Abstract. Traditional geographic information provided by authoritative sources results from a lengthy and labor-intensive process of synthesis. Census data, for example, is compiled from billions of raw observations, and little detail is available about the process by which synthesis is achieved. By contrast, the vast amounts of geographic information that are now appearing on the Web are largely produced by non-experts, and any integration is likely achieved by software rather than the intervention of experts. Several examples are cited. Asserted geographic facts are clearly of variable quality, and three general strategies are advanced for addressing quality control: Linus's Law, social strategies, and strategies that make use of fundamental geographic knowledge.

Michael Goodchild is Professor of Geography at the University of California, Santa Barbara, and Director of UCSB’s Center for Spatial Studies. He received his B.A. degree from Cambridge University in Physics in 1965 and his Ph.D. in geography from McMaster University in 1969, and has received four honorary doctorates. He was elected member of the National Academy of Sciences and Foreign Member of the Royal Society of Canada (2002), member of the American Academy of Arts and Sciences (2006), and Foreign Member of the Royal Society and Corresponding Fellow of the British Academy (2010); and in 2007 he received the Prix Vautrin Lud. He was editor of Geographical Analysis between 1987 and 1990 and editor of the Methods, Models, and Geographic Information Sciences section of the Annals of the Association of American Geographers from 2000 to 2006. He serves on the editorial boards of ten other journals and book series, and has published more than 15 books and 400 articles. He was Chair of the National Research Council’s Mapping Science Committee from 1997 to 1999, and currently chairs the Advisory Committee on Social, Behavioral, and Economic Sciences of the National Science Foundation. His current research interests center on geographic information science, spatial analysis, and uncertainty in geographic data. For more information, see Michael Goodchild’s complete CV.
Abstract. In this presentation I describe the recently developed large-scale spatio-temporal simulator of activities and travel for Southern California. The simulator includes population synthesis that recreates the entire resident population of this region, provides locations for residences, workplaces, and schools for each person, estimates car ownership and type as well as main driver for each vehicle, and provides other key personal and household characteristics. Then, a synthetic schedule generator recreates for each resident person in the simulated region a schedule of activities and travel that reflects intra-household activity coordination for a day. These synthetic activity and travel daily schedules are then converted to multiple Origin Destination (OD) matrices at different times in a day. These are in turn combined with other Origin-Destination matrices (representing truck travel, travel from and to ports and airports, and travel generated outside the region) and assigned to the network in multiple periods in a day. The assignment output is then used in the software EMFAC to produce estimates of fuel consumed and pollutants emitted (including CO2) by different classes of vehicles. The overall model system also includes provision for finer spatial and temporal resolutions that are pilot tested using TRANSIMS (a fine time-space resolution routing algorithm). Numerical examples from each major modeling group are also provided together with an outline of next steps in research and practice.

Kostas Goulias is Professor of Geography at the University of California, Santa Barbara, Co-Director of UCSB’s GeoTrans Laboratory, and Associate Director of the UC Transportation Center. His Ph.D. is in Civil Engineering from the University of California, Davis. Research interests include microsimulation in activity-based analysis and forecasting, travel behavior, survey design, applied statistics and econometrics, transportation and air quality, travel demand management, congestion management systems, traffic analysis and site impacts, telecommunications and travel behavior/demand, optimal resource allocation, and road transport informatics/intelligent transportation systems. Goulias has provided transportation engineering and planning consulting services to state/federal agencies and to international organizations and firms in the United States, Europe, and Asia, developing new data-collection and modeling techniques, simulation frameworks, and expert reviews of technologies and engineering practice and policies.
Abstract. In 2009, the UCSB Center for Spatial Studies undertook to develop a web portal to digital teaching resources (interactive activities, lesson plans, videos, etc.) concerning spatial concepts and principles for the spectrum of science, engineering and humanities fields. That goal led to outlining a long-term research and web development agenda loosely framed around the question, “what might a multidisciplinary course on spatial thinking at the undergraduate level consist of?” Answering that question completely would require meeting three objectives step-wise: first, identifying those spatial concepts and principles considered fundamental from a variety of disciplinary perspectives; second, defining a set of spatial learning objectives; and third, designing the course itself—its lecture content, exercises, and assessment instruments.

The TeachSpatial project has made substantial progress towards the first of these objectives and its web site (www.teachspatial.org) provides some tools for helping meet all three. I will discuss our several efforts at “finding the spatial”—in NSF award abstracts, in scholarly works on spatiality from multiple fields, and in K-12 teaching standards—and show how those results, embedded in the new TeachSpatial site, could enable progress in a collective effort by a fledgling community of interest.

Karl Grossner is a researcher at the University of California, Santa Barbara’s Center for Spatial Studies. His Ph.D. is in Geography from UCSB. Karl's research interests include the formalization of conceptual knowledge in ontologies, and their implementation in database systems. Spatial cognition, intelligence and literacy are but one application area; another is the representation of geo-historical knowledge in spatial-temporal databases to support the emerging genre of digital historical atlases useful for both analysis and the dissemination of research results.
Abstract: The glass house presents itself as a domestic dilemma. With few interior walls and transparent exterior walls, where does one find privacy? Sew a button to a dress? Or display art? Although often minimalist in design and decor, the spatial arrangement of a glass house sheds much light on the changing role of women and domestic practices from the 19–20th centuries.
An academic Minor in Spatial Studies is now available for students at UCSB. The goals of this minor are to:

- provide opportunities for undergraduates to complement disciplinary majors with a supportive set of courses that strengthen spatial reasoning skills for problem solving; and
- facilitate acquisition of knowledge and perspective on creativity that transcends disciplinary boundaries, unites quantitative and qualitative thinking, and allies with multi-media graphic display and communication of information.

For the Minor, students select a focus area that aligns most clearly with their disciplinary and/or career interests. These include (1) Spatial Thinking, (2) Space and Place, and (3) Spatial Sciences.

The minor draws on the academic strengths of UCSB in the arts, humanities, sciences, social sciences, and engineering fields that invoke spatial reasoning and innovation. Students have the opportunity to select courses and to integrate knowledge around spatial themes from elective and required courses from a broad range of UCSB departments and programs.

The focus of discussion at this session will be the questions and comments from students and advisors. For information about the Minor in Spatial Studies, see

- [http://geog.ucsb.edu/undergraduates/minor-spatial-studies](http://geog.ucsb.edu/undergraduates/minor-spatial-studies)
ThinkSpatial

The UCSB brown-bag forum on spatial thinking

Presents

David Uttal
Professor of Psychology and Education at Northwestern University

Spatial Abilities and STEM Education: When, Why, and How

Psychology 1523
12:00 p.m. Friday, 20 January 2012

Abstract. Are spatial skills important for Science, Technology, Engineering and Mathematics (STEM) education and practice? The answer seems to be both yes and no. On the one hand, some research (e.g., Wai, Lubinski, & Benbow) has revealed strong and consistent correlations between spatial abilities and STEM career choice. However, several studies (e.g., Hambrick et al., in press; Stieff, 2007) have shown that spatial skills do not seem to predict performance in experts. I will begin my talking by trying to resolve this seeming paradox, suggesting that spatial skills serve more as a barrier or gateway to STEM entry than as a critical part of STEM practice. This argument then lays the foundation for a case for when spatial training and experiences might facilitate STEM achievement. I will review the work on spatial training and argue that it could help many students to get over the barriers to early STEM learning. I will also argue that spatial training is effective, that it transfers, and that it can endure. Taken together, the findings I discuss help to constrain the possible answers to the questions regarding when, why, and how spatial thinking matters in STEM education and also suggest what we can and cannot expect to happen if we attempt to improve students' spatial thinking.

David Uttal is Professor of Psychology and Education at Northwestern University. He serves as Director of the Multidisciplinary Program in Education Sciences, and IES-funded pre-doctoral training program that focuses on interdisciplinary and mixed methods approaches to education research. He also serves as Director of the Cognitive Division in the Psychology Department. He is a Fellow of the American Psychological Association and the American Psychological Society. His work has been funded by the National Institutes of Health, the National Science Foundation, and the Institute for Education Sciences. His research interests are in spatial and mathematical thinking and their development.

This presentation is sponsored by the UCSB Department of Psychological and Brain Sciences (Cognition, Perception and Cognitive Neuroscience Group)

The objectives of the ThinkSpatial brown-bag presentations are to exchange ideas about spatial perspectives in research and teaching, to broaden communication and cooperation across disciplines among faculty and graduate students, and to encourage the sharing of tools and concepts. Please contact Don Janelle (ext 5267, janelle@spatial.ucsb.edu) to review and schedule possible discussion topics or presentations that share your disciplinary interest in spatial thinking.
Abstract. *Unlearning the City* is a project that questions the paradigms of urbanism within which we have formed habits of imagining, researching, and teaching about the city. The central problem in theorizing cities today is a paucity of vocabulary. The structural changes that have occurred in cities around the world in the last two decades have strained the limits of our existing vocabulary. A new vocabulary, I suggest, must involve the task of unhinging the existing vocabulary from its existing certitudes and generate new contexts of meaning: it must enable us to rethink the materiality of city space. In this presentation I will turn to political wall writing in India to explore the spatial relations between citizens, city space, and the body politic, and the privileged materiality of public space aimed at aiding the spatial imagination of the state.

Swati Chattopadhyay is an associate professor and Chair of the Department of History of Art and Architecture at the University of California, Santa Barbara, and the editor of the *Journal of the Society of Architectural Historians*. She is the author of *Representing Calcutta: Modernity, Nationalism, and the Colonial Uncanny* (Routledge, 2005, paperback 2006), and *Unlearning the City* (Minnesota, 2012), editor of a special issue of *Urban History* (vol 39, no 1, 2012) on South Asian suburbs, and co-editor of a special issue of *PostColonial Studies* (Nov 2005) on subalternity and popular culture.
Abstract. Beyond point and click, advances in technology are making it possible to interact with multi-media objects in rich and near-realistic ways. Given this possibility, the open question is how such objects and actions might be designed to promote their purposeful use. My research investigates how cognition and perception, as well as individual differences in spatial ability, affect purposeful use of virtual objects in science learning. In addition, it provides insight about the effective design of interactive learning resources.

Andrew Stull is a post-doctoral researcher at the University of California, Santa Barbara. In a previous incarnation, he worked as a media editor in the textbook industry where he specialized in the integration of digital media with print textbooks. His doctoral work evaluated anatomy learning in virtual reality and his current work focuses model-based learning with concrete and virtual models in chemistry. Generally, his interests address the design of small-object interactions and multi-media in the promotion of meaningful learning.

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Please contact Don Janelle (ext 5267, janelle@spatial.ucsb.edu) to review and schedule possible discussion topics or presentations that share your disciplinary interest in spatial thinking.
Abstract. The World Atlas of Language Structures (WALS; URL: wals.info) is the first attempt to provide broad coverage of the geographical distribution of the structural diversity of the world's languages, answering on the basis of samples of languages such questions as the distribution of languages with large, medium, and small inventories of vowels or of languages which have distinct terms for 'hand' and 'arm' versus those that do not. I will first introduce the project, including discussion of some of the problems that arose in transferring our knowledge of linguistic diversity to map form and presentation of some of the maps as illustrative material. I will then look at ways in which the atlas can be used as a research tool, both within linguistics (e.g. testing correlations between different structural parameters) and in cooperation with other disciplines (such as prehistory).

Bernard Comrie is Director of the Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology, Leipzig, and Distinguished Professor of Linguistics at the University of California Santa Barbara. His main interests are language universals and typology, historical linguistics (including in particular the use of linguistic evidence to reconstruct aspects of prehistory), linguistic fieldwork, and languages of the North Caucasus. His publications include Aspect (1976), Language Universals and Linguistic Typology (1981/1989), Tense (Cambridge, 1985), The Russian Language in the Twentieth Century (co-authored, 1996), and The Dictionary of Languages and Dialects of the Peoples of the Northern Caucasus (co-authored, 2010). He is also editor of The World’s Major Languages (1987/2009) and co-editor of The Slavonic Languages (1993), The World Atlas of Language Structures (2005), and Studies in Ditransitive Constructions (2010). For more information, see http://www.eva.mpg.de/lingua/staff/comrie.php.
The objectives of the ThinkSpatial brown-bag presentations are to exchange ideas about spatial perspectives in research and teaching, to broaden communication and cooperation across disciplines among faculty and graduate students, and to encourage the sharing of tools and concepts. Please contact Don Janelle (ext 5267, janelle@spatial.ucsb.edu) to review and schedule possible discussion topics or presentations that share your disciplinary interest in spatial thinking.
ThinkSpatial

The UCSB brown-bag forum on spatial thinking

Presents

Richard Church
Geography, UCSB
Ellison Hall, Room 5824

What makes a location problem difficult to solve?

12:00 p.m. Tuesday, 13 March 2012

Abstract. The problems of location science include the fields of military defense, geography, business, planning, logistics, public services, biological reserve design, as well as many others. Such problems span a range of scales, from micro chip design, placing items on a store shelf, to searching for a location for a factory and may even be defined on a temporal basis. Sometimes the problem is akin to searching for a needle in a haystack where a feasible solution might not exist, and in other cases the number of possibilities is nearly as large as the stars in the sky. This talk will use a number of real case examples to demonstrate why location problems are important, complex, and difficult to solve.

Richard Church is a Professor of Geography at UCSB. He is an expert in operations research, systems modeling, and GIS. He specializes in problems of resource allocation, transportation, logistics, and environmental management. He is a member of the Section on Location Analysis of INFORMS and has worked on a wide variety of location problems, including the location of regional waste water treatment plants, the design of ambulance systems, and the placement of telephone switches in a DSL phone system, to name a few. For more information, see http://geog.ucsb.edu/~forest/RLC/Index.html.

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Please contact Don Janelle (ext 5267, janelle@spatial.ucsb.edu) to review and schedule possible discussion topics or presentations that share your disciplinary interest in spatial thinking.
Abstract. A common and current trope in academic libraries is that they serve as the 'intellectual heart of campus.' This is often used as a programmatic justification for the revival of 'Library as Place.' This revival has often taken the form of hosting author readings and research seminars, installing coffee shops and comfortable furniture, and otherwise attempting to make the library a Third Place for scholars. One must immediately ask, in the words of the UCSB Campus Architect: Is the library really "the symbolic heart of the campus?" Or, does it simply occupy "the most important site on our campus"?

This lecture presents initial results of a 2011 sketch map study that shows how contemporary Chinese undergraduates understand the importance of the library as an idea, but it does not necessarily follow that the library is a privileged Place.

Jon Jablonski is head of the UCSB Library's Map & Imagery Lab. With master’s degrees from the University of Washington (Library and Information Science) and the University of Oregon (Geography), his research seeks to use qualitative methods to better understand how people are using technology to explore the information landscape. In 2011 he was a Fulbright Scholar at Wuhan University, where he taught Library Science and conducted the experiment presented in this talk. Previous work in China includes a case study of cultural heritage cyberinfrastructure in provincial libraries.