



Institute of Mathematical Geography:
Quick Response Code (QR Code) Archive
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During 2010/11, Quick Response Codes (QR codes) became prevalent in the United States (Wikipedia). Generally, they function as does a bar code: scan them and obtain extra information beyond the senseless pattern. The two-dimensional black and white pixel displays might be considered as a cross product of bar codes. They may link to images, websites, or a host of electronic files. In Japan, they have been common for years. Now, they are becoming common as advertising and marketing tools of various sorts in the United States: advertisements in Chicago buses sometimes carry QR codes, for example. Scan them with your smartphone, and you see even more about the product being advertised. The cameras in most contemporary smartphones are sufficient as scanners. If the phone does not already come ready to scan QR codes, just download a free application (“app”) and the phone is ready to read not only QR codes but probably also bar codes.

Beyond straightforward marketing applications, the world is open to various constructive applications of this recent technological patch. Many are already scanning, using smartphones, bar codes on grocery items—a list comes up on the phone’s screen showing prices for the item associated with that code at nearby stores. A cylindrical can of tuna is scanned as easily as a flat side of a box of cereal. One can decide where to shop, in either the real or virtual worlds, based on evidence from scanning bar codes already in the kitchen cupboard.

These sorts of application, while useful, seem only one step removed from various traditional marketing applications. The Wikipedia article notes a variety of existing applications. Imagine, in addition, a mathematics or science textbook with many exercises: some with answers in the back of the book, others with no answers. If each exercise had its own QR code, then one could jump to a worked solution for any exercise simply using a smartphone and requiring no computer or CD in the back of the book. In fact, the solution might be a movie of a professor showing how to work the problem.

Alternatively, imagine a journal article in a conventional scholarly journal. More and more, references to websites are integrated, as print URLs only. If in addition, a QR code were inserted as part of the reference, the reader could link directly to the online reference from the print copy. Further, animated graphics are impossible to embed in standard printed documents. The use of a QR code overcomes that impossibility. Associate a QR code with the desired animation and publish the QR code in the journal article—it’s a simple black and white figure. Then, the reader of the article simply opens a smartphone, scans the image in the figure, and views the animation in association with the text in the article. An example of this strategy is forthcoming in an issue of *Geographical Analysis*. The Wikipedia reference notes an existing publishing application from Purdue University.

A number of questions about these codes, at an abstract level, come to mind.

- How many codes are possible—might we run out? Certainly a very large finite number is available and as scanner technology improves, and interesting artistic variants appear, the number will increase. Eventually, an infinite number may be possible once any pixel resolution becomes possible.
- Might a single code point to more than one location? The answer appears to be “no.”
- Might two different QR codes point to the same location? The answer is “yes.” The transformation from QR code to electronic file is a many-to-one transformation. That characteristic appears acceptable for many applications; the reverse would not have been.
- How long do QR codes endure? The answer appears unknown at this time. It is an important question and its eventual answer will no doubt be significant in determining whether QR codes are here to stay or are simply a passing trend.

The ideas above suggest that one powerful academic application of QR codes is to overcome the gap between conventional and electronic publication—in the world of publishing as well as in the world of education. The QR code unifies these disparate print and online worlds. We take advantage of this unification of worlds to archive, using QR codes, all publications of the Institute of Mathematical Geography, from 1985 to the present (see Appendix). Future publications will carry their own QR codes. Continuing to find important academic uses for these codes may help them to endure!

References:



Google QR code creator: <http://2d-code.co.uk/qr-code-google-charts-api/>





GoQR.me, QR code creator permitting links to html anchors: <http://goqr.me/en/>



Wikipedia: QR code. http://en.wikipedia.org/wiki/QR_code



APPENDIX

QR codes associated with online publications, and with archived publications in DeepBlue (persistent archive of The University of Michigan Library), of the Institute of Mathematical Geography. Both hyperlinks and QR codes are included here. Either one will work in pdf format; only the QR code will work from a printout of the material.

	
Online publication, http://www.image.net.org/	DeepBlue publication, http://deepblue.lib.umich.edu/handle/2027.42/58219



Interactive eBooks. Use a computer with Google Earth loaded to read .kmz files.

		
kmz file	kmz file	kmz file
<p><u>Spatial Synthesis: Volume II, Book 4. Making It Clear: The Importance of Transparency, Again.</u> Sandra Arlinghaus with input from John D. Nystuen and Diana Sammataro. March 21, 2009.</p>	<p><u>Spatial Synthesis: Volume II, Book 3. Population-Environment Dynamics: The Power of the Network Link.</u> GoogleBookversion. S. Arlinghaus. December 1, 2008</p>	<p><u>Spatial Synthesis: Volume II, Book 2. Making It Clear: The Importance of Transparency,</u> GoogleBook version. S. Arlinghaus. December 1, 2008</p>
		
<p><u>Spatial Synthesis: Volume II, Book 2. Making It Clear: The Importance of Transparency, October 31, 2008</u> Sandra Arlinghaus.</p>	<p>Spatial Synthesis, Volume II, Book 1. <u>Scientific, Planning, Humanitarian, and Teaching Applications, From DevInfo to Google Earth.</u> Sandra Arlinghaus. September 2008.</p>	<p><u>3D Atlas of Ann Arbor, 3rd Edition,</u> Sandra Lach Arlinghaus with input from others noted throughout. June 2007.</p>



[3D Atlas of Ann Arbor, 2nd Edition.](#) Sandra Lach
Arlinghaus, November, 2006.



[3D Atlas of Ann Arbor, 1st Edition.](#) Editor and principal
author: Sandra Lach
Arlinghaus with co-authors
noted throughout the
files. June, 2006.



**Spatial Synthesis, Volume I,
Book 1. [Centrality and
Hierarchy.](#)** Arlinghaus,
Sandra Lach and Arlinghaus,
William Charles. June 21,
2005

**Monograph Series, Classic eBooks in pdf format.
Includes links to Student Series, as well.**



[Monograph One](#) 78 pp. (master document prepared using MTS by Gwen Nystuen)

Sandra L. Arlinghaus and John D. Nystuen, 1986.

Mathematical Geography and Global Art: the Mathematics of David Barr's 'Four Corners Project'.

2009: [Link](#) to Supplementary Materials.

- Front Matter
- Table of Contents
- Chapter 1. Introduction
- Chapter 2. Four Corner Sites for the Tetrahedron Sculpture
- Chapter 3. Extension of Barr's Problem to the Set of Platonic Solids
- Chapter 4. Uniqueness Questions
- Appendix A. Some Solid Geometry
- Appendix B. Some Linear Algebra
- Appendix C. Terrae Antipodum: Antipodal Landmass Map



[Monograph Two](#) 79 pp. (master document prepared using a typewriter)

Sandra L. Arlinghaus, 1986.

Down the Mail Tubes: the Pressured Postal Era, 1853-1984.

2009: [Link](#) to Supplementary Materials.

- Front Matter
- Review by Sylvia L. Thrupp
- Table of Contents
- Introduction



- Pneumatic Postal Networks in Western Europe
- Pneumatic Postal Networks in the United States
- Transfer of Technology
- Appendix
- Notes
- Source of Maps and Figures



Monograph Three 167 pp. (original document prepared by the author using a typewriter)
Sandra L. Arlinghaus, 1986.

Essays on Mathematical Geography.
2009: *Link to Supplementary Materials.*

- Front Matter
- Table of Contents
- The Well-tempered Map Projection
- Antipodal Graphs
- Measuring the Vertical City
- Concavity and Human Settlement Patterns
- Steiner Transformations
- Analogue Clocks
- Fad and Permanence in Human Systems
- Topological Exploration in Geography
- A Space for Thought
- Chaos in Human Systems--The Heine-Borel Theorem



Monograph Four 118 pp. plus front matter. (Original document prepared by the author using a typewriter)

Robert F. Austin, 1986.

A Historical Gazetteer of Southeast Asia.
2009: *Link to Supplementary Materials.*

- Cover
- Front Matter
- Introduction
- Gazetteer
- Notes and Abbreviations
- Additional References



Monograph Five 101 pp. (original document prepared by the author using ChiWriter)
Sandra L. Arlinghaus, 1987.

Essays on Mathematical Geography-II.

- Cover
- Dedication
- Frontispiece: The Atlantic Drainage Tree
- Acknowledgment
- Table of Contents
- Getting a Handel on Water-graphs
- Terror in Transit: A Graph Theoretic Approach to the Passive Defense of Urban Networks
- Terrae Antipodum
- Urban Inversion
- Fractals: Constructions, Speculations, and Concepts
- Solar Woks
- A Pneumatic Postal Plan: The Chambered Interchange and ZIPPR Code
- Endpiece



Monograph Six 162 pp. (Original document prepared by the authors using word processing software.)

Pierre Hanjoul, Hubert Beguin, and Jean-Claude Thill, 1988.

Theoretical Market Areas Under Euclidean Distance.

- Abstract -- Acknowledgments
- Table of Contents
- 1. Introduction
- 2. Modelling consumers' behaviour
- 3. Delimitation of the problem and definitions
- 4. Elementary properties of market areas
- 5. Variation of the transportation cost difference along specific curves
- 6. Remarkable bounds and asymptotic behaviour: spatial extension
- 7. Variation of y with x along the indifference line
- 8. The standpoint of mathematical topology: spatial structure
- 9. Properties of the measures of Z_k and of the extra territory of centre j
- 10. Dependence of the market areas on the exponent a when $h = .^a$
- 11. Some limiting properties of market areas
- 12. Relaxation of the assumptions about the transportation cost function h
- 13. Descartes' ovals
- Conclusion
- References
- Appendices
- List of main symbols



[Monograph Seven](#) 115 pp. (Original document prepared by the editor using word processing software.)

Keith J. Tinkler, Editor, 1988. With contributions by Keith J. Tinkler, John D. Nystuen, and Michael F. Dacey.

Nystuen--Dacey Nodal Analysis.

- Acknowledgments
- "Foreward" (Nystuen)
- Table of Contents
- Preface (Tinkler)
- Statistics for Nystuen Dacey Nodal Analysis (Tinkler)
- Appendix A (Tinkler)
- Appendix B (Tinkler)
- Appendix C (Nystuen and Dacey)
- Appendix D (Nystuen and Dacey)
- Appendix E (Nystuen and Dacey)
- Appendix F (Tinkler)



[Monograph Eight](#) 85 pp. (Original document prepared by the author using word processing software.)

James W. Fonseca, 1989.

The Urban Rank-size Hierarchy: A Mathematical Interpretation.

- Introduction
- The Spiral Constant
- Other Derivations of the Ratio of the Spiral Constant
- Generating Rank-Size by the Spiral Constant
- The Slope of the Rank-Size Distribution
- The Spiral Constant and Concavity of Rank-Size Distributions
- The Spiral Constant and the Primate City
- Traditional Rank-Size Relationships
- Rank-Size Central Place Theory
- Directions for Further Research
- Bibliography
- About the Author



[Monograph Nine](#) 84 pp. (original document prepared by the author using Plain TeX)

Sandra L. Arlinghaus, 1989.

An Atlas of Steiner Networks.

- Front Matter
- Introduction
- Networks of Minimal Total Length in the Triangle
- Networks of Minimal Total Length, in General
- Geometric Constructions: the Six Point Case
- Enumeration of Candidate Steiner Networks



Monograph Ten 103 pp. (original document prepared by the author using word processing software)

Daniel A. Griffith, 1989.

Simulating $K=3$ Christaller Central Place Structures: An Algorithm Using A Constant Elasticity of Substitution Consumption Function.



- Front Matter
- Preface
- Table of Contents
- Chapter 1.0. Introduction
- Chapter 2.0. Background
- Chapter 3.0. Mathematical and numerical solutions to components of the $K = 3$ central place structure problem
- Chapter 4.0. A multinomial logit classification model for determining hierarchical levels for commodities
- Chapter 5.0. Results for contrived test data sets
- Chapter 6.0. About the algorithm
- Chapter 7.0. Concluding comments
- Chapter 8.0. Bibliography
- Appendix A: BASIC computer code for IBM-Compatible PCs



Monograph Eleven 104 pp. (original document prepared by the authors using Plain TeX)

Sandra L. Arlinghaus and John D. Nystuen, 1990.

Environmental Effects on Bus Durability.



- Front Matter
- Chapter 1: Climatic Effects
- Chapter 2: Terrain Effects
- Chapter 3: Congestion Effects
- Chapter 4: Combined Effects



[Monograph Twelve](#) 398 pp. (Original document prepared by IMaGe using TeX.)

Daniel A. Griffith, Editor, 1990.

Spatial Statistics: Past, Present, and Future

(because the file for the entire book is large, over 147MB, pdfs for individual chapters are also given)

[Front Matter](#) [1. Brian Ripley](#) [2. J. Keith Ord](#) [3. Luc Anselin](#) [4. Robert P. Haining](#) [5. R. J. Martin](#) [6. Daniel Wartenberg](#) [7 J. H. P. Paelinck](#) [8. Daniel A. Griffith](#) [9. Kanti V. Mardia](#) [10. Ashish Sen](#) [11. Sylvia Richardson](#) [12. Graham J. G. Upton](#) [13. Patrick Doreian](#) [Index](#)



[Monograph Thirteen](#) (original document prepared by the editor using Plain TeX)

Sandra L. Arlinghaus, Editor, 1990.

Solstice: An Electronic Journal of Geography and Mathematics,
Volume I.

- Front matter for entire volume
- Front matter for Volume I, Number 1, Summer, 1990
- Postulates of the Science of Space (reprint), W. K. Clifford
- Beyond the fractal, S. L. Arlinghaus
- Groups, graphs, and God, W. C. Arlinghaus
- Regular features
- Front matter for Volume I, Number 2, Winter, 1990
- A city of strangers: spatial aspects of alienation in the Detroit metropolitan area (reprint), J. D. Nystuen
- Scale and dimension: their logical harmony, S. L. Arlinghaus.
- Parallels between parallels, S. L. Arlinghaus
- The Hedetniemi matrix sum: a real-world application, S. L. Arlinghaus, W. C. Arlinghaus, J. D. Nystuen
- Fractal geometry of infinite pixel sequences: "Super-definition" resolution? S. L. Arlinghaus
- Regular Features



[Monograph Fourteen](#) 52 pp. (original document prepared by the author using Plain TeX)

Sandra L. Arlinghaus, 1991.

Essays on Mathematical Geography--III.

- Cover
- Dedication
- Copyright statement
- Preface
- Table of Contents
- Table for Central Place Fractals
- Tiling According to the "Administrative" Principle



- Moire Maps
- Triangle Partitioning
- An Enumeration of Candidate Steiner Networks
- A Topological Generation Gap
- Synthetic Centers of Gravity: Conjecture



Monograph Fifteen (original document prepared by the editor using Plain TeX)

Sandra L. Arlinghaus, Editor, 1991.

Solstice: An Electronic Journal of Geography and Mathematics,
Volume II.

- Front Matter, Number 1, Volume II.
- The Spatial Shadow: Light and Dark---Whole and Part. S. Arlinghaus, D. Barr, J. Nystuen.
- Construction Zone: Logistic Curve. S. Arlinghaus.
- Construction Zone: Spatial Theory lectures. S. Arlinghaus.
- End Matter, Number 1, Volume II.
- Front Matter, Number 2, Volume II.
- Reprint: Proof, Truth, and Confusion. S. Mac Lane.
- Digital Maps and Data Bases: Aesthetics versus Accuracy. R. F. Austin
- End Matter, Number 2, Volume II.



Monograph Sixteen (original document prepared by the editor using Plain TeX)

Sandra L. Arlinghaus, Editor, 1992.

Solstice: An Electronic Journal of Geography and Mathematics,
Volume III.

- Front Matter, Number 1, Volume III.
- Computing Areas of Regions with Discretely Defined Boundaries. H. L. Stern
- The Quadratic World of Kinematic Waves. S. Arlinghaus, J. Nystuen, M. Woldenberg.
- End Matter, Number 1, Volume III.
- Front Matter, Number 2, Volume III.
- Reprint: What Are Mathematical Models and What Should They Be? Frank Harary
- Reprint: Where Are We? Comments on the Concept of the "Center of Population". Frank Barmore.
- The Pelt of the Earth: An Essay on Reactive Diffusion. S. Arlinghaus, J. Nystuen.
- End Matter, Number 2, Volume III.



Monograph Seventeen (original document prepared by the editor using Plain TeX)

Sandra L. Arlinghaus, Editor, 1993.

Solstice: An Electronic Journal of Geography and Mathematics,
Volume IV.

- Front Matter, Number 1, Volume IV.
- Electronic Journals: Observations Based on Actual Trials, 1987-Present. S. Arlinghaus and R. Zander
- Wilderness As Place. J. Nystuen
- Reprint: The Earth Isn't Flat. And It Isn't Round Either: Some Significant and Little Known Effects of the Earth's Ellipsoidal Shape. F. Barmore.
- Microcell Hexnets? S. Arlinghaus
- Sum Graphs and Geographic Information. S. Arlinghaus, W. Arlinghaus, F. Harary.
- End Matter, Number 1, Volume IV.
- Front Matter, Number 2, Volume IV.
- Villages in Transition: Elevated Risk of Micronutrient deficiency. W. Drake, S. Pak, I. Tarwotjo, Muhilal, J. Gorstein, R. Tilden
- End Matter, Number 2, Volume IV.



Monograph Eighteen 109 pp. (Original document prepared by the author using word processing software.)

David J. Gordon. 1995.

The Cause of Location of Roads in Maryland: A Study in Cartographic Logic.

- Chapter 1: Introduction to the Cause of Location of Roads
- Chapter 2: Developing the Hypothesis of Ridge Roads
- Chapter 3: Constructing a Model of Ridge Roads
- Chapter 4: Central Maryland: a Case Study
- Chapter 5: Generalizing the Results
- References Cited
- Appendix A Glossary
- Appendix B Constructing the Contour Map of Travel Cost

Added [link](#) to folder containing figures.



Monograph Nineteen (original document prepared by the editor using Plain TeX)

Sandra L. Arlinghaus, Editor, 1994.

Solstice: An Electronic Journal of Geography and Mathematics,
Volume V.

- Front Matter, Number 1, Volume V.
- Reprint: Getting Infrastructure Built, Virginia Ainslie and Jack Licate.
- Reprint: Center Here; Center There; Center, Center Everywhere, Frank Barmore.
- Equal-Area Venn Diagrams of Two Circles: Their Use with Real-World



Data, B. Burkhalter

- Los Angeles, 1994--A Spatial Scientific Study
- End Matter, Number 1, Volume V.
- Front Matter, Number 2, Volume V.
- The Paris Metro: Is its Graph Planar? S. Arlinghaus, W. Arlinghaus, F. Harary.
- Interruption! S. Arlinghaus
- Reprint: Imperfections in the Uniform Plane, M. Dacey.
- Construction Zone: The Braikenridge-MacLaurin Construction
- End Matter, Number 2, Volume V.



Monograph Twenty

Sandra L. Arlinghaus, Editor, 1995.

Solstice: An Electronic Journal of Geography and Mathematics, Volume VI.

- Chapter 0: Front Matter
- Chapter 1: Fifth Anniversary of Solstice
- Chapter 2: New Format for Solstice
- Chapter 3: "Motor Vehicle Transport and Global Climate Change: Policy Scenarios," R. Wallace
- Chapter 4: "Discrete Mathematics and Counting Derangements in Blind Wine Tastings," J. Nystuen, S. Arlinghaus, W. Arlinghaus
- Chapter 5: Index



Monograph Twenty One

Sandra L. Arlinghaus, Editor, 1996.

Solstice: An Electronic Journal of Geography and Mathematics, Volume VII.

- Chapter 0: Front Matter
- Chapter 1: "The Greening of Detroit, 1975-1992: Physical Effects of Decline," J. Nystuen, R. Ryznar, T. Wagner
- Chapter 2: "Algebraic Aspects of Ratios," S. Arlinghaus
- Chapter 3: "U.S. Route 12 Buffer," D. Jacobs
- Chapter 4: "Web Fractals," S. Arlinghaus
- Chapter 5: "Part II. Elements of Spatial Planning: Theory. Merging Maps: Node Labeling Strategies," S. Arlinghaus
- Chapter 6: Index



Monograph Twenty Two

Sandra L. Arlinghaus, Editor, 1997

Solstice: An Electronic Journal of Geography and Mathematics, Volume VIII.



- Front Matter
- "Why Whales Don't Freeze or Kidney-Shaped Airports: Spatial Analysis and Spatial Design." John D. Nystuen
- "To the Memory of Clyde Tombaugh, 1906-1997." Frank Harary
- "The Photographic Record. SunSweep: A Visit on the Summer Solstice." John D. Nystuen
- "Buffers and Duality." Sandra L. Arlinghaus, Frederick L. Goodman, Daniel A. Jacobs
- "A Graph Theoretic View of the Join-Count Statistic." Sandra L. Arlinghaus and William C. Arlinghaus
- "Differences in Feature Representation in Digital Map Bases." John D. Nystuen and Andrea I. Frank

Monograph Twenty Three

Sandra L. Arlinghaus, Editor, 1998

Solstice: An Electronic Journal of Geography and Mathematics, Volume IX.

SEE ASSOCIATED ARTICLES IN SOLSTICE TO VIEW ANIMATION...



- Front Matter
- "Animaps." Sandra L. Arlinghaus, William D. Drake, and John D. Nystuen with Audra Laug, Kris S. Oswald, and Diana Sammataro
- "Spatial Analysis, the Wisconsin Idea and the UW-System: The Use and Abuse of Dispersion Statistics." Frank E. Barmore
- "Revitalizing Maps or Images?" Sandra L. Arlinghaus and Ruben De la Sierra
- Book Review by John D. Nystuen: *The Universe Below* by William J. Broad.
- "Animated Four Color Theorem: Sample Map." Sandra Lach Arlinghaus
- "Animaps, II." Sandra Lach Arlinghaus
- Book Review by Daniel Albert: *Rising Tide: The Great Mississippi Flood of 1927 and How it Changed America* by John M. Barry

SOLSTICE: AN ELECTRONIC JOURNAL OF GEOGRAPHY AND MATHEMATICS



 <p>2010 Volume XXI, Number 1, 2010</p>	 <p>2010 Volume XXI, Number 2, 2010</p>
 <p>2009 Volume XX, Number 1, 2009</p>	 <p>2009 Volume XX, Number 2, 2009</p>
 <p>2008 Volume XIX, Number 1, 2008</p>	 <p>2008 Volume XIX, Number 2, 2008</p>
 <p>2007 Volume XVIII, Number 1, 2007</p>	 <p>2007 Volume XVIII, Number 2, 2007</p>
 <p>2006 Volume XVII, Number 1, 2006</p>	 <p>2006 Volume XVII, Number 2, 2006</p>

 <p>2005 Volume XVI, Number 1, 2005</p>	 <p>2005 Volume XVI, Number 2, 2005</p>
 <p>2004 Volume XV, Number 1, 2004</p>	 <p>2004 Volume XV, Number 2, 2004</p>
 <p>2003 Volume XIV, Number 1, 2003</p>	 <p>2003 Volume XIV, Number 2, 2003</p>
 <p>2002 Volume XIII, Number 1, 2002</p>	 <p>2002 Volume XIII, Number 2, 2002</p>
 <p>2001 Volume XII, Number 1</p>	 <p>2001 Volume XII, Number 2</p>
 <p>2000 Volume XI, Number 1</p>	 <p>2000 Volume XI, Number 2</p>

 <p>1999 Volume X, Number 1</p>	 <p>1999 Volume X, Number 2</p>
 <p>1998 Volume IX, Number 1,</p>	 <p>1998 Volume IX, Number 2</p>
 <p>1997 Volume VIII, Number 1</p>	 <p>1997 Volume VIII, Number 2</p>
 <p>1996 <u>Volume VII, Number 1</u></p>	 <p>1996 <u>Volume VII, Number 2</u></p>
 <p>1995 <u>Volume VI, Number 1</u></p>	 <p>1995 <u>Volume VI, Number 2</u></p>
 <p>1994 <u>Volume V, Number 1</u></p>	 <p>1994 <u>Volume V, Number 2</u></p>



1993
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Discussion Papers



- **[Classical permitted reprints](#)**: John D. Nystuen, Series Editor.
Michigan Inter-University Community of Mathematical Geographers-- Anderson, M.; Bunge, W.; Casetti, E.; Dacey, M. F.; Getis, A.; Gould, P. R.; Guyot, R.; Karlin, A.; Martin, R.; Nordbeck, S.; Nystuen, J. D.; Pattison, W.; Perkal, J.; Semple, R. K.; Tobler, W. R., Toulmin, S.; Warntz, W.; Yuill, R. S.
- **[Original \(new\) material](#)**: Daniel A. Griffith, Series Editor.
Spatial Regression Analysis on the PC: Spatial Statistics Using MINITAB--Griffith, D. A.

Instructional Materials



- **Textbooks (permitted reprints)**
 - [Kolars and Nystuen](#)
 - [Philbrick](#)
- [MapPack](#), S. Arlinghaus, 1995: specific to Atlas GIS, v. 3.0.
- Precollegiate Interactive Atlas: [S. Arlinghaus and B. Riordan](#) This atlas originally came spiral bound with a sheet of reflective Mylar as the back cover, used to distort maps to illustrate various ideas associated with projection.

Awards



Author affiliation

Dr. Sandra Arlinghaus is Adjunct Professor at The University of Michigan, Director of IMAge, and Executive Member, Community Systems Foundation.

Institute of Mathematical Geography



Solstice: An Electronic Journal of Geography and Mathematics,
Volume XXII, Number 1

Institute of Mathematical Geography (IMaGe).

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Please contact an appropriate party concerning citation of this article:

sarhaus@umich.edu

<http://www.imagenet.org>

<http://deepblue.lib.umich.edu/handle/2027.42/58219>

***Solstice* was a Pirelli INTERNETional Award Semi-Finalist, 2001 (top 80 out of over 1000 entries worldwide)**

One article in *Solstice* was a Pirelli INTERNETional Award Semi-Finalist, 2003 (Spatial Synthesis Sampler).

***Solstice* is listed in the Directory of Open Access Journals maintained by the**

University of Lund where it is maintained as a "searchable" journal.

Solstice is listed on the journals section of the website of the American Mathematical Society, <http://www.ams.org/>

Solstice is listed in [*Geoscience e-Journals*](#)

IMaGe is listed on the website of the Numerical Cartography Lab of The Ohio State University: http://ncl.sbs.ohio-state.edu/4_homes.html

Congratulations to all *Solstice* contributors.

Remembering those who are gone now but who contributed in various ways to *Solstice* or to IMaGe projects, directly or indirectly, during the first 25 years of IMaGe:

[Allen K. Philbrick](#) | [Donald F. Lach](#) | [Frank Harary](#) | [H. S. M. Coxeter](#) |
[Saunders Mac Lane](#) | [Chauncy D. Harris](#) | [Norton S. Ginsburg](#) | [Sylvia L. Thrupp](#) | [Arthur L. Loeb](#) | [George Kish](#) |

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