, Topic 7, S3**
2004.09	**September**	**2004**	[Use "Shadow Maps" to Understand Overlay Errors](#) — *describes how shadow maps of certainty can be used to estimate error and its propagation*	**B3, Topic 3, Further Reading2**
2004.08	**August**	**2004**	[Mapping Techniques Rate Hugag Habitat Suitability](#) — *expands discussion to Binary Progression and Rating suitability models*	**B3, Topic 7, S2**
2004.07	**July**	**2004**	[Suitability Models Find the Good, the Bad and the Hugag](#) — *describes a simple suitability model for characterizing habitat*	**B3, Topic 7, S1**
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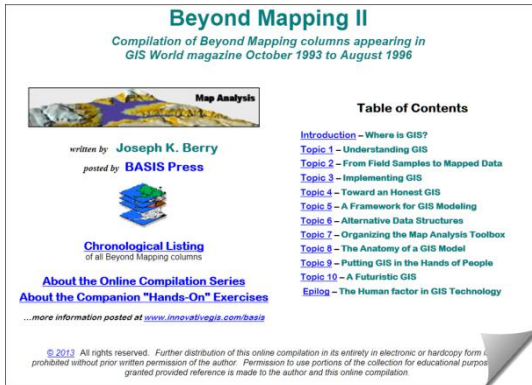|			relative advantages	*Further Reading4*
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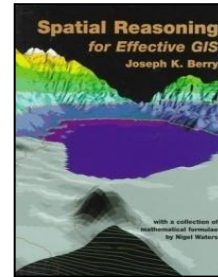
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Spatial Reasoning for Effective GIS

Hardcopy Book

Beyond Mapping II
Compilation of Beyond Mapping columns appearing in
GIS World magazine October 1993 to August 1996

Map Analysis

written by **Joseph K. Berry**
posted by **BASIS Press**

Chronological Listing
of all Beyond Mapping columns

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Beyond Mapping II: *A Compilation of Beyond Mapping Columns …is an* online book *organizing the Beyond Mapping columns first published in GIS World (now GeoWorld) from 1993 to 1995 into 10 Topics, Introduction and Epilog*

Spatial Reasoning for Effective GIS
…is a hardcopy book *(John Wiley Publishers, 1993) of selected Beyond Mapping columns organized into 10 Topics, Introduction, Epilog, Resource Listing, Appendix on GIS Formulae and Index. The BM columns were first published in GIS World (now* GeoWorld*) from 1993 to 1995*

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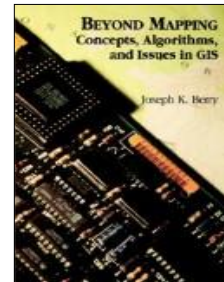
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Beyond Mapping: Concepts, Algorithms and Issues in GIS

Online Book <u></u>

Hardcopy Book

Beyond Mapping I: *A Compilation of Beyond Mapping Columns* is an **online book** organizing the Beyond Mapping columns first published in GIS World (now GeoWorld) from March 1989 to September 1993 into 10 Topics, Introduction and Epilog.
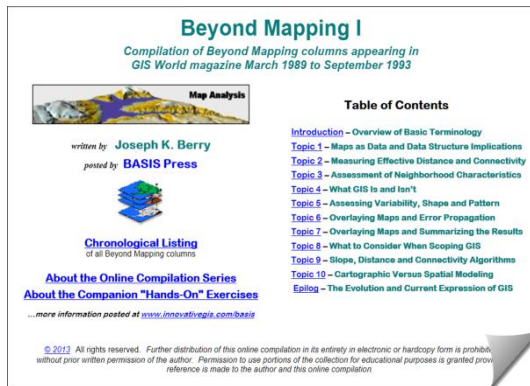
Beyond Mapping: *Concepts, Algorithms and Issues in GIS* …is a **hardcopy book** (John Wiley Publishers, 1993) of selected Beyond Mapping columns organized into 10 Topics, Introduction, Epilog, Resource Listing, Glossary and Index. The BM columns were first published in GIS World (now GeoWorld) from 1989 to 1993.

Note: click on the hyperlinks below to access the columns compiled into the Beyond Mapping I online book.

Date Code	…Beyond Mapping columns **below** were published in the **Map Analysis** book/CD (March 1989 to September 1993)			Beyond Mapping book Topic/Section
1993.09	**September**	*1993*	Terminology Accelerates Your Intellectual Depletion Allowance — *introduces the concepts and organization used in GIS databases comprised of multiple map layers*	*Intro, S3*
1993.08	**August**	*1993*	GIS Maps Are Dumb — *compares the basic Vector and Raster data structure approaches for storing individual map layers*	*Intro, S2*
1993.07	**July**	*1993*	Coming to Terms with Terminology — *describes the underlying theory of how point, line and areal features are stored in Vector and Raster GISs*	*Intro, S1*
1993.06	**June**	*1993*	*Special URISA Issue — no BM column*	*--*
1993.05	**May**	*1993*	Is Conflict Resolution an Oxymoron? — *discusses how weights are used combining individual map layers of concern to derive an overall map of suitability that reflects group consensus*	*Topic 10, S4*
1993.04	**April**	*1993*	Maps Speak Louder than Words — *describes analysis procedures that translate decision-maker concerns into maps*	*Topic 10, S3*
1993.03	**March**	*1993*	Effective Standards Required to Go Beyond Mapping — *identifies and describes four levels of GIS standards (data Exchange, Geographic, Algorithmic and Interpretational)*	*Topic 10, S2*
1993.02	**February**	*1993*	GIS Mirrors Perceptions of Decision Criteria — *describes a flowcharting procedure that expresses GIS model logic in a clear and concise form*	*Topic 10, S1*
1993.01	**January**	*1993*	Take a New Look at Visual Connectivity — *describes viewshed and visual exposure procedures*	*Topic 9, S5*
1992.12	**December**	*1992*	Twists and Contortions Lead to Connectivity — *describes procedures for calculating optimal paths and routing corridors*	*Topic 9, S4*
1992.11	**November**	*1992*	Rubber Rulers Fit Reality Better — *describes procedures for calculating effective distance that considers intervening absolute and relative barriers*	*Topic 9, S3*
1992.10	**October**	*1992*	Distance Is Simple and Straight Forward — *describes simple distance*	*Topic 9, S2*

			calculation as a propagating wavefront	
1992.09	**September**	*1992*	There's More Than One Way to Figure Slope — *describes procedures for calculating surface slope and its varied applications*	*Topic 9, S1*
1992.08	**August**	*1992*	A Tailored Plan and Curriculum Cure GIS Training Woes — *describes and discusses the importance of effective education and training needed for successful GIS adoption*	*Topic 8, S3*
1992.07	**July**	*1992*	*Special URISA Issue — no BM column but supplemental white paper was made available…* Bringing the GIS Paradigm to Closure — *discusses the evolution and probable future of GIS technology*	*Epilog, S1*
1992.06	**June**	*1992*	GIS Is Never Having to Say You're Sorry — *discusses the human and organizational considerations in adopting GIS technology*	*Topic 8, S2*
1992.05	**May**	*1992*	Both Dreams and Nightmares Are Born of Frustration — *discusses the limitations of traditional cost/benefit analysis in evaluating the adoption of a radically new technology like GIS*	*Topic 8, S1*
1992.04	**April**	*1992*	If I Hadn't of Believed It, I Wouldn't Have Seen It — *discusses map-wide overlay techniques and the spatial evaluation of algebraic equations, such as regression*	*Topic 7, S3*
1992.03	**March**	*1992*	Map Overlay Techniques— there's more than one — *discusses region-wide summary and map coincidence techniques*	*Topic 7, S2*
1992.02	**Feb**/*Jan*	*1992*	Characterizing Spatial Coincidence the Computer's Way — *describes point-by-point overlay techniques*	*Topic 7, S1*
1991.12	**December**	*1991*	Analyzing the Non-Analytical — *describes how "joint probability of coincidence" and "minimum mapping resolution" can be used to assess results of overlaying maps*	*Topic 6, S2*
1991.11	**November**	*1991*	GIS Facilitates Error Assessment — *discusses potential sources of error when overlaying maps and how "shadow maps" of error and "fuzzy theory" can shed light on the problem*	*Topic 6, S1*
1991.10	**October**	*1991*	Discovering Feature Patterns — *describes procedures for assessing landscape pattern (Spacing and Contiguity)*	*Topic 5, S3*
1991.09	**September**	*1991*	You Can't See the Forest for the Trees — *discusses indices of feature shape (Boundary Configuration and Spatial Integrity)*	*Topic 5, S2*
1991.08	**August**	*1991*	Need to Ask the Right Questions Takes You Beyond Mapping — *describes indices of map variability (Neighborhood Complexity and Comparison)*	*Topic 5, S1*
1991.07	**July**	*1991*	*Special URISA Issue — no BM column but supplemental white paper was made available…* A Mathematical Structure for Analyzing Maps— *a 1986 journal article establishing a framework for map analysis/modeling*	*Supplement*
1991.06	**June**	*1991*	Frankly My Dear, I Don't Give a Damn — *discusses how GIS modeling and spatial reasoning are changing policy formation and decision-making*	*Topic 4, S4*
1991.05	**May**	*1991*	Who Says You Can't Teach an Old Dog New Tricks? — *describes the basic concepts and approaches used in GIS modeling*	*Topic 4, S3*
1991.04	**Apr**/*Mar*	*1991*	What's Needed to Go Beyond Mapping — *lists and describes the analytical tools needed to go beyond mapping*	*Topic 4, S2*
1991.02	**Feb**/*Jan*	*1991*	Technobabble — *discusses the radical changes GIS technology and the digital map are bringing to traditional mapping*	*Topic 4, S1*
1990.12	**December**	*1990*	I Don't Do Windows — *describes procedures for summarizing weighted roving windows*	*Topic 3, S4*
1990.10	**Oct**/*Nov*	*1990*	Torture Numbers, They'll Tell you Anything — *discusses the underlying theory and basic considerations of spatial interpolation*	*Topic 3, S3*
1990.08	**Aug**/*Sep*	*1990*	It's Like the New Math, I am Just Too Old — *discusses the concept of calculating a "map derivative" and its use*	*Topic 3, S2*
1990.06	**Jun**/*July*	*1990*	Imagination is More Important than Information — *describes*	*Topic 3, S1*

			procedures for characterizing surface configuration (slope, aspect and profile)	
1990.04	**Apr**/May	**1990**	[There's Only One Problem Having All this Sophisticated Equipment](#) — *discusses the basic approaches used for calculating narrowness and visual connectivity*	*Topic 2, S4*
1990.02	**Feb**/Mar	**1990**	[Keep It Simple Stupid (KISS)](#) — *describes the use of "accumulation surfaces" for deriving optimal path density and N^{th} best paths*	*Topic 2, S3*
1989.11	**Nov**/Dec	**1989**	[As the Crow Walks](#) — *describes the use of "propagating waves" for calculating effective distance and optimal paths*	*Topic 2, S2*
1989.09	**Sep**/Oct	**1989**	[You Can't Get There from Here](#) — *introduces the similarities and differences between "simple" and "effective" distance measurement*	*Topic 2, S1*
1989.07	**Jul**/Aug	**1989**	[GIS Technology Is Technical Oz](#) — *discusses and compares the relative advantages/disadvantages between Vector and Raster processing*	*Topic 1, S3*
1989.05	**May** V2-3	**1989**	[It Depends: Implications of data structure](#) — *discusses and compares the similarities and differences between Vector and Raster data structure applications*	*Topic 1, S2*
1989.03	**March** V2-2	**1989**	[Maps as Data: a 'Map-ematics' is Emerging](#) — *describes the differences between Discrete and Continuous mapped data*	*Topic 1, S1*
1989.01	**Jan** V2-1	**1989**	*No BM column*	*--*
1988.09	**Sep** V1-2	**1988**	*No BM column*	*--*
1988.07	**Jul** V1-1	**1988**	*No BM column*	*--*

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