



Resources for Spatial Thinking and Analysis

Donald G. Janelle

Center for Spatially Integrated Social Science

University of California, Santa Barbara

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Workshop on Spatial Analysis in Anthropology



Social Science Infrastructure

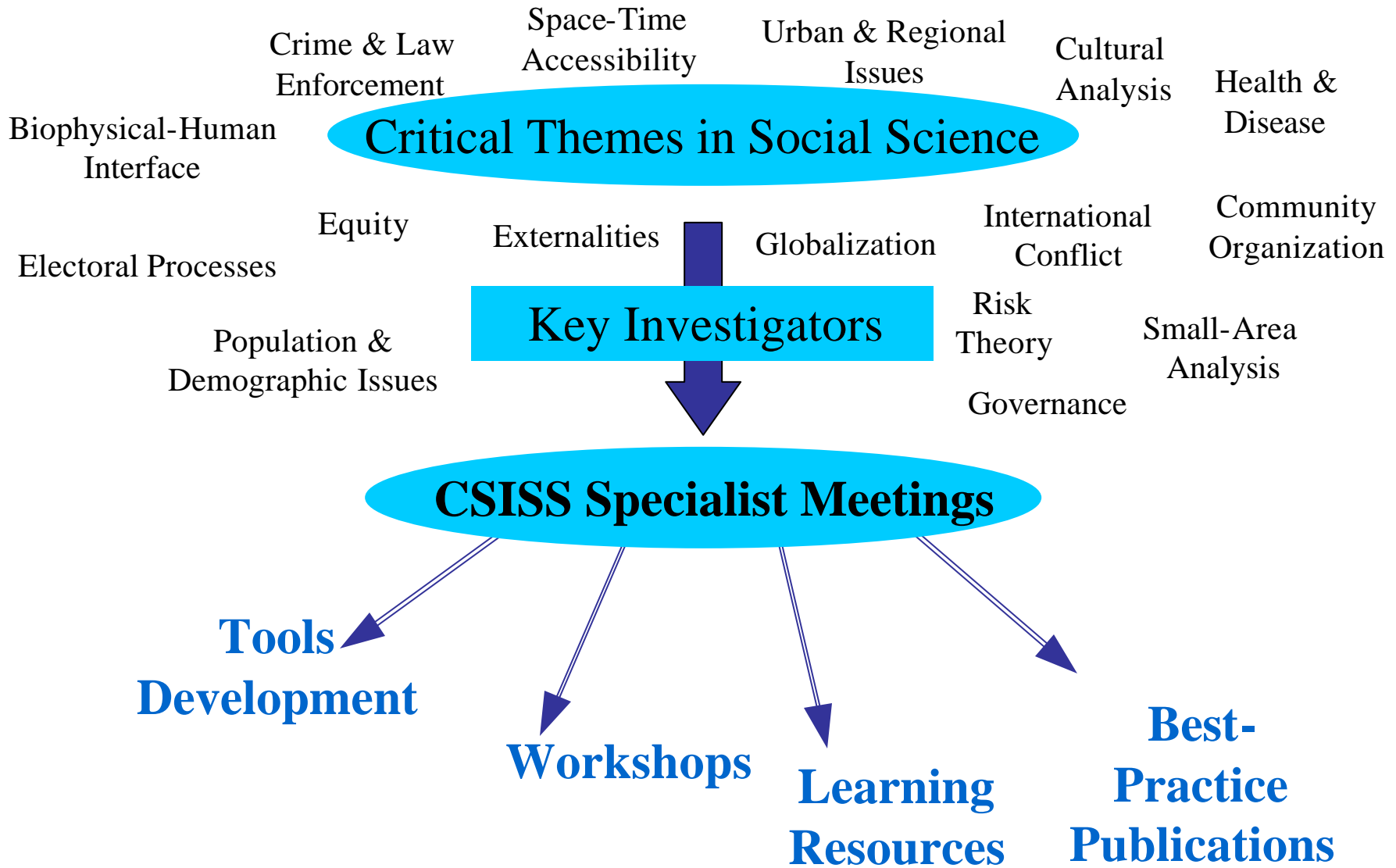
Enhancing shared resources for research and learning – **the NSF View**

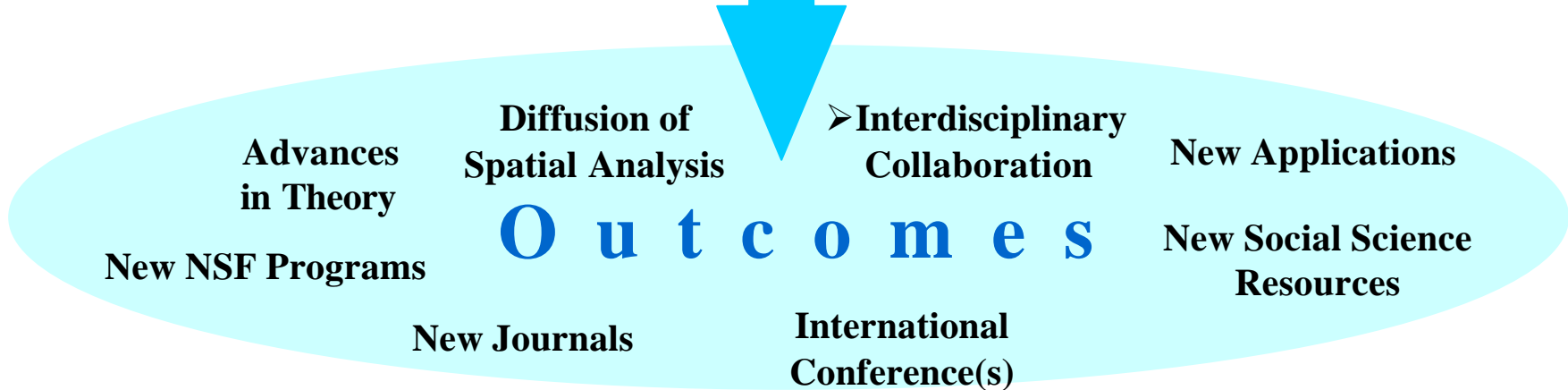
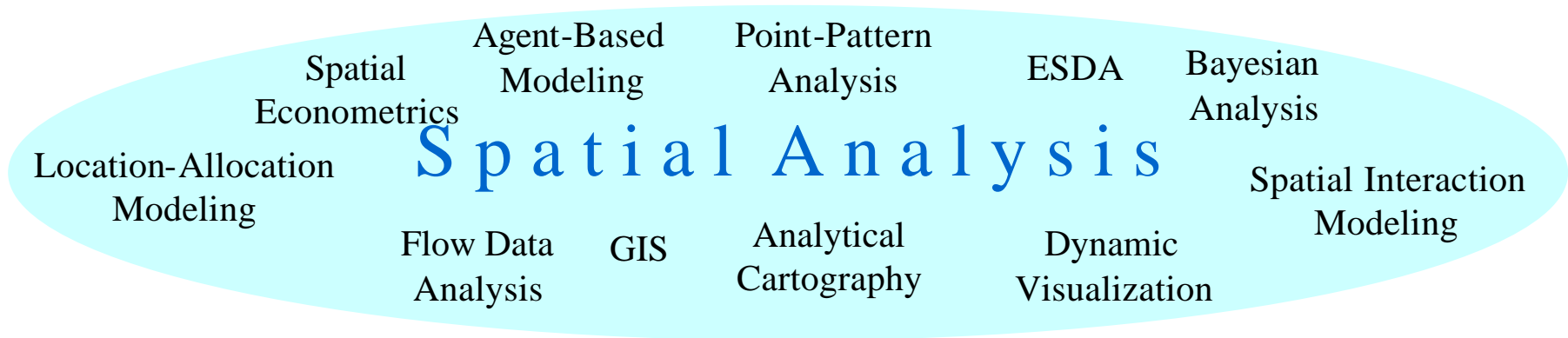
- Data and tools
- Human resources - training, education
- Communication - linkages, networks, collaboration
- Outreach - accessibility and dissemination



Spatial Social Science The CSISS Perspective

- **Views space as integrating social processes**
- **Sees social science problems as processes in place**
- **Uses GIS to integrate data by location**
- **Uses spatial analysis to integrate multi-discipline views**







The CSISS Mission recognizes the growing significance of space, spatiality, location, and place in social science research. It seeks to develop unrestricted access to tools and perspectives that will advance the spatial analytic capabilities of researchers throughout the social sciences. CSISS is funded by the [National Science Foundation](#) under its program of support for infrastructure in the social and behavioral sciences.

CSISS News

[GIScience 2002 Call for Participation](#)

Core Programs	Learning Resources	Spatial Resources	Spatial Tools
<p>These six infrastructure programs form the core of the Center's activities.</p>	<p>These introductory materials include CSISS Classics and select video clips from the CSISS summer workshops.</p>	<p>CSISS has compiled e-journals, bibliographies, and other spatial resources for the social sciences.</p>	<p>Here's where you'll find information about software for the exploration and analysis of spatial data.</p>
Search Engines	CSISS Events	Community Center	About CSISS
<p>Try CSISS's custom search engine to find spatial analysis resources on the Internet.</p>	<p>Here's where you'll find information and registration for workshops, conferences and specialist meetings.</p>	<p>Join one of the forums on topics such as spatial equity, spatial externalities, and spatial econometrics.</p>	<p>CSISS people, programs and the original NSF proposal are described here.</p>

Learning Resources

[CSISS Classics](#)

[GIS Cookbook](#)

[ARGUS Activities & Readings](#)

[NCGIA Core Curriculum](#) ▶

[Course Syllabi](#) ▶

[Workshop Video Clips](#) ▶

[Papers & Presentations](#) ▶

Center for Spatially Integrated Social Science

CSISS Classics

The foundations of spatial analysis span many disciplines over many generations of researchers and practitioners. **CSISS Classics** provides summaries and illustrations of major contributions to spatial thinking in the social sciences. Primary emphasis is given to research before 1980, with an attempt to capture and acknowledge the repository of spatial thinking in the social sciences for the last few centuries. The summaries, along with key references, are intended as guides for those interested in exploring intellectual inheritance from previous generations.



Edward T. Hall, Proxemic Theory, 1966

Background Hall, Edward Twitchell (1914--)

The anthropologist Edward T. Hall was born in Missouri in 1914. The foundation for his lifelong research on cultural perceptions of space was laid during World War II when he served in the U.S. Army in Europe and the Philippines. During this time, as well as during his subsequent service as director of the Foreign Service Institute training program for technicians assigned to overseas duty, Hall observed the many difficulties created by failures of intercultural communication. Hall began to believe that basic differences in the way that members of different cultures perceived reality were responsible for miscommunications of the most fundamental kind. Along with his wife, Mildred Reed Hall, he has published numerous practical and academic books on cross-cultural communication.

Innovation Hall is most associated with proxemics, the study of the human use of space within the context of culture. In *The Hidden Dimension* (1966), Hall developed his theory of proxemics, arguing that human perceptions of space, although derived





Strangers waiting for a train in Oklahoma try to maintain at least 18" of personal space. Edward Hall's theory of proxemics suggests that people will maintain differing degrees of personal distance depending on the social setting and their cultural backgrounds.



Friedrich Ratzel, Clark Wissler, and Carl Sauer: Culture Area Research and Mapping

By Nina Brown

Innovation

A culture area is a region of the world in which people share similar cultural traits. Researchers may define a culture area by plotting the distribution of a single cultural trait, such as maize agriculture, and uniting all the communities that share this trait into a single cultural area. Alternatively, researchers sometimes choose to group communities into a culture area





A portion of Clark Wissler's map of the culture areas of the Native American United States.

The map highlights similarities in food gathering techniques for seven culture areas

Cultural Area: Related Work and Web Links

Gupta, Akhil and James Ferguson. *Culture, Power, Place: Explorations in Critical Anthropology*. (Durham, NC: Duke University Press, 1997).

Kroeber, Alfred L. "The Cultural Area and Age Area Concepts of Clark Wissler." In *Methods in Social Science*. Pp. 248-265. Stuart A. Rice, ed. (Chicago: University of Chicago Press, 1931).

Meinig, D.W. "The Mormon Cultural Region: Strategies and Patterns in the Geography of the American West, 1847-1964." *Annals of the Association of American Geographers* 55 (2): 191-21 (1965).

Sauer, Carl O. *Agricultural Origins and Dispersals*. (New York: American Geographical Society, 1952).

Carl Sauer Biographical Sketch

<http://geography.miningco.com/cs/carlosauer/>

<http://www.as.ua.edu/ant/Faculty/murphy/diffusion.htm>

<http://www.indiana.edu/~intell/wissler.html>



Gordon R. Willey: Settlement Patterns in Archaeology By Jorge Sifuentes and Eric White

Background

Widely recognized as one of the most important American archaeologists of the second half of the twentieth century; Gordon Willey (1913-2002) was appointed in 1950 as the first scholar to hold the Charles P. Bowditch Chair at Harvard University. He was a professor in the Department of Anthropology for 36 years.

Willey pioneered settlement pattern studies based on fieldwork in Peru's



CSISS Classics in Anthropology??

- To what extent is *space* the 'great un-named' variable in anthropological research?
 - Anthropology's role in documenting the environmental and cultural distinctiveness of places and regions.
 - Spatial integration, though primarily implicit rather than explicit, is an important component of anthropological theory.
- Can these contributions be expressed in a more explicitly spatial way – as examples of spatial thinking and spatial analysis in anthropology?

Bronislaw Malinowski – *A CSISS Classic?*

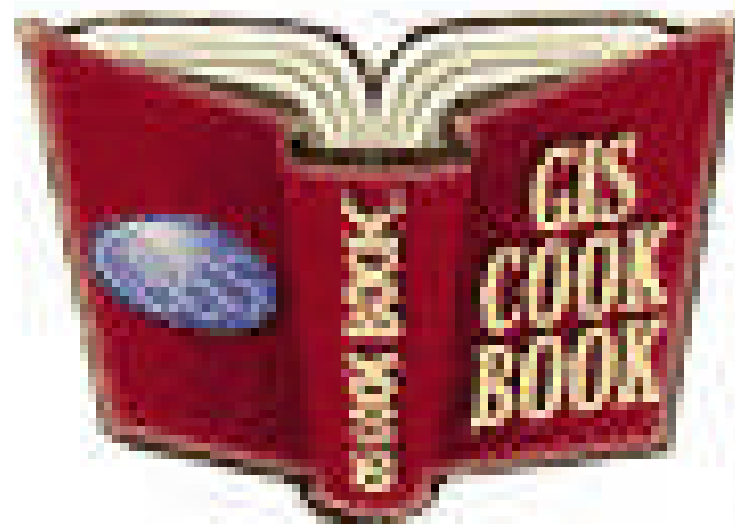


- Noted for fieldwork and for theoretical contribution to 'functionalism'
- Documented the ceremonial exchange known as the 'Kula' among the Trobriand Islanders of the South Pacific
 - The Kula helped maintain social relations and trading networks with people across vast expanses of ocean.
 - a long-distance balanced reciprocity to cope with vast spaces.

Margaret Mead – a *CSISS Classic*?



- Noted for fieldwork and for theoretical contributions in gender and personality research.
- Are there spatial dimensions to her research that can be made more explicit?
 - In studies of the Mundugumor (Biwat of Papua New Guinea), how is space treated in the contexts of subsistence, trade, and settlement patterns?



GIS Cookbook: Contents

- [Backgrounds](#) provide brief statements about when to use different GIS tools, the components of each tool, and discussions on the pros and cons of using the tool.
- [Getting Started](#) recipes are intended to help users who are unfamiliar with the basics of GIS software. They include short explanations on how to complete common tasks, such as how to add data or open a new view.
- [Recipes](#) are step-by-step lessons that guide users through basic spatial analysis and mapping procedures. Screen shots and examples are provided for clearer instruction. Recipes cover six of the most basic elements of spatial analysis and mapping -- geocoding, buffers, projections, datums, density estimation, and census tracts.
- [Glossary Terms](#) are GIS terms used within recipes that may be unfamiliar to new users of GIS. Underlined terms are hyperlinked to definitions that appear in

[Return Home](#)

[Core Programs](#)

[Learning Resources](#)

[Spatial Resources](#)

[Spatial Tools](#)

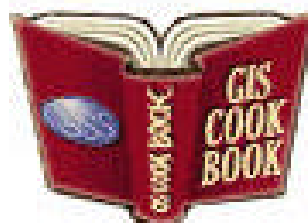
[Search Engines](#)



Center for Spatially Integrated Social Science

GIS Cookbook: Recipes

- ◊ [Buffering an Area \(ArcView 3.2\)](#)
- ◊ [Selecting From Geocoded Addresses \(ArcView 3.2\)](#)
- ◊ [Classifying Data \(ArcView 3.2\)](#)
- ◊ [Reprojecting Data \(ArcView 3.2\)](#)
- ◊ [How to Geocode Addresses \(ArcGIS 8.1\)](#)
- ◊ [How to Geocode Addresses \(ArcView 3.2\)](#)
- ◊ [Creating a Report \(ArcView 3.2\)](#)
- ◊ [Buffering an Area \(ArcGIS 8.1\)](#)



Course Syllabi From Leading Researchers in Spatial Social Science

*Anthropology • Archaeology • Criminology • Demography • Economics
Environment & Resources • Geographical Information Science
History • Political Science • Public Health • Sociology
Spatially Integrated Social Science • Urban Studies & Urban Planning*

This page provides links to reading lists of courses taught by leading researchers in spatial social science, organized by discipline. The links are provided with the permission of the researchers themselves. In most cases these researchers are not directly affiliated with CSISS; in all cases the researchers are considered by CSISS to be leaders in the analysis of space within their discipline.



Global Positioning Systems

<http://www.css.cornell.edu/courses/465/css465.html>

This course is an introduction to navigation-grade Global Positioning System (GPS) instruments used in agriculture and environmental science. Emphasis is placed on instrument familiarization, field data collection and processing, real-time and post-differential correction, and GPS-GIS integration. The course is designed to be a very practical, hands-on experience with GPS instruments used for field-based survey and mapping of plots, fields, boundary conditions, and other bio-physical features. The Course Objectives are 1) Familiarization of GPS instruments in a field setting; 2) Collection of position data and feature boundary definition; 3) Correction of position data using various methods; 4) Transfer of data from a GPS environment to a GIS environment; 5) Estimation of area and perimeter of delineated feature(s); and 6) Production of maps depicting spatial location and extent of delineated feature(s)

Arthur J. Lembo, Jr. and Stephen D. DeGloria, Department of Crop and Soil Sciences, Cornell University

Search Engines

Internet Search

Site Search

Social Science Data
Search 

Spatial Tools Search
Engine

Literature Search

CSISS Web Search Engine

- Building databases of web sites –
Thunderstone's Taxis Webinator – web walking and indexing software (seeded with ~1500 terms related to spatial social science)
- About 36,000 websites / updated weekly
- User Searchable via keyword entries or access via directories



Web Search

GIS, GPS, remote sens*

Search

[Help](#)

1 through 10 of 178 of the best matching documents.

Page: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [next>>](#)

HUNDERSTONE

1: [**The GIS Portal! Great GIS Net Sites! GPS / Remote Sensing / Space**](#)

of SIS **GIS** Jobs **GIS** Data and Software Library Online **GIS** Classic **GIS** Sites **GIS** WWW Resources **GIS** Software Companies **GIS** Books Colleges, Universites and Research Institutes Breaking **GIS** News! The Best Web Resource Lists! **GIS** / Mapping Companies **GIS** Services **GIS** Related Sites U.S. Federal Government Agencies State/Provincial Government Agencies Municipal/Local Government Agencies Worldwide Government Agencies Non Governmental Organizations **GPS / Remote Sensing / Space** **GPS / Remote Sensing / Space** New since last update! Lowrance Positioning Resources Ltd. Airborne

8: [The Asian GIS Portal](#)

Asian **GIS** Portal Site Map | Click here to make this your Default Home Page | Recommend this Site Subscribe Site Update **GIS** News Career Alert Tender Alert Email Education Books Glossary History of Maps Publications Tenders Tutorials Policy Application Agriculture and Soil Archaeology Biodiversity - Ecology Business Geographics Environment Forestry GII Geology Geomorphology Health LIS Military Mountains Natural Hazards Oceanography Urban Planning Utility Water Resources Technology **GIS GPS Remote Sensing** Image Processing Cartography & Map Publishing Data Conversion Digital Photogrammetry Synthetic Aperture Radar (SAR) Modelling and **Sensors** Internet **GIS** Aerial Photography & Surveying News 18/04/2001 Indonesia to launch telecom satellite in 2003 FleetBoss's cost effective fleet management solutions MapInfo augments Market Analysis Solutions with Census 2000 Data Terrasolid's TerraScan LiDAR Processing Software now available from Airborne 1 Pixxures' Online Storefront for Digital ...

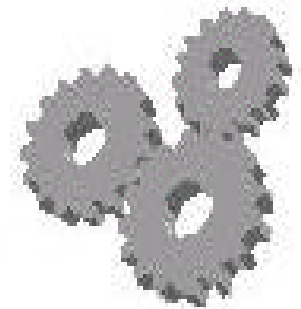
<http://www.gisdevelopment.net/>

9: [Education Strategies for Integrating Metadata](#)

Metadata Education Project Metadata education strategies by: Course type Course topic Learning Outcome Course Types Strategies for a "Geographic Information / Spatial Concepts" course This is a

CSISS Tools Clearinghouse

The ***CSISS Tools Clearinghouse*** is intended to grow into a robust collection of spatial analysis software, software links, and links to information about tools for spatial analysis. The development of these tools is a lively research area and the goal of this clearinghouse is to provide up-to-date information on available tools. The clearinghouse is comprised of:



[Search Engine](#)

Search a continuously updated, comprehensive index of the CSISS Select Tools and Links to Portals.

[Select Tools](#)

Browse through tools particularly suited to the analysis of spatial phenomena.

[Links to Portals](#)

A listing of useful collections of software tools for anyone interested in Spatial Analysis, or those looking for specific tools.

CSISS Tools

Forthcoming - a collection of spatial toolboxes developed by Luc Anselin.

Spatial Tools Search Engine

Word count: 'spatial autocorrelation': 35

Documents 1 - 10 of about 35 matching the query, best matches first.

[Analysis of spatial autocorrelation of USGS 1:250000 digital elevation models](#)

Jay Lee and Louis K. Marion Department of Geography Kent State University Kent, OH 44242-0
paper describes the results of performing numerical analyses of spatial autocorrelation on 1:250,000
<http://spatialodyssey.ursus.maine.edu/gisweb/spatdb/gis-lis/gi94064.html> - size 14K -

[Analysis of spatial autocorrelation of U.S.G.S 1:250,000 Digi...](#)

Analysis of spatial autocorrelation of U.S.G.S 1:250,000 Digital Elevation Models Author: Jay Lee
Elevation Models) Format: html Date: 18/09/01 Time: 13:52:57 Remote Name: 202.28.179.1 Rem
http://www.ai-geostats.org/online_papers/papers/0000004d.htm - size 1K -

[Globals](#)

Moran's I and Geary's c are well known tests for spatial autocorrelation. They represent two specific
measures spatial autocorrelation. Moran's I is produced by standardizing the spatial autocovariance
<http://xerxes.sph.umich.edu:2000/ppa/doc/globals/Globals.htm> - size 6K -

[Nearest Neighbor Analysis](#)

See Anselin(1995) for a complete discussion of Local Moran's I and LISAs. Input Input data file, v
each point. The maximum study distance (d). The number of bands within d. The weights matrix file
<http://xerxes.sph.umich.edu:2000/ppa/doc/Local/Local1.htm> - size 7K -

CSISS Select Tools

Below is a list of *Spatial Analysis Tools*. CSISS researchers have chosen these tools for their usefulness in aiding the exploration and analysis of spatial phenomena in the social sciences. This list is by no means complete and, it is hoped, will continue to grow with input from the research community. Inclusion on this list is not an endorsement by CSISS. If you have comments, have found an error, or would like to nominate a tool for inclusion please contact the Tools Manager, Luc Anselin at anselin@uiuc.edu.

All websites on this page have been comprehensively indexed by the [CSISS Spatial Tools Search Engine](#).

Cartographic Data Visualizer (CDV)

<http://www.kinds.ac.uk/kinds/cdv.htm>

A visual, interactive, graphic front end for analyzing spatial datasets.

ClusterSeer

http://www.terraseer.com/csr/clusterseer_features.html

ClusterSeer provides statistics for evaluating disease clusters in space and time.

CrimeStat

<http://www.icpsr.umich.edu/NACJD/crimestat.html>

A spatial statistics program for the analysis of crime incident locations.

Fragstats

<http://www.umass.edu/landeco/research/fragstats/fragstats.html>

Computation of wide variety of landscape metrics for categorical map patterns.



Spatial Tools Links to Portals

Below is a list of *portals*, i.e., collections of links, found useful to researchers of spatial phenomena in the social sciences. All portals listed here have been comprehensively indexed and are searchable at the [CSISS Spatial Tools Search Engine](#).

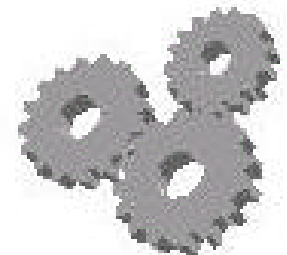
If you have comments, have found an error, or would like to nominate a portal for inclusion please contact the Tools Manager, Luc Anselin at anselin@uiuc.edu.

Spatial Analysis Tools

[AI-Geostats](#). Large collection. The central place for GIS and Spatial Statistics on the web.

[Social Science Statistical Lab](#). Spatial Analysis links for social scientists from Yale University.

[Spatial Analysis Starting Points](#). Additional GIS and Spatial Analysis Links from Georgia.



Math and Statistics archives with spatial content

[StatLib](#). Perhaps the largest statistical site on the web.

Search for this:

visuali*ation, population

Submit

Literature Search of Spatial Analysis in the Social Sciences

Database of ~ 10,000 entries
Searches abstracts and keywords
Retrieves bibliographic references

- Derived from *Econ Lit*, *Sociological Abstracts*, *Social Sciences Citation Index*, *Humanities Citation Index*, *MLA International Bibliography*, *Anthropological Literature*, *Historical Abstracts*, *America: History and Life*, and *California Digital Library*

Search for this:

1 through 10 of 12 matching documents, best matches first.

Results by: [HUNDERSTONE](#)

Page: [1](#) [2](#)

1: Folk-Urban Hierarchy - **Central Place** Theory in **Anthropology**

1975 . Lalone, D. . *Urban Anthropology* v4n(2): 189-189.

[Get Citation](#), [View Record](#), [Find Similar](#)

2: Application of **Central Place** Theory to Settlements of Pacific Coast of Guatemala

1975 . Paull, G. J. . *Urban Anthropology* v4n(2): 194-194.

[Get Citation](#), [View Record](#), [Find Similar](#)

3: Toward an Endogenous **Central Place** Theory

1989 . de Palma, Andre and Yorgos Y. Papageorgiou . *Northwestern U; McMaster U,*

[Get Citation](#), [View Record](#), [Find Similar](#)

4: Nearer, my chieftain, to thee: **central place** theory and chiefdoms, revisited

2000 . Gibson, D. Blair . *Hierarchies in Action: Cui Bono?*

[Get Citation](#), [View Record](#), [Find Similar](#)

5: Stranger communities and "Sweetheart Dances"

1998 . Kronerfeld, D. B. . *Anthropos* v93n(1-3): 77-88.

CSISS Summer Workshops 2003

- **Accessibility in Space and Time: A GIS Approach**
?? July, Ohio State University (Mei-Po Kwan)
- **Introduction to Spatial Pattern Analysis in a GIS Environment**, 28 July – 1 August, UCSB (Arthur Getis)
- **Geographically Weighted Regression**, 4-8 August
(Stewart Fotheringham)
- **Spatial Analysis in Population Studies**
?? July, Pennsylvania State University (Stephen Matthews)
<http://csiss.org/events/workshops/> – to apply and to learn more about the workshops.

ICPSR Workshops (with Luc Anselin)

- **Introduction to Spatial Data Analysis** (UIUC)
- **Spatial Regression Analysis** (University of Michigan)
<http://icpsr.umich.edu/TRAINING/summer.html>

Map Making and Visualization of Spatial Data



Dr. Sara Fabrikant
Workshop Coordinator

We offer here several video clips and slide shows produced from Dr. Fabrikant's workshop, [Map Making and Visualization of Spatial Data](#). The original workshop was taped in July 2001 by UCSB Production Services, under the direction of Ray Tracy. The workshop featured five lecturers: Dr Barbara P. Buttenfield, Dr Keith C. Clarke, Dr Dan Dorling, Dr Waldo Tobler, and Dr Sara Fabrikant. The summer course introduced spatial information design and geographic visualization for the Social Sciences. Sessions covered principles of scientific visualization, graphical design, and thematic mapping. Applications for this popular workshop far exceeded the number of slots that were available, and so CSISS is seeking alternative ways to present the information.

The intellectual property rights associated with these presentations belong to the lecturers, Dr Fabrikant, Dr Clarke, Dr Buttenfield, Dr Tobler, and Dr Dorling. Use of these clips is restricted to educational and instructional uses and must not be sold or distributed in whole or in part without written permission from the presenters and Center for Spatially Integrated Social Science.

The videos and slide shows offered on this page were edited by Nina Brown to present key concepts by workshop lecturers. You will need the [RealPlayer™](#) to view these clips. The Real SlideShow™ files are smaller than the Real Video™ files, so they will display more quickly:

The Cartographic Process

by Dr Barbara P. Buttenfield

[Real SlideShow](#)

10:22 min

Perspectives on Cartographic Communication

by Dr Barbara P. Buttenfield

[Real SlideShow](#)

12:54 min

Principles of Perceptual Organization

by Dr Sara Fabrikant

[Real SlideShow](#)

10:11 min

Mapping Volumetric Data

by Dr Barbara P. Buttenfield

[Real SlideShow](#)

10:15 min

[Real Video](#)

8:57 min

40 MB

Dot Maps

by Dr Sara Fabrikant

[Real SlideShow](#)

9:03 min

The Advantages of Cartograms

by Dr Dan Dorling

[Real SlideShow](#)

4:29 min

[Real Video](#)

8:15 min

16 MB

CSISS Best Practice Publications

- *Spatially Integrated Social Science*

MF Goodchild and DG Janelle, eds.

Oxford University Press, 2003

- *Advances in Spatial Econometric Modeling*

L Anselin, RJGM Florax, and SJ Rey, eds.

Springer-Verlag, 2003



Center for Spatially Integrated Social Science

UCSB / Principal Investigator: M.F. Goodchild

Co-PI: R.P. Appelbaum

Program Director: D.G. Janelle

**Building resources for
spatial analysis in the
social sciences**

www.CSISS.org

- Internet Gateway to Spatial Analysis
- Virtual Community for Spatial Social Science
- Learning Resources for Researchers
- Summer National Workshop Program
- Spatial Analytic Tools Development **L. Anselin**