…the old
"Beyond Mapping III" book (30 Topics)
has been divided into
two books (10 Topics each with Further Reading)

You are encouraged to access the revised *Beyond Mapping Compilation Series* posted at

http://www.innovativegis.com/basis/BeyondMappingSeries/
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Chronological Listing of Beyond Mapping Columns

by Joseph K. Berry appearing in GeoWorld (formally GIS World) magazine from 1989 through present

<*Click here*> *right-click to download a printer-friendly version of this listing (.pdf).*

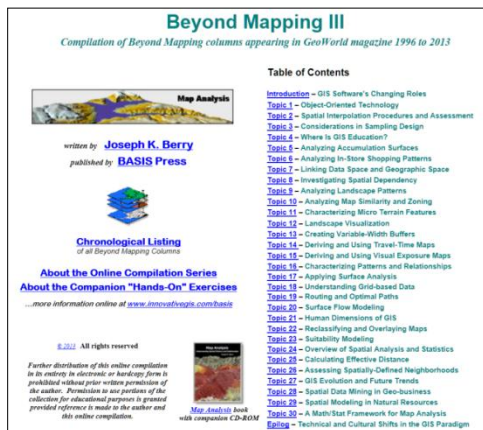The compilation of Beyond Mapping columns is organized into three groups—

Beyond Mapping III: *A Compilation of Beyond Mapping Columns is an online book organizing the columns from **1996 to 2013** into 30 Topics, Introduction and Epilog*

Beyond Mapping II: *A Compilation of Beyond Mapping Columns is an online book organizing the columns from **1993 to 1996** into 10 Topics, Introduction and Epilog*

Beyond Mapping I: *A Compilation of Beyond Mapping Columns is an online book organizing the columns from **1989 to 1993** into 10 Topics, Introduction and Epilog*

…click on hyper links below to access the postings; click on any of the figures to pop-up a high resolution graphic.
Permission to use portions of the collection for educational and non-commercial purposes is granted provided reference is made to the author and this online compilation.

Notes: Recent Beyond Mapping columns also can be accessed via http://www.geoplace.com, select the "**News**" item at the top-left, then "**Articles/Columns & Archives**" and from the second "**or search by**" pick list choose "**Beyond Mapping**."   Most of the processing and figures discussed in these online papers were derived using MapCalc^TM software. See www.innovativegis.com, "Software" section to download a free MapCalc Learner version with tutorial materials for classroom and self-learning map analysis concepts and procedures.

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Beyond Mapping III: *A Compilation of Beyond Mapping Columns …is an online book organizing the Beyond Mapping columns first published in GeoWorld (formally GIS World) from 1996 to 2013 into 28 Topics,*

Introduction and Epilog.

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

	...columns **below** (highlighted in tan) were published since the **Map Analysis** book/CD release (after January, 2007)		
12	**December**	**2013**	[Where Do We Go from Here?](#) — *Swan Song after 25 years of Beyond Mapping columns*
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*
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*
9	**September**	**2013**	[The Spatial Key to Seeing the Big Picture](#) — *describes a five step process for generating grid map layers from spatially tagged data*
8	**August**	**2013**	[Generating Mountains and Molehills from Field Sampled Data](#) — *creating an elevation surface from field sampled data*
7	**July**	**2013**	[In Search of the Elusive Image](#) — *describes extended geo-query techniques for accessing images containing a location of interest*
6	**June**	**2013**	[Setting a Place at the Table for Grid-based Data](#) — *describes the differences between individual file and table storage approaches*
5	**May**	**2013**	[Mixing It up in GIS Modeling's Kitchen](#) — *an overview of map analysis and GIS modeling considerations*
4	**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*
3	**March**	**2013**	[Depending on Where is What](#) — *develops an organizational structure for spatial statistics*
2	**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*
1	**January**	**2013**	[Optimal Path Density is not all that Dense (Conceptually)](#) — *uses Optimal Path Density Analysis to identify "corridors of common access"*
12	**December**	**2012**	*[Bringing Travel and Terrain Directions into Line](#) — describes comparison procedures and route evaluation techniques*
11	**November**	**2012**	[Just How Crooked Are Things?](#) — *discusses distance-related metrics for assessing crookedness*
10	**October**	**2012**	[To Boldly Go Where No Map Has Gone Before](#) — *identifies Lat/Lon as a Universal Spatial Key for joining database tables*
9	**September**	**2012**	[Organizing Geographic Space for Effective Analysis](#) — *an overview of data organization for grid-based map analysis*

| 8	*August*	*2012*	[Altering Our Spatial Perspective through Dynamic Windows](#) — *discusses the three types of roving windows— fixed, weighted and dynamic*
7	*July*	*2012*	[Narrowing-In on Absurd Gerrymanders](#) — *discusses how a Narrowness Index (NI) can be applied to assess redistricting configurations*
6	*June*	*2012*	[Questioning GIS in Higher Education](#) — *describes thoughts and notes from a panel discussion on "GIS in Higher Education"*
5	*May*	*2012*	[Infusing Spatial Character into Statistics](#) — *describes a statistical structure for spatial statistics operations*
4	*April*	*2012*	[Simultaneously Trivializing and Complicating GIS](#) — *describes a mathematical structure for spatial analysis operations*
3	*March*	*2012*	[Paint by Numbers Outside the Traditional Statistics Box](#) — *discusses the nature of Spatial Statistics operations*
2	*February*	*2012*	[Map-ematically Messing with Mapped Data](#) — *discusses the nature of grid-based mapped data and Spatial Analysis operations*
1	*January*	*2012*	[SpatialSTEM Has Deep Mathematical Roots](#) — *provides a conceptual framework for a map-ematical treatment of mapped data*
12	*December*	*2011*	[VtoR and Back!](#) — *describes various techniques for converting between vector and raster data types*
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*
10	*October*	*2011*	[The Universal Key for Unlocking GIS's Full Potential](#) — *outlines a global referencing system approach compatible with standard DBMS systems*
9	*September*	*2011*	[Assessing Wildfire Response (Part 2): *Jumping Right into It*](#) — *describes map analysis procedures for determining initial response time for alternative attack modes*
8	*August*	*2011*	[Assessing Wildfire Response (Part 1): *Oneth by Land, Twoeth by Air*](#) — *discusses a spatial model for determining effective helicopter landing zones*
7	*July*	*2011*	[Extending Information into No-Data Areas](#) — *describes a technique for "filling-in" information from surrounding data into no-data locations*
6	*June*	*2011*	[Breaking Away from Breakpoints](#) — *describes the use of curve-fitting to derive continuous equations for suitability model ratings*
5	*May*	*2011*	[Correlating Maps and a Numerical Mindset](#) — *describes a Spatially Localized Correlation procedure for mapping the mutual relationship between two map variables*
4	*April*	*2011*	[Comparing Apples and Oranges](#) — *describes a Standard Normal Variable (SNV) procedure for normalizing maps for comparison*
3	*March*	*2011*	[A Dynamic Tune-up for Distance Calculations](#) — *describes the algorithms for dynamic effective distance procedures involving intervening conditions*

2	February	2011	Advancing the Concept of Effective Distance — *describes the algorithms used in implementing Starter value advanced techniques*
1	January	2011	Which Direction Are You Headed? — *describes four perspectives on the trailing "S" in the GIS acronym*
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*
11	November	2010	A Suitable Framework for GIS Modeling — *describes a framework for suitability modeling based on a flowchart of model logic*
10	October	2010	Putting GIS Modeling Concepts in Their Place — *develops a typology of GIS modeling types and characteristics*
9	September	2010	Comparing Emergency Response Alternatives — *describes comparison procedures and route evaluation techniques*
8	August	2010	Extending Emergency Response Beyond the Lines — *discusses basic model processing and modifications for additional considerations*
7	July	2010	E911 for the Backcountry — *describes development of an on- and off-road travel-time surface for emergency response*
6	June	2010	A Twelve-step Program for Recovery from Flaky Forest Formulations — *describes a spatial model for identifying Landings and Timbersheds*
5	May	2010	Extending Forest Harvesting's Reach — *discusses a multiplicative weighting method for model extension*
4	April	2010	Harvesting an Understanding of GIS Modeling — *describes a prototype model for assessing off-road access to forest areas*
3	March	2010	Fitting Square Pegs into Round GIS Educational Holes — *discusses the need to engage non-GIS students in developing spatially distributed solutions*
2	February	2010	GIS Education's Need for "Hitchhikers" — *establishes the need for engaging "domain experts" in moving geotechnology to the next level*
1	January	2010	A Quick Peek Outside GIS's Disciplinary Cave — *discusses future directions of geotechnology with particular emphasis on career outlook and GIS education*
12	December	2009	From a Map Pancake to a Soufflé — *continues the discussion of concepts and configuration of a 3D GIS*
11	November	2009	Thinking Outside the Box — *discusses concepts and configuration of 3-dimensional geography*
10	October	2009	Visualizing a Three-dimensional Reality — *uses visual connectivity to introduce and reinforce the paradigm of three-dimension geography*
9	September	2009	GIS and the Cloud Computing Conundrum — *describes cloud computing with particular attention to its geotechnology expression*
8	August	2009	Use Spatial Sensitivity Analysis to Assess Model Response — *develops an approach for assessing the sensitivity of GIS models*

7	July	2009	Melding the Minds of the "-ists" and "-ologists" — *elaborates on the two basic mindsets driving the geotechnology community*
6	June	2009	A Narrow-minded Approach — *describes how Narrowness maps are derived*
5	May	2009	Identifying Upland Ridges — *describes a procedure for locating extended upland ridges*
4	April	2009	What's Missing in Mapping? — *discusses the need for identifying data dispersion as well as average in Thematic Mapping*
3	March	2009	What's in a Name — *suggests and defines the new term Geotechnology*
2	February	2009	Is it Soup Yet? — *describes the evolution in definitions and terminology*
1	January	2009	Follow These Steps to Map Potential Sales — *describes an extensive geo-business application that combines retail competition analysis and product sales prediction*
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*
11	November	2008	Discover the "Miracles" in Mapping Data Clusters — *describes the use of "clustering" to identify inherent groupings of similar data patterns*
10	October	2008	Get "Map-ematical" to Identify Data Zones — *describes the use of "level-slicing" for classifying locations with a specified data pattern (data zones)*
9	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*
8	August	2008	Interpreting Interpolation Results (and why it is important) — *describes the use of "residual analysis" for evaluating spatial interpolation performance*
7	July	2008	Myriad Techniques Help to Interpolate Spatial Distributions — *discusses the basic concepts underlying spatial interpolation*
6	June	2008	Linking Numeric and Geographic Distributions — *investigates the link between numeric and geographic distributions of mapped data*
5	May	2008	Shedding Light on Terrain Analysis — *discusses how terrain orientation is used to generate Hillshade maps*
4	April	2008	Twisting the Perspective of Map Surfaces — *describes the character of spatial distributions through the generation of a customer density surface*
3	March	2008	Contiguity Ties Things Together — *describes an analytical approach for determining effective contiguity (clumped features)*
2	February	2008	How to Determine Exactly "Where Is What" — *discusses the levels of precision and accuracy*
1	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*

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12	*December*	*2007*	[Lumpers and Splitters Propel GIS](#) — *describes the two camps of GIS (GeoExploration and GeoScience)*
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)*
10	*October*	*2007*	[Get a Consistent Statistical Picture](#) — *describes creation of a Standardized Map Variable surface using Median and Quartile Range*
9	*September*	*2007*	[Normally Things Aren't Normal](#) — *discusses the appropriateness of using traditional "normal" and percentile statistics*
8	*August*	*2007*	[GIS Innovation Drives Its Evolution](#) — *discusses the cyclic nature of GIS innovation (Mapping, Structure and Analysis)*
7	*July*	*2007*	[The Long and Short of Slope](#) — *investigates longitudinal and transverse slope calculation*
6	*June*	*2007*	[Segmenting Our World](#) — *discusses techniques for segmenting linear routes based on terrain inflection*
5	*May*	*2007*	[Getting the Numbers Right](#) — *describes an alternative framework based on how the map values are retrieved to classify analytical operations*
4	*April*	*2007*	[Geo-Referencing Is the Cornerstone of GIS](#) — *describes current and alternative approaches for referencing geographic and abstract space*
3	*March*	*2007*	[Understand Resolution to "Think with Maps"](#) — *discusses the factors that determine the "informational scale" digital maps*
2	*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*
⬆			*…BM columns **above** were published after the **Map Analysis** book/CD (January, 2007 to December 2013).*

Return to Top of the listing

Online Book
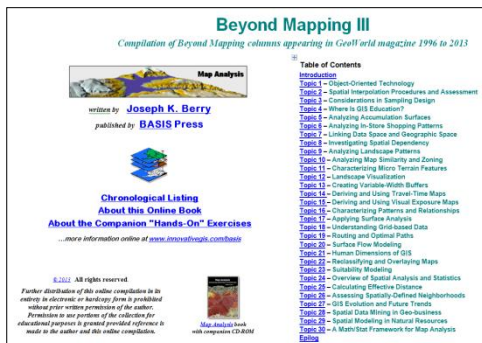
[Beyond Mapping III](#): A Compilation of Beyond Mapping Columns …is an online book organizing the Beyond Mapping columns first published in GIS World/[GeoWorld](#) from 1996 to 2013

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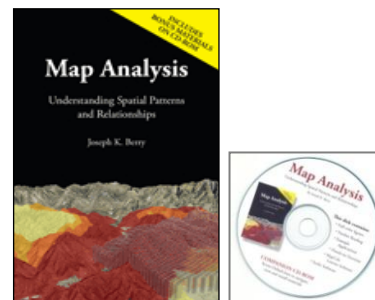
[Map Analysis](#): Understanding Spatial Patterns and Relationships …is a hardcopy book (GeoTec Media, 2007) of selected columns from 1996 to 2007 organized into 10 Topics, Introduction, Epilog, Index and a companion CD-ROM containing Additional Readings, Color Graphics files, Instructor Materials and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

into 28 Topics, Introduction and Epilog.   *exercises cross-referenced to the topics.*

<u>*Note*</u>*: click on the hyperlinks below to access the columns compiled into the <u>Beyond Mapping III</u> online book.*

⬇️		…BM columns **<u>below</u>** were published in the **<u>Map Analysis</u>** book/CD (September 1996 to January, 2007).	
1	**January**	**2007**	<u>A Multifaceted GIS Community</u> — *investigates the technical shifts and cultural impacts of the rapidly expanding GIS tent of users, application developers and tool programmers*
12	**December**	**2006**	<u>Pathways to GIS</u> — *explores different paths of GIS adoption for five disciplines (Natural Resources, Facilities Management, Public Health, Business and Precision Agriculture)*
11	**November**	**2006**	<u>Contemporary GIS and Future Directions</u> — *discusses contemporary GIS and probable future directions (Multimedia Mapping and Spatial Reasoning/Dialog)*
10	**October**	**2006**	<u>Early GIS Technology and Its Expression</u> — *traces the early phases of GIS technology (Computer Mapping, Spatial Database Management and Map Analysis/Modeling)*
9	**September**	**2006**	<u>Statistically Compare Continuous Map Surfaces</u> — *discusses procedures for comparing continuous map surfaces*
8	**August**	**2006**	<u>Spatial Data Mining "Down on the Farm"</u> — *discusses process for moving from Whole-Field to Site-Specific management*
7	**July**	**2006**	<u>Statistically Compare Discrete Maps</u> — *discusses procedures for comparing discrete maps*
6	**June**	**2006**	<u>Under the Hood of Spatial Interpolation</u> — *investigates the basic concepts in IDW and Kriging interpolation procedures*
5	**May**	**2006**	<u>The Average Is Hardly Anywhere</u> — *discusses the difference between spatial and non-spatial data distributions*
4	**April**	**2006**	<u>Key Concepts Characterize Unique Conditions</u> — *describes a technique for handling unique combinations of map layers*
3	**March**	**2006**	<u>Use LCP Procedures to Center Optimal Paths</u> — *discusses a procedure for eliminating "zig-zags" in areas of minimal siting preference*
2	**February**	**2006**	<u>Nearby Things Are More Alike</u> — *use of decay functions in weight-averaging surrounding conditions*
1	**January**	**2006**	<u>Spatially Aggregated Reporting: The Probability is Good</u> — *discusses techniques for smoothing "salt and pepper" results and deriving probability surfaces from aggregated incident records*
12	**December**	**2005**	<u>Filtering for the Good Stuff</u> — *investigates a couple of spatial filters for assessing neighborhood connectivity and variability*
11	**November**	**2005**	<u>Milking Spatial Context Information</u> — *describes a procedure for deriving a customer density surface*

10	*October*	*2005*	[Computer Processing Aids Spatial Neighborhood Analysis](#) — *discusses approaches for calculating slope and profile*
9	*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*
8	*August*	*2005*	[Taking Distance to the Edge](#) — *discusses advance distance operations*
7	*July*	*2005*	[Calculate and Compare to Find Effective Proximity](#) — *describes how effective proximity is calculated*
6	*June*	*2005*	[Extend Simple Proximity to Effective Movement](#) — *discusses the concept of effective distance responding to relative and absolute barriers*
5	*May*	*2005*	[Use Cells and Rings to Calculate Simple Proximity](#) — *describes how simple proximity is calculated*
4	*April*	*2005*	[Measuring Distance Is Neither Here nor There](#) — *discusses the basic concepts of distance and proximity*
3	*March*	*2005*	[Making Space for Mapped Data](#) — *investigates the link between geographic space and data space for mapping data patterns*
2	*February*	*2005*	[Use Spatial Statistics to Map Abnormal Averages](#) — *discusses surface modeling to characterize the spatial distribution inherent in a data set*
1	*January*	*2005*	[Bending Our Understanding of Distance](#) — *uses effective distance in establishing erosion setback to demonstrate spatial analysis*
12	*December*	*2004*	[Moving Mapping to Analysis of Mapped Data](#) — *describes Spatial Analysis and Spatial Statistics as extensions to traditional mapping and statistics*
11	*November*	*2004*	['Straightening' Conversions Improve Optimal Paths](#) — *discusses a procedure for spatially responsive straightening of optimal paths*
10.1	*October*	*2004*	[Logic and Extent Elevate Suitability Models to New Levels](#) — *extends Rating discussion to include additional habitat considerations and model weighting*
10	*October*	*2004*	[Extended Experience Materials](#) *(unpublished support material) — provides hands-on experience with Suitability Modeling*
9	*September*	*2004*	[Use "Shadow Maps" to Understand Overlay Errors](#) — *describes how shadow maps of certainty can be used to estimate error and its propagation*
8	*August*	*2004*	[Mapping Techniques Rate Hugag Habitat Suitability](#) — *expands discussion to Binary Progression and Rating suitability models*
7	*July*	*2004*	[Suitability Models Find the Good, the Bad and the Hugag](#) — *describes a simple suitability model for characterizing habitat*
6	*June*	*2004*	[Computers Quickly Characterize Spatial Coincidence](#) — *discusses several human considerations in implementing GIS*
5	*May*	*2004*	[Overlay Operations Feature a Variety of Options](#) — *discusses the basic overlaying map operations*
4	*April*	*2004*	[Options Seem Endless When Reclassifying Maps](#) — *discusses the basic reclassifying map operations*

3	*March*	*2004*	[Use a Map-ematical Framework for GIS Modeling](#) — *describes a conceptual structure for map analysis operations and GIS modeling*
2	*February*	*2004*	[Migration Modeling Determines Spill Effect](#) — *describes procedures for assessing overland and channel flow impacts*
1	*January*	*2004*	[Use Available Tools to Calculate Flow Time and Quantity](#) — *discusses procedures for tracking flow time and quantity*
12	*December*	*2003*	[Constructing Realistic Downhill Flows Proves Difficult](#) — *discusses procedures for characterizing path, sheet, horizontal and fill flows*
11	*November*	*2003*	[Traditional Approaches Can't Characterize Overland Flow](#) — *describes the basic considerations in overland flow*
10.3	*October*	*2003*	[Think with Maps to Evaluate Alternative Routes](#) — *describes procedures for comparing routes*
10.2	*October*	*2003*	[Least Cost Path Review](#) *(unpublished support material)* — *brief review of the LCP procedure for identifying optimal routes and corridors*
10.1	*October*	*2003*	[Extended Experience Materials](#) *(unpublished support material)* — *provides hands-on experience with Optimal Path analysis*
9	*September*	*2003*	[A Recipe for Calibrating and Weighting GIS Model Criteria](#) — *identifies procedures for calibrating and weighting map layers in GIS models*
8	*August*	*2003*	[Consider Multi-Criteria When Routing](#) — *discusses the construction of a discrete "cost/avoidance" map and optimal path corridors*
7	*July*	*2003*	[A Three-Step Process Identifies Preferred Routes](#) — *describes the basic steps in Least Cost Path analysis*
6	*June*	*2003*	[Use Mapping "Art" to Visualize Values](#) — *describes procedures for generating contour maps*
5	*May*	*2003*	[Turning GIS Education on Its Head](#) — *describes the numerous GIS career pathways and the need to engage prospective students from a variety of fields*
4	*April*	*2003*	[Multiple Methods Help Organize Raster Data](#) — *discusses different approaches to storing raster data*
3	*March*	*2003*	[Try Vulnerability Maps to Visualize Aesthetics](#) — *describes a procedure for deriving an aesthetics map based on visual exposure to pretty and ugly places*
2	*February*	*2003*	[Use Maps to Assess Visual Vulnerability](#) — *discusses a procedure for identifying visually vulnerable areas*
1	*January*	*2003*	[Beware of Slope's Slippery Slope](#) — *describes various slope calculations and compares results*
12	*December*	*2002*	[Use Surface Area for Realistic Calculations](#) — *describes a technique for adjusting planimetric area to surface area considering terrain slope*
11	*November*	*2002*	[Identify Valley Bottoms in Mountainous Terrain](#) — *illustrates a technique for identifying flat areas connected to streams*

10	*October*	*2002*	[Accumulation Surfaces Connect Bus Riders and Stops](#) — *discusses an accumulation surface analysis procedure for linking riders with bus stops*
9	*September*	*2002*	[Normalizing Maps for Data Analysis](#) — *describes map normalization and data exchange with other software packages*
8	*August*	*2002*	[Maps Are Numbers First, Pictures Later](#) — *discusses the numeric and geographic characteristics of map values*
7	*July*	*2002*	[Grids and Lattices Build Visualizations](#) — *describes Lattice and Grid forms of map surface display*
6	*June*	*2002*	[Use Travel Time to Connect with Customers](#) — *describes techniques for optimal path and catchment analysis*
5	*May*	*2002*	[Grid-Based Mapping Identifies Customer Pockets and Territories](#) — *identifies techniques for identifying unusually high customer density and for delineating spatially balanced customer territories*
4	*April*	*2002*	[Maps and Curves Can Spatially Characterize Customer Loyalty](#) — *describes a technique for characterizing customer sensitivity to travel-time*
3	*March*	*2002*	[Use Travel Time to Identify Competition Zones](#) — *discusses the procedure for deriving relative travel-time advantage maps*
2	*February*	*2002*	[Stratify Maps to Make Better Predictions](#) — *illustrates a procedure for subdividing an area into smaller more homogenous groups prior to generating prediction equations*
1	*January*	*2002*	[Spatial Data Mining Allows Users to Predict Maps](#) — *describes the basic concepts and procedures for deriving equations that can be used to derive prediction maps*
12	*December*	*2001*	[Use Statistics to Map Data Clusters](#) — *discusses clustering for partitioning an area into separate data groups*
11	*November*	*2001*	[Use Similarity to Identify Data Zones](#) — *describes level-slicing for classifying areas into zones containing a specified data pattern*
10	*October*	*2001*	[Geographic Software Removes Guesswork from Map Similarity](#) — *discusses basic considerations and procedures for generating similarity maps*
9	*September*	*2001*	[Use Polar Variograms to Assess Distance and Direction Dependencies](#) — *discuses a procedure to incorporate direction as well as distance for assessing spatial dependency*
8	*August*	*2001*	[Use Exposure Maps and Fat Buttons to Assess Visual Impact](#) — *investigates procedures for assessing visual exposure*
7	*July*	*2001*	[Visual Exposure is in the Eye of the Beholder](#) — *describes procedures for assessing visual impact and creating simple models*
6	*June*	*2001*	[Identify and Use Visual Exposure to Create Viewshed Maps](#) — *discusses basic considerations and procedures for establishing visual connectivity*
5	*May*	*2001*	[Consider Slope and Scenic Beauty in Deriving Hiking Maps](#) — *describes a*

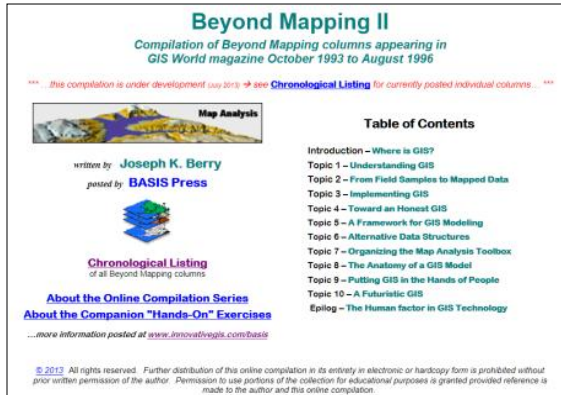|			
			general procedure for weighting friction maps to reflect different objectives
4	*April*	*2001*	[Derive and Use Hiking-Time Maps for Off-Road Travel](#) — *discusses procedures for establishing hiking-time buffers responding to off-road travel*
3	*March*	*2001*	[Integrate Travel-Time into Mapping Packages](#) — *describes procedures for transferring travel-time data to other maps*
2	*February*	*2001*	[Use Travel-Time Buffers to Map Effective Proximity](#) — *discusses procedures for establishing travel-time buffers responding to street type*
1	*January*	*2001*	[Create Effective Distance Buffers to Improve Map Accuracy](#) — *develops procedures for creating buffers that respond to the relative ease of movement*
12	*December*	*2000*	[Line-of-Sight Buffers Add Intelligent to Maps](#) — *describes procedures for creating buffers that track relative visual exposure and noise levels*
11	*November*	*2000*	[Extending GIS Procedures with Variable-Width Buffers](#) — *discusses the basic considerations in establishing variable-width buffers that respond to both intervening conditions and the type of connectivity*
10	*October*	*2000*	[Video Mapping Brings Maps to Life](#) — *describes how video maps are generated and discusses some applications of video mapping*
9	*September*	*2000*	[Capture "Where and When" on Video-based GIS](#) — *describes how GPS-enabled video and digital still cameras work*
8	*August*	*2000*	[How to Represent Changes in a Virtual Forest](#) — *discusses how simulations and "fly-bys" are used to visualize landscape changes and characteristics*
7	*July*	*2000*	[How to Rapidly Construct a Virtual Scene](#) — *describes the procedures in generating a virtual scene from landscape inventory data*
6	*June*	*2000*	[Behind the Scenes of Virtual Reality](#) — *discusses the basic considerations and concepts in 3D-object rendering*
5	*May*	*2000*	[Modeling Erosion and Sediment Loading](#) — *illustrates a GIS model for assessing erosion potential and sediment loading*
4	*April*	*2000*	[Confluence Maps Further Characterize Micro-terrain Features](#) — *describes the use of optimal path density analysis for mapping surface flows*
3	*March*	*2000*	[Characterizing Terrain Slope and Roughness](#) — *discusses techniques for determining terrain inclination and coarseness*
2	*February*	*2000*	[Characterizing Local Terrain Conditions](#) — *discusses the use of "roving windows" to distinguish localized variations*
1	*January*	*2000*	[Use Data to Characterize Micro-Terrain Features](#) — *describes techniques to identify convex and concave features*
12	*December*	*1999*	[Can Predictable Maps Work for You?](#) — *describes a procedure for deriving a spatial prediction model*
11	*November*	*1999*	[Use Scatterplots to Understand Map Correlation](#) — *discusses the underlying concepts in assessing correlation among maps*

10	*October*	*1999*	[Use Statistics to Compare Map Surfaces](#) — *describes several techniques for comparing map surfaces*
9	*September*	*1999*	[Compare Maps by the Numbers](#) — *describes several techniques for comparing discrete maps*
8	*August*	*1999*	[Use Metrics to Assess Forest Fragmentation](#) — *describes some landscape indices for determining richness and fragmentation*
7	*July*	*1999*	[Get to the Core of Landscape Analysis](#) — *describes techniques for assessing core area and edge characterization*
6	*June*	*1999*	[Use GIS to Analyze Landscape Structure](#) — *discusses the underlying principles in landscape analysis and introduces some example landscape indices*
5	*May*	*1999*	[Use GIS to Calculate Nearby Neighbor Statistics](#) — *describes a technique that calculates the proximity to all of the surrounding parcels of a similar vegetation type*
4	*April*	*1999*	[GIS Represents Spatial Patterns and Relationships](#) — *discusses the important differences among discrete mapping , continuous map surfaces and map analysis*
3	*March*	*1999*	[Observe the Evolving GIS Mindset](#) — *illustrates the "map-ematical" approach to analyzing mapped data*
2	*February*	*1999*	[Is GIS Technology Ahead of Science?](#) — *discusses several issues surrounding the differences in the treatment of non-spatial and spatial data*
1	*January*	*1999*	[Extending Spatial Dependency to Maps](#) — *describes a technique for generating a map of spatial autocorrelation*
12	*December*	*1998*	[Measuring Spatial Dependency](#) — *describes the basic measures of autocorrelation*
11	*November*	*1998*	[Unlocking the Keystone Concept of Spatial Dependency](#) — *discusses spatial dependency and illustrates the effects of different spatial arrangements of the same set of data*
10	*October*	*1998*	[GIS Data Are Rarely Normal](#) — *describes the basic non-spatial descriptive statistics*
9	*September*	*1998*	[GIS Software's Changing Roles](#) — *discusses the evolution of GIS software and identifies important trends*
8	*August*	*1998*	[Identify Data Patterns](#) — *discusses data clustering and its application in identifying spatial patterns*
7	*July*	*1998*	[Explore Data Space](#) — *establishes the concept of "data space" and how mapped data conforms to this fundamental view*
6	*June*	*1998*	[Link Data and Geographic Distributions](#) — *describes the direct link between numeric and geographic distributions*
5	*May*	*1998*	[Beware the Slippery Surfaces of GIS Modeling](#) — *discusses the relationships*

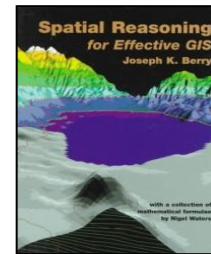|			
			among maps, map surfaces and data distributions
4	*April*	*1998*	Continued Analysis of In-Store Movement and Sales Patterns — *describes the use of temporal analysis and coincidence mapping to enhance shopping patterns*
3	*March*	*1998*	Further Analyzing In-Store Movement and Sales Patterns — *discusses how map analysis is used to investigate the relationship between shopper movement and sales*
2	*February*	*1998*	GIS Analyzes In-Store Movement and Sales Patterns — *describes a procedure using accumulation surface analysis to infer shopper movement from cash register data*
1	*January*	*1998*	Analyzing Stepped Accumulation Surfaces — *describes a technique for forcing an optimal path through a series of points*
12	*December*	*1997*	Determining Optimal Path Corridors — *describes a technique for determining the set of nth best paths between two points*
11	*November*	*1997*	Analyzing Accumulation Surfaces — *describes how two surfaces can be analyzed to determine the relative travel-time advantages*
10	*October*	*1997*	Building Accumulation Surfaces — *reviews how proximity analysis and effective distance is used to construct accumulation surfaces*
9	*September*	*1997*	Diverse Student Needs Must Drive GIS Education — *identifies new demands and students that are molding the future of GIS education*
8	*August*	*1997*	Varied Applications Drive GIS Perspectives — *discusses how map analysis is enlarging the traditional view of mapping*
7	*July*	*1997*	Uncovering the Mysteries of Spatial Autocorrelation — *describes approaches used in assessing spatial autocorrelation*
6	*June*	*1997*	Where Is GIS Education — *describes the broadening appeal of GIS and its impact on academic organization and infrastructure*
5	*May*	*1997*	Depending on the Data — *discusses the fundamental concepts of spatial dependency*
4	*April*	*1997*	Comparing Map Errors — *describes how normalized maps of error can be used to visualize the differences in error surfaces*
3	*March*	*1997*	Move Beyond a Map Full of Errors — *discusses a technique for generating a "shadow map" of error*
2	*February*	*1997*	Justifiable Interpolation — *describes the "Residual Analysis" procedure for assessing interpolation performance*
1	*January*	*1997*	Designer Samples — *describes different sampling patterns and their relative advantages*
12	*December*	*1996*	What's the Point? — *discusses the general considerations in point sampling design*
11	*November*	*1996*	Does Anyone Object? — *discusses some concerns of object-oriented GIS*

10	*October*	*1996*	[Spatial Objects—the Parse and Parcel of GIS?](#) — *discusses database objects and their map expressions*
9	*September*	*1996*	[What Is Object-Oriented Technology Anyway?](#) — *establishes the basic concepts in object-oriented technology*

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Online Book

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

*** ...this compilation is under development (July 2013) → see **Chronological Listing** for currently posted individual columns... ***

Map Analysis

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

Chronological Listing
of all Beyond Mapping columns

About the Online Compilation Series
About the Companion "Hands-On" Exercises

...more information posted at *www.innovativegis.com/basis*

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Table of Contents

Introduction – Where is GIS?
Topic 1 – Understanding GIS
Topic 2 – From Field Samples to Mapped Data
Topic 3 – Implementing GIS
Topic 4 – Toward an Honest GIS
Topic 5 – A Framework for GIS Modeling
Topic 6 – Alternative Data Structures
Topic 7 – Organizing the Map Analysis Toolbox
Topic 8 – The Anatomy of a GIS Model
Topic 9 – Putting GIS in the Hands of People
Topic 10 – A Futuristic GIS
Epilog – The Human factor in GIS Technology

[**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*

Hardcopy Book

[**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*

Note: click on the hyperlinks below to access the columns compiled into the Beyond Mapping II *online book at* [www.innovativegis.com/basis](#)

8	*August*	*1996*	[Developing an Understanding GIS](#) — *describes the translation of mapped data to spatial information for decision-making*
7	*July*	*1996*	[Don't Forget the Human Factor: an Experiential GIS](#) — *describes an early experience (1980) in the application of GIS to land use planning involving the spatial expression and public hearing of a Comprehensive Plan of Development and Conservation*
6	*June*	*1996*	[Analyzing Spatial Dependency between Maps](#) — *Analyzing Spatial Dependency Between Maps — investigates multivariate analysis involving the coincidence of two or more map layers*
5	*May*	*1996*	[Analyzing Spatial Dependency within a Map](#) — *investigates univariate analysis involving spatial relationships within a single map layer*
4	*April*	*1996*	[The Unique Character of Spatial Analysis](#) — *discusses spatial analysis as deriving new spatial information based on geographic dependence within and among map variables*
3	*March*	*1996*	[Classifying the Analytical Capabilities of GIS](#) — *discusses the differences and similarities in the Berry and Tomlin map analysis classification schemes*

2	**February**	**1996**	[Evaluating Map-ematical Relationships](#) — *discussed the differences and similarities between the two basic types of GIS models (Cartographic and Spatial) using the Universal Soil Loss Equation as an example*
1	**January**	**1996**	[Extending Basic Models through Logic Modifications](#) — *describes logic extensions to a simple Landslide Susceptible model by adding additional criteria that changes a model's structure*
12	**December**	**1995**	[From Recipes to Models](#) — *describes basic Binary and Rating model expressions using a simple Landslide Susceptible model*
11	**November**	**1995**	[Heads-Up and Feet-Down Digitizing](#) — *discusses the design components of a GIS/GPS/RS field unit*
10	**October**	**1995**	[GIS and Remote Sensing Share a Lofty Marriage](#) — *identifies the basic concepts, principles and theoretical underpinnings of Remote Sensing (RS) technology*
9	**September**	**1995**	[Put Things in Their Proper Places with GPS](#) — *identifies the basic concepts, principles and theoretical underpinnings of the Global Positioning System (GPS)*
8	**August**	**1995**	[Rasterized Lines and Vectorized Cells](#) — *describes specialized offshoots of traditional raster and vector data formats*
7	**July**	**1995**	[How are your QUADS and TINS?](#) — *describes alternative Quadtree and Triangular Irregular Network data formats*
6	**June**	**1995**	[Raster is Faster, but Vector is Correcter](#) — *describes the structuring of traditional Vector data using explicit topology linking spatial and attribute tables*
5	**May**	**1995**	[Are You a GIS Dead Head?](#) — *describes the structuring of traditional Raster data using implicit topology based on the row/column positioning in a matrix*
4	**April**	**1995**	[Explore a New Spatial Paradigm](#) — *discusses the movement from mapping and spatial inventories by technologists to spatial reasoning and dialog involving enlightened users in development of solutions to complex spatial problems*
3	**March**	**1995**	[Is the GIS Cart in Front of the Horse?](#) — *discusses driving forces, trends and forecasts in contemporary GIS from the perspective of modeling interrelationships among mapped variables*
	February	1995	[Layers to Tapestry](#) *(supplement) — describes an interactive environment for diagramming GIS Logic and processing flows*
2	**February**	**1995**	[Dodge the GIS Modeling Babble Ground](#) — *identifies a Classification Guide for categorizing GIS models*
1	**January**	**1995**	[What's in a Model?](#) — *discusses a conceptual framework for GIS model types and characteristics*
12	**December**	**1994**	[Resolving Map Detail](#) — *discusses the four basic types Map Resolution (Spatial, Minimum Mapping, Thematic and Temporal) that define the level of detail in a digital map as dramatically different from the traditional concept of Map Scale*
11	**November**	**1994**	[What Does Your Computer Really Think of Your Map?](#) — *discusses Spatial*

			Topology through the differences among Graphics Packages, Mapping Software, Spatial Database Management Systems, and GIS Analysis/Modeling Approaches
10	October	1994	*Empirical Verification Assesses Mapping Performance* — *describes procedures for assessing mapping performance through Error Matrix (discrete) and Residual Analysis (continuous)*
9	September	1994	Avoid Dis-Information — *describes the calculation of a localized Coefficient of Variance map*
8	August	1994	Spawning Uncertainty — *identifies a procedure for tracking error propagation in map overlay*
7	July	1994	The This, That, There Rule — *describes creating a "Shadow Map of Certainty" that characterizes the spatial distribution of probable error*
6	June	1994	Build It and They Will Come — *describes the tactical and conceptual considerations in GIS implementation*
5	May	1994	What Can GIS Do for You? — *identifies and discusses the seven basic types of questions addressed by GIS technology*
4	April	1994	Question GIS before You Start — *discusses the importance of an Information Needs Assessment (INA) and a GIS Reality Assessment (GRA)*
3	March	1994	Maneuvering on GIS's Sticky Floor — *describes Inverse Distance, Kriging, and Minimum Curvature techniques for surface modeling*
2	February	1994	Surf's Up — *fitting continuous map surfaces to geographic data distributions*
1	January	1994	Averages Are Mean — *compares nonspatial and spatial distributions of field data*
12	December	1993	Consider a GIS Modeler's Toolkit — *discusses an Object-Oriented Programming System approach to GIS model development*
11	November	1993	Moving Toward a Humane GIS — *describes an interactive link between GIS model logic and code*
10	October	1993	Distinguishing Data from Information and Understanding — *considers the fundamental concepts behind moving mapped data to information and ultimately to understanding*

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Online Book   **Hardcopy Book**

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.

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 1989 to 1993 into 10 Topics, Introduction and Epilog.

Note: click on the hyperlinks below to access individual Beyond Mapping columns

9	**September**	**1993**	Terminology Accelerates Your Intellectual Depletion Allowance — *introduces the concepts and organization used in GIS databases comprised of multiple map layers*
8	**August**	**1993**	GIS Maps Are Dumb — *compares the basic Vector and Raster data structure approaches for storing individual map layers*
7	**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*
6	*June*	*1993*	*Special URISA Issue — no BM column*
5	**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*
4	**April**	**1993**	Maps Speak Louder than Words — *describes analysis procedures that translate decision-maker concerns into maps*
3	**March**	**1993**	Effective Standards Required to Go Beyond Mapping — *identifies and describes four levels of GIS standards (data Exchange, Geographic, Algorithmic and Interpretational)*
2	**February**	**1993**	GIS Mirrors Perceptions of Decision Criteria — *describes a flowcharting procedure that expresses GIS model logic in a clear and concise form*
1	**January**	**1993**	Take a New Look at Visual Connectivity — *describes viewshed and visual exposure procedures*
12	**December**	**1992**	Twists and Contortions Lead to Connectivity — *describes procedures for calculating optimal paths and routing corridors*
11	**November**	**1992**	Rubber Rulers Fit Reality Better — *describes procedures for calculating effective distance that considers intervening absolute and relative barriers*
10	**October**	**1992**	Distance Is Simple and Straight Forward — *describes simple distance calculation as a propagating wavefront*

9	September	1992	There's More Than One Way to Figure Slope — *describes procedures for calculating surface slope and its varied applications*
8	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*
7	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*
6	June	1992	GIS Is Never Having to Say You're Sorry — *discusses the human and organizational considerations in adopting GIS technology*
5	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*
4	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*
3	March	1992	Map Overlay Techniques— there's more than one — *discusses region-wide summary and map coincidence techniques*
2	Feb/*Jan*	1992	Characterizing Spatial Coincidence the Computer's Way — *describes point-by-point overlay techniques*
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*
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*
10	October	1991	Discovering Feature Patterns — *describes procedures for assessing landscape pattern (Spacing and Contiguity)*
9	September	1991	You Can't See the Forest for the Trees — *discusses indices of feature shape (Boundary Configuration and Spatial Integrity)*
8	August	1991	Need to Ask the Right Questions Takes You Beyond Mapping — *describes indices of map variability (Neighborhood Complexity and Comparison)*
7	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*
6	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*
5	May	1991	Who Says You Can't Teach an Old Dog New Tricks? — *describes the basic concepts and approaches used in GIS modeling*
4	Apr/*Mar*	1991	What's Needed to Go Beyond Mapping — *lists and describes the analytical tools needed to go beyond mapping*
2	Feb/*Jan*	1991	Technobabble — *discusses the radical changes GIS technology and the digital*

			map are bringing to traditional mapping
12	**December**	**1990**	[I Don't Do Windows](#) — *describes procedures for summarizing weighted roving windows*
10	**Oct**/Nov	**1990**	[Torture Numbers, They'll Tell you Anything](#) — *discusses the underlying theory and basic considerations of spatial interpolation*
8	**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*
6	**Jun**/July	**1990**	[Imagination is More Important than Information](#) — *describes procedures for characterizing surface configuration (slope, aspect and profile)*
4	**Apr**/May	**1990**	[There's Only One Problem Having All this Sophisticated Equipment](#) — *discusses the basic approaches used for calculating narrowness and visual connectivity*
2	**Feb**/Mar	**1990**	[Keep It Simple Stupid (KISS)](#) — *describes the use of "accumulation surfaces" for deriving optimal path density and N^{th} best paths*
11	**Nov**/Dec	**1989**	[As the Crow Walks](#) — *describes the use of "propagating waves" for calculating effective distance and optimal paths*
9	**Sep**/Oct	**1989**	[You Can't Get There from Here](#) — *introduces the similarities and differences between "simple" and "effective" distance measurement*
7	**Jul**/Aug	**1989**	[GIS Technology Is Technical Oz](#) — *discusses and compares the relative advantages/disadvantages between Vector and Raster processing*
5	**May** V2-3	**1989**	[It Depends: Implications of data structure](#) — *discusses and compares the similarities and differences between Vector and Raster data structure applications*
3	**March** V2-2	**1989**	[Maps as Data: a 'Map-ematics' is Emerging](#) — *describes the differences between Discrete and Continuous mapped data*
9	**Jan** V2-1	**1989**	*No BM column*
9	**Sep** V1-2	**1988**	*No BM column*
7	**Jul** V1-1	**1988**	*No BM column*

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