

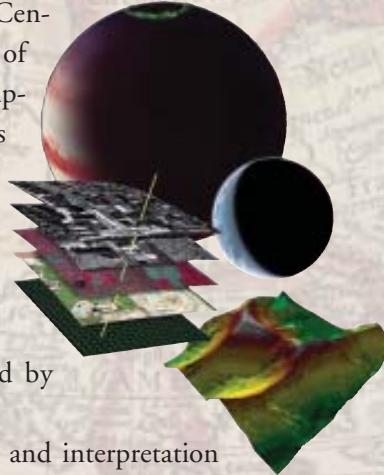
TOOLS FOR MAP MAKING

Sponsored by the Interdisciplinary Humanities Center (IHC) in cooperation with the Department of Geography and the Center for Spatial Studies, the upcoming “Geographies of Place” series will explore ideas of place and how they have been produced through mapping, media, and imaginative labor. In the work of settlement and statecraft, social practice and cultural perception, place has historically been the source of both solace and struggle. “Geographies of Place” will examine the ways in which space is demarcated by identity and memory, possession and destination.

Maps can add important dimensions to analysis and interpretation in the humanities, illustrating the distribution of phenomena, patterns of activities, processes of landscape change, flows among places, and connections between natural and human environments. They also enable the transfer of information, provide guidance to navigation, and offer insight to solving problems, and are useful to all disciplines.

Featured in this series, UCSB geographers **Keith Clarke**, **Michael Goodchild**, **Alan Glennon**, and **Indy Hurt** will each demonstrate select mapping tools and types of readily available data in a workshop to be held on October 15, from 1–4 p.m. at the McCune Conference Room in the HSSB building. **Ann Bermingham** and **Donald Janelle** will moderate the session and lead a question-and-answer session.

This workshop will provide demonstrations for a range of tools used in map making that are readily accessible and that illustrate a variety of applications of interest in the humanities. These tools will include open-source software to create maps from databases and online mapping tools that allow access to historical and contemporary socio-demographic data. Demonstrations will cover procedures for transferring GPS tracks and locations to maps and for embedding one’s own information and imagery to Google Earth and similar geo-browsers. Information on courses and software licenses available at UCSB will be provided, along with listings of mapping resources and data that are Web accessible. Participants are encouraged to bring their laptops to the workshop for accessing resources that exist online.



RECENT EVENTS 2010

- 6/1 CIRGIS Meeting; Geography Poster display
- 7/12–16 NIH Advanced Spatial Analysis Workshop: “Geographically Weighted Regression”
- 7/19–23 NIH Advanced Spatial Analysis Workshop: “Spatial Pattern Analysis”

UPCOMING EVENTS 2010–2011

- 10/14 3:45 p.m., 11th Annual Dangermond Lecture, **Michael Worboys** (University of Maine), “Bringing geographic information indoors,” Buchanan 1930
- 10/15 1–4 p.m., Tools for Map Making, McCune Conf. Room, HSSB
- 12/13–14 Upham Hotel, Spatio-Temporal Constraints on Social Networks
- 7/11–15 NIH Advanced Spatial Analysis Workshop: “Multilevel Modeling Workshop,” instructed by **Kelvyn Jones** and **S. V. Subramanian**

THINK SPATIAL BROWN BAG SERIES 2010–2011

12:00–1:00 p.m.
Ellison Hall, Room 5824

- 10/15 10–11 a.m., **Michael Worboys** (University of Maine), “The Foundations of Spatial Change”
- 10/26 **Petrutza Caragea** (Iowa State University) “Analysis of Areal Data: Should a Model with (Spatial) Dependence be Considered?”
- 11/2 **Waldo Tobler** (UCSB), “Visualization of Some Spatial Concepts”
- 11/9 **George Legrady** (UCSB), “Representing Space—Representation in Space”
- 11/30 **Lisa Parks** (UCSB), “Zeroing In: Infrastructure Ruins and Datalands in Afghanistan and Iraq”
- 1/18 **Michael Goodchild** and **Donald Janelle** (UCSB), “Progress Report on the Proposed UCSB Undergraduate Minor in Spatial Studies”

ROYAL SOCIETY INDUCTS
FOREIGN MEMBERS

"As the unchallenged global leader of Geographic Information Science (or systems), **Michael Goodchild** has led research teams that have created new analytical methods for integration and analysis of very large spatial databases, leading to a \$20bn+ industry. The quality and innovative nature of his work has led to his election to the U.S. National Academy of Sciences and the American Academy of Arts and Sciences, a Foreign Fellow of the Royal Society of Canada, a gold medalist of the Royal Geographical Society and, now, a Foreign Fellow of Britain's Royal Society—founded in 1660 and recognized as the world's oldest scientific academy." (Royal Society press release)

2010 UCGIS AWARD

Goodchild was recently contacted by alumna Professor Dawn Wright in her role as Chair of the University Consortium for Geographic Information Science (UCGIS) Research Award committee: "It is my great pleasure and privilege to inform you that you have been selected as the recipient of the 2010 UCGIS Research Award. This award is given to the creator(s) of a particularly outstanding research work or series of works as published in a peer-reviewed medium, and that makes a significant contribution to geographic information science. Your professional and personal contributions to geographic information science research are highly regarded, and the award committee noted in particular your work on spatial data accuracy in GIS, based on measurement theory and visualizing error. We are therefore extremely pleased to recognize your important accomplishments and continuing contributions!"

APPOINTED, JACK AND LAURA
DANGERMOND ENDOWED CHAIR

Prompted by their interest in geography, geographic education and the development of advanced spatial-analytic methods and GIS (geographic information system) technology in an academic environment and their long relationship with UCSB in supporting student research in the field of GIS and its application to human and environmental problems, Jack and Laura Dangermond have established the Jack and Laura Dangermond Endowed Chair in Geography. **Goodchild** has been appointed the first endowed chair.

GEOGRAPHY ON A MOTORCYCLE: THE GUINEA WORM IN NIGER

Guinea worm is a two-host nematode, imbibed by humans while infecting the common water flea, a creature found all over Africa in relatively calm freshwater bodies. Once a person has drunk the infected water the worm moves its way out of the confines of the stomach and into the muscle tissue, where it can grow to more than three feet in length before it tries to exit through the unfortunate host's skin. The process of extracting the worm is long and painful, often taking weeks, and there is little that can be done to ease the discomfort of a long, thin creature being pulled from one's foot.

One might not believe that the best, most capable and advanced tool to have while on a field study on the spread of Guinea worm through eastern Niger is a Yamaha Mate 50cc motor scooter. The Mate is a small green bike, with a flimsy plastic leg shield, a speedometer that goes no higher than sixty (kilometers that is), and its parts are so simple the bike itself can be disassembled and put together with a coin. It seemed unlikely to help me get anywhere but to the house of someone who would let me borrow a better vehicle. And yet, it was; and I realized that in some ways, the bike itself shared similarities to the parasite's history, and perhaps that was the reason it proved so useful.

The Yamaha Mate is no longer a vehicle you may ever see again on our western hemisphere. Long forgotten by the world outside of Africa, it is no longer manufactured and its owner manual is no longer published. Google it and you won't be able to find a Wikipedia entry, a fansite, or even a Facebook page extolling its existence. Yet the Yamaha Mate "*cinquante*" remains an important part of everyday life in Sahelian Africa, still seen on the pot-holed roads from Senegal all the way to Ethiopia. The buzz of its tiny engine pollutes thousands of city streets and country roads like angry bees, producing the dirty smoke of a two-stroke engine. Gone from everyone's memory—except for those who use it—there it is, at the end of every road in the Sahel.

Guinea worm clings to its own existence in the same elusive, yet established, manner; it has been hanging on as a species despite all the influences from the outside world determined to eradicate it and it can be found scattered through west and east Africa along the same dusty empty terrain of the Sahel. The parasite has been around since before the *Bible* was first written and may have even been referenced in the hieroglyph tales written on pyramid walls in ancient Egypt. There were millions of cases a year 30 years ago and it was chosen to be "the next smallpox"—the next plague the world would snuff out into history. For a creature that has reached the pinnacle of evolutionary nastiness, where seeing one alive remains a memorably horrifying experience even today, it has surprisingly remained alive and forgotten.

Tracking a worm that is declared to be at the brink of eradication again and again by the eradication community can be



The Mate

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a challenge, as it now subsists only in the most remote corners of Africa. There are no roads to the places in Niger where the Guinea worm is thought to finally have died out. Trips to places with local names like Galloa Gata, “the distant trees,” and Tondi Zigi, “the far expanse of stone,” are either done on foot or on a capable, fuel-efficient motorbike that tolerates temperatures above 120 degrees. It is a parasite that has defined modernity’s attempted in-roads to all places on earth. Apparently, when seeking what hides at the end of the world, it is best to use a bike that has long been there.

Nathaniel Royal will soon submit his first academic paper demonstrating the application of spatial techniques to clarify disease processes and detailing his findings on the spread of Guinea worm in Niger. For more information, please contact Royal at nroyal01@yahoo.com.

SUMMER WORKSHOPS PAST AND FUTURE

In June a whirl of activity began at the UCSB Center for Spatial Studies as coordinators pulled together the final details for two advanced spatial analysis workshops. Mid-July marked the arrival of Drs. **A. Stewart Fotheringham**, **Martin Charlton**, and **Chris Brunson**, followed by twenty-four population science scholars eager to dive head first into a week-long intensive Geographically Weighted Regression Workshop. The following week brought a new set of population science and public health scholars for a Spatial Pattern Analysis Workshop, led by Drs. **Arthur Getis**, **John Weeks**, **Jared Aldstadt**, **Stephen Matthews**, and **Michael Goodchild**.

The success of the Advanced Spatial Analysis program is reflected in the success of the scholars that participate, along with the thoughtful planning of program directors **Don Janelle** and **Stephen A. Matthews**. UCSB graduate students **Josh Bader**, **Frank Davenport**, **Indy Hurt**, and **Justin Stoler** served as technical consultants to help the visitors with their research. Participants have started projects and collaborations in the workshops that are subsequently presented at conferences, incorporated into grant proposals and publications, and developed into curriculum. Two workshops each summer have been offered since 2008 at UCSB and the Penn State Population Research Institute.

Summer 2011 marks the end of the program with the final offering of the Multilevel Modeling Workshop, July 11–15, instructed by **Kelvyn Jones** and **S. V. Subramanian** at UCSB, and the Spatial Econometrics Workshop, June 20–24, instructed by **Paul Voss** and **Katherine Curtis** at Pennsylvania State University. All applications are to be submitted online at www.csiss.org/GISPopSci, beginning in mid-January, with an application deadline of March 31, 2011. Please browse the website for further workshop details.



Where the road ends and the work begins.



Spatial Pattern Analysis Workshop participant Chris Herrmann, criminologist from the City University of New York, marvels at his success in applying new skills to his data. Each participant brings a laptop and data to work with when they aren't using our state-of-the-art computing labs. Herrmann's

laptop was remarkably large and equipped with a stereo system that kept participants rocking late into the night as they worked in the Manzanita Village residence halls.



Don Janelle leads workshop participants on a 6:00 a.m. hike up the Riviera to Franchesci Park for spectacular views of downtown Santa Barbara.

A NEW TEACHSPATIAL NSF AWARD

The UCSB Center for Spatial Studies has been awarded \$150,000 by the National Science Foundation's Division of Undergraduate Education (DUE), for a one-year National Science Digital Library (NSDL) Pathways project that will extend and enhance the existing web portal (<http://teachspatial.org>). TeachSpatial will help make spatial thinking accessible to students in all STEM fields (science, technology, engineering and mathematics), by providing guided access to relevant teaching and learning resources in the NSDL repository. **Don Janelle**, Program Director of the Center for Spatial Studies, is the project's Principal Investigator. **Karl Grossner** will be hired as a Postdoctoral Associate for 2011, to continue the work on TeachSpatial that he began in 2008.

As a conceptual framework, spatial thinking promotes new understandings about the spatial patterning of processes in the social, biological, and physical worlds as well as the applications of spatial technologies to analyze, model, and visualize problems and research outcomes. Student progress and performance in numerous STEM subjects at the undergraduate level is thus strongly tied to improving their ability to reason about spatial configurations and their properties.

The 2006 National Research Council report *Learning to Think Spatially* identified an "educational blind spot" in relevant science and math standards for grades 9–12, stemming from the "absence of formalized connections between abstract geometric concepts and their scientific application." The TeachSpatial project will help to illuminate that blind spot: first, by discovering and making explicit those spatial learning objectives that are implicit in (or missing from) existing standards, thereby defining a suitable baseline for new undergraduates; and second, by building an interface to the NSDL—a *collection* in NSDL terms—that facilitates teaching to those objectives.

A great many spatially-related teaching resources for varied STEM subjects are registered in NSDL (course syllabi, exercises and linked datasets, exemplar applications, etc.), but we lack the means to locate them in a broader multi-disciplinary context. The new portal will highlight the explicit spatial nature of a great many of those resources, focusing on spatial concepts and spatial thinking as they apply across all STEM disciplines. In so doing it will provide a novel bridging function for multidisciplinary communication, science development, and teaching.

The TeachSpatial project will develop a new metadata framework that includes core spatial concepts, existing STEM educational standards, and our proposed new learning objectives. Relationships between core concepts and derived, complex ones that concern spatial transformations, analytical methods, and representation will be expressed in a lightweight "ontology of spatial thinking." The resulting lexicon will be used to semi-automatically discover existing relevant resources within the NSDL repository and apply metadata tags to them.

"TeachSpatial addresses a fundamental educational need to empower learners with concepts and tools for informed spatial reasoning for advancing science and improving decisions. Its focus on web technologies to deliver instructional resources will enhance accessibility for students to master and apply spatial concepts for discovery learning. The TeachSpatial portal will enable instructors working as pioneers for spatial thinking to exchange experiences, pedagogical strategies, and evaluations of specific resources."

SPATIAL TECHNOLOGY FORUMS:

Originally begun as a graduate forum to share tools and techniques for online mapping, the spatial@ucsb Technology Forum has expanded to include faculty, staff, undergraduates, and technologists from the local community. During 2009–2010 the group held quarterly formal lunch meetings as well as weekly after-hours coding sessions. One particularly popular lunch meeting consisted of a rapid-fire series of nine short talks. Speakers were invited to speak on the spatial topic of their choice, but were constrained to three minutes and ten slides. These lightning talks were recorded and placed on Youtube at: http://www.youtube.com/view_play_list?p=B505CF893FF5E53E. The videos also can be found by searching Youtube for spatial@ucsb.

The 2009 fires in Santa Barbara and the January 2010 earthquake in Haiti influenced the weekly coding group to emphasize disaster relief infrastructure. The coding group spent time bolstering the OpenStreetMap dataset for UCSB and Isla Vista, creating kite and balloon aerial photography rigs and associated GIS workflows, and developing a mobile graffiti reporting web app.

The Spatial Technology Forum will continue these coding sessions and quarterly lunches through the 2010–2011 academic year. Because of the lunches' popularity and limited space, lunch attendance is by invitation only. The weekly coding circle for fall 2010 is now organizing on the theme of Android and geolocation.

Please contact **Alan Glennon** (alan@spatial.ucsb.edu) if you have an interest in spatial technology and would like to receive an invitation or information about Spatial Technology Forum activities.

