Dr. Bednarz' academic interests fall into two areas, geographic education and urban-economic geography. Over the past 15 years, during which he served as editor of the Journal of Geography and now as North American editor of the Journal of Geography in Higher Education, Dr. Bednarz has focused mainly on topics related to how people learn, organize, and use geographic information. His research interests lie within the broad area of spatial thinking, especially in how information technology (IT) affects individuals’ ability to perceive, understand, and analyze spatial patterns, distributions, and relationships. His research perspective, like that of most geographers, extends beyond the spatial abilities typically investigated by psychologists or educational psychologists (i.e., spatial visualization and spatial orientation), to include what Golledge calls, spatial relations. These abilities—associating and correlating spatially distributed phenomena, wayfinding, overlaying, understanding scale, etc.—are often the most relevant to learning and applying geography.

Three projects are currently underway to explore aspects of this research topic. The first, a funded project now in the publication stage, measured changes in students’ spatial-relations ability that resulted from successfully completing a geography-techniques course such as cartography, remote sensing, or GIS. This project assessed changes in students’ problem-solving strategies and procedures by video-taping students performing an authentic assessment task. A second effort is investigating the appropriate role and importance of geo-spatial technologies and spatial thinking on education for sustainable development (ESD). Bednarz’s research is part of an international sponsored program exploring ESD from a multi-cultural perspective with colleagues from North America, Europe, the Middle East, and Asia. The third, an NSF-sponsored GK-12 project, is developing strategies to introduce spatial thinking explicitly into school science and geography classes and to support teachers in implementing the program. Action research by teachers and graduate student fellows will assess the impact of spatial thinking on students’ attitudes and learning outcomes.

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At present, the Grosvenor Center, in cooperation with the Agency for Instructional Technology and the National Geographic Society, is developing a technology-based professional development project for teachers called “Geography: Teaching with the Stars.” Each of the 20 programs in the series is content-based, with pedagogic and learning material enhancements. The project includes a major formative evaluation component and a research protocol that addresses teacher effectiveness and student learning. These programs are meant to supplement the fine professional development offered by NGS-sponsored state Alliances by using a technology-based alternative delivery system to reach teachers in all parts of the United States.

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Rick L. Bunch is Associate Professor and Director of the Center for Geographic Information Science and Health in the Department of Geography at the University of North Carolina Greensboro. His research and teaching interests are in Geographic Information Science and spatial cognition. He is the Book Review Editor for Research in Geographic Education and is a member of the editorial board for Cartography and Geographic Information Science. He has published articles in the Annals of the Association of American Geographers, The Professional Geographer, Research in Geographic Education, Social Science Quarterly, Southeastern Geographer, and Cartography and Geographic Information Science.

Rick’s early research focused on identifying the cognitive processes associated with learning spatial information in GIS. These studies compared the cognitive abilities of young adolescents and adults for tasks that required the integration of spatial information. This research also complemented traditional statistical analysis by using a back-propagation neural network to model and predict outcomes given a set of user characteristics as input. The striking accuracy of the neural network model has formed his belief that one could manipulate and measure the way in which geographic information is presented (e.g., instruction) and represented (e.g., GIS and maps) to audiences of varying spatial abilities. Rick is currently exploring Cognitive Load Theory (CLT) as a method for examining these complex interactions.

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Anjan Chatterjee is Professor of Neurology and member of the Center for Cognitive Neuroscience at the University of Pennsylvania. After medical school at Penn, he completed a neurology residency at the University of Chicago, post-doctoral fellowship training in dementia at Case Western Reserve University and in cognitive neurology at the University of Florida. His clinical practice focuses on patients with cognitive disorders. His research focuses on spatial and temporal attention, the interface of space and language, neuroaesthetics and neuroethics. In 2002, he was awarded the Norman Geschwind Prize in Behavioral and Cognitive Neurology by the American Academy of Neurology. He is an associate editor of the Journal of Cognitive Neuroscience, and on the editorial boards of The Empirical Studies of the Arts, Cognitive Neuropsychology, Neuropsychology, Cognitive and Behavioral Neurology, and Behavioural Neurology. He is a founding Board Member of the Neuroethics Society.

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Mary Curtis

Mary Curtis is serving as the 2008–09 Grosvenor Scholar at the National Geographic Society in Washington, D.C. Originally from Houston, Texas, Curtis worked for the past eleven years as the lead geography teacher and curriculum writer within Clear Brook HS (CBHS) in the Clear Creek Independent School District (CCISD). She also served a term as the Team Leader for the School of Communication and Public Service within CBHS. Believing geo-spatial technology to be an asset to the geography curriculum, Curtis served as the PI for the Clear Creek Education Foundation Grant that enabled ArcView GIS to be installed in three high schools in the district. Curtis entered the doctoral program at Texas State University—San Marcos in the summer of 2005, while still teaching in CCISD.

An active member of the Friends of Geography (FOG), a regional branch of the Texas Alliance for Geographic Education (TAGE), she served as its secretary for several years. Curtis is a Teacher Consultant for TAGE and has presented at a number of Alliance sponsored workshops and training events for several years. She has conducted training sessions for her school district as well as local, state, and national social studies and geography organizations. In 2007, Curtis was recognized by the National Council for Geographic Education with the Distinguished Teaching Award.

Curtis earned a B.A. in Political Science from Texas A&M University and a MS degree in Instructional Technology from the University of Houston — Clear Lake. She is currently working on a dissertation that addresses the use of geospatial technologies and spatial thinking in K-12 geography education.

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Daniel C. Edelson is Vice President for Education and Children’s Programs at the National Geographic Society, where he also serves as the Executive Director of the National Geographic Education Foundation. In these positions, he leads the National Geographic Society’s efforts to improve public understanding of geography and related disciplines through both formal and informal education programs.

Throughout his career, Dr. Edelson has conducted educational research and development, with a primary focus on environmental science and geography. He is the author of several middle school and high school textbooks in the earth and environmental sciences and of geographic information systems (GIS) tools for use in schools. Dr. Edelson has written extensively on motivation, classroom teaching and learning, educational technology, teacher professional development, and educational reform drawing on research conducted with colleagues and students.

Prior to joining the National Geographic Society, Dr. Edelson was a professor of education and computer science at Northwestern University for fifteen years. He received his Ph.D. from Northwestern University and a B.S. from Yale University.

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Charlie Fitzpatrick is the Manager of K-12 Education Program at Environmental Systems Research Institute (ESRI). For much of his career, Fitzpatrick taught secondary level social studies for St. Paul Academy and Summit School in Minnesota. Since the mid-1980s Fitzpatrick worked diligently to bring innovative geography education strategies to K-12 educators through summer institutes that were supported both by the Minnesota Alliance and the National Geographic Society (NGS). In the early 1990s he directed the Educational Technology Leadership Institute. In June of 1992, Fitzpatrick left the classroom to work for ESRI to lead their K-12 Education Program. His dedication for reforming and re-vitalizing education is evident in the articles and books he has authored or co-authored, such as Space and Places: A Manual for Geography Teachers, Linking Through Diversity: Practical Classroom Activities for Experiencing and Understanding Cultures, and A Small World Geography.

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Dedre Gentner, Ph.D., is the Twight Professor of Psychology and Education and Director of the Cognitive Science Program at Northwestern University. She is best known for her structure-mapping theory of analogical learning and reasoning, and for her Natural Partitions theory of language acquisition. She has co-edited three books—Mental models, The analogical mind and Language in mind. She is a past president of the Cognitive Science Society a member of the American Association of Arts and Sciences. Her current work investigates analogical learning and development in the spatial domain, and the influence of spatial language on the representation and processing of spatial information.
Phil Gersmehl is Co-Director of the New York Center for Geographic Learning and Professor of Geography at the University of Minnesota. He grew up surrounded by questions about educational policy and practice – both of his parents, all three uncles, and his grandfather were teachers and/or school principals. He received a BA in Education from Concordia Teachers College, River Forest, Illinois, and a PhD in Geography from the University of Georgia. He then taught for five years at Concordia before moving to the University of Minnesota, where he developed a number of computer-assisted instructional modules, distance-learning courses, and animated maps for television. In 1990, the Association of American Geographers asked him to serve as Director of ARGUS (Activities and Readings in the Geography of the United States) and ARGWorld (Activities and Resources in the Geography of the World). As part of these projects, he led evaluation institutes and teacher workshops in 23 states, as well as Canada, Japan, Korea, and Russia. He is author of numerous articles in educational journals and several books, including The Language of Maps (National Council for Geographic Education) and Teaching Geography (Guilford Press), and is now Co-Director of a Department of Education FIPSE project to design an interactive CD to illustrate successful strategies for teaching analytical geography.
Michael F. Goodchild

Michael F. Goodchild is Professor of Geography at the University of California, Santa Barbara, and Director of spatial@ucsb. He received his BA degree from Cambridge University in Physics in 1965 and his PhD in Geography from McMaster University in 1969. After 19 years at the University of Western Ontario, he moved to Santa Barbara in 1988. He was Director of the National Center for Geographic Information and Analysis from 1991 to 1997. He was elected member of the National Academy of Sciences and Foreign Fellow of the Royal Society of Canada in 2002, and member of the American Academy of Arts and Sciences in 2006. He has received honorary doctorates from Laval University, Keele University, McMaster University, and Ryerson University. He has received the Canadian Association of Geographers Award for Scholarly Distinction, the Association of American Geographers award for Outstanding Scholarship, the Canadian Cartographic Association’s Award of Distinction for Exceptional Contributions to Cartography, and the Educator of the Year Award from the University Consortium for Geographic Information Science. He has received Lifetime Achievement Awards from Environmental Systems Research Institute, Inc. and the Geospatial Information and Technology Association, and has been inducted into the GIS Hall of Fame of the Urban and Regional Information Systems Association. 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. His published books include Accuracy of Spatial Databases; Geographical Information Systems: Principles and Applications; Environmental Modeling with GIS; Scale in Remote Sensing and GIS; Interoperating Geographic Information Systems; Geographic Information Systems and Science; Uncertainty in Geographical Information; Foundations of Geographic Information Science; Spatially Integrated Social Science; GIS, Spatial Analysis, and Modeling; and Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools. In addition he is author of some 350 scientific papers. 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.

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Larry V. Hedges

A national leader in the fields of educational statistics and evaluation, Larry V. Hedges joined the Northwestern faculty in 2005. He is one of eight Board of Trustees Professors at Northwestern, the university’s most distinguished academic position. He will hold appointments in statistics and education and social policy. Previously, he was the Stella M. Rowley Professor at the University of Chicago.

Hedges’s research straddles many fields—in particular those of sociology, psychology, and educational policy. He is best known for his work to develop statistical methods for meta-analysis (a statistical analysis of the results of multiple studies that combines their findings) in the social, medical, and biological sciences. It is a key component of evidence-based social research. Examples of some his recent studies include: understanding the costs of generating systematic reviews, differences between boys and girls in mental test scores, the black-white gap in achievement test scores, and frameworks for international comparative studies on education.

Widely published, he has authored or co-authored numerous journal articles and five books, including the seminal Statistical Methods for Meta-Analysis: A Practical Guide to Modern Methods of Meta-Analysis (with I. Olkin) and The Handbook of Research Synthesis (with H. Cooper).

He has been elected a member or fellow of numerous boards, associations and professional organizations, including the National Academy of Education, the American Statistical Association, the American Psychological Association, and the Society of Multivariate Experimental Psychology. He is convener of the Campbell Collaboration’s statistics group, which is part of a larger effort to produce an online database of “best practices” in the social sciences and education. He chairs the Technical Advisory Group of the U.S. Department of Education’s What Works Clearinghouse, an initiative to give educators and researchers a library of systematic reviews to aid in the development of evidenced-based educational policy.

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Injeong Jo met a wonderful geography teacher in eleventh grade who taught her that geography was not about memorization but about making sense of the world. Emphasizing that geography is not about place names but about understanding the world, the teacher encouraged students to work with maps and diagrams, which are powerful tools to represent geographic features. Injeong was fascinated with learning geography and decided to spend her life teaching geography.

Injeong majored in geography education at Seoul National University in Korea, and after graduation she taught geography and social studies in Busan Information High School for five years. Because she was interested in curriculum development regarding students’ geographic thinking and skills development, Injeong went to the United States for further study.

She received a M.S. in geography from the Texas A&M University. For her master’s thesis, Injeong developed a ‘taxonomy of spatial thinking’, which is a framework to help evaluate the current geography curriculum from a spatial perspective. Using that framework, she evaluated geography textbook questions to see how well these questions address aspects of spatial thinking.

Injeong is now a Ph.D. student at Texas A&M University. Her research interests include geography education and spatial thinking in general with development of curriculum and assessments in these areas in particular. Injeong’s current research focus is on pre-service teacher education to help them deepen understanding of spatial thinking and improve the ability to teach spatial thinking skills.

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Kim Kastens is a Doherty Senior Research Scientist at Lamont-Doherty Earth Observatory of Columbia University, and an Adjunct Professor of Earth & Environmental Sciences. Her bachelor’s degree is in Geology & Geophysics from Yale, and her PhD is in Oceanography from Scripps Institution of Oceanography.

Kastens’ training and early career were in marine geology, focusing on the tectonic and geological evolution of the Mediterranean region, and the structure and tectonics of oceanic transform faults. All told, she led or participated in 26 major oceanographic research cruises, and 3 GPS geodesy campaigns.

For the last twelve years and into the foreseeable future, Kastens has redirected her professional efforts towards improving the public’s understanding and appreciation of the Earth and environment. She is engaged on four fronts, working to reach the public and improve geoscience learning through: (1) journalists, (2) teachers, (3) information technology, and (4) science of learning research. She founded Columbia’s Earth & Environmental Science Journalism dual masters degree program (http://www.ldeo.columbia.edu/eesj/). She developed the Where are We? software and curriculum materials to help elementary school children learn to “translate” back and forth between their visually-perceived environment and a map. Her research on learning projects investigate how children use maps while navigating, how climate forecast maps and bathymetric maps are understood by their target audiences, and how people visualize a three-dimensional geological structure from the limited information available from outcrops. She is currently co-leading an NSF-funded multidisciplinary effort to create a “Synthesis of Research on Thinking & Learning in the Geosciences.”

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Bob Kolvoord is a Professor of Integrated Science and Technology at James Madison University, where he also has a joint appointment in the College of Education and teaches in the Geographic Science and Information Analysis degree programs. His research focuses on the use of data visualization tools in K-12 classrooms and providing professional and curriculum development in supporting the use of these tools, especially GIS and GPS. He is a co-author of the recently released “Making Spatial Decisions Using GIS” from ESRI Press and is a co-editor (w/Danny Edelson) on an upcoming collection of GIS activities for the MyWorld GIS. With Barbaree Ash Duke, he recently edited a collection of STEM-based GIS activities for middle school students.

For the last four years, he has led the Geospatial Semester project at JMU, which offers high school students the chance to learn about geospatial technologies as they pursue local projects and earn college credit. He is particularly interested in understanding how to identify and sequence technology-based activities to build students’ spatial thinking skills across grade levels and content areas to enable broader and deeper uses of these technologies in science, math and social studies learning.

Susan Levine

Susan Levine received her B.A. with honors from Simmons College in 1972, majoring in Psychology, Mathematics and Education and her Ph.D. in Psychology from M.I.T. in 1976. She joined the faculty at the University of Chicago that year. Professor Levine is co-director of the Center for Early Childhood Research and serves as the chair of the Psychology Department’s program in Cognition and Cognitive Neuroscience. In addition, she chairs the department’s Curriculum Committee and serves on the board of Chapin Hall. Research interests include: Cognitive development, development and plasticity of spatial skills, early quantitative development, and language development and functional plasticity in children with early brain injury.
Lynn S. Liben

Lynn S. Liben is Distinguished Professor of Psychology at the Pennsylvania State University at University Park. She received her B.A. in Psychology from Cornell, and her M.A. and Ph.D. in Developmental Psychology from the University of Michigan. She has served as Head of the Psychology Department and as Director of the Child Study Center at Penn State. She is currently Editor of Child Development, formerly the Editor of the Journal of Experimental Child Psychology, and serves on the Editorial boards of a number of other leading journals. She is a Fellow of the American Psychological Association and the American Psychological Society, former President of Division 7 (Developmental Psychology) of APA and of the Jean Piaget Society.

Dr. Liben’s research focuses on children’s developing understanding of external spatial representations such as maps and photographs. She has applied her research to a variety of educational contexts including children’s television (e.g., Sesame Street), magazines (e.g., Highlights for Children), museums (e.g., the Exploratorium), art education, and to classroom instruction in geography and geology. A second focus of Dr. Liben’s work is on the development of gender and racial stereotypes, including ways in which these stereotypes may affect children’s educational and occupational choices. Her work at the intersection of the domains of space and gender includes the study of sex-related differences in spatial skills and of the gender gap in performance on the annual National Geographic Bee. She has received funding for her research from NICHD, the National Geographic Society, the National Institute of Education, the Social Science Research Council, and the National Science Foundation.

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Sandra Metoyer

Sandra Metoyer is a PhD student in the geography department at Texas A&M University. Her primary research focus is geography education. Specifically Sandra is interested in the study of how adolescents develop spatial thinking skills (cognition), investigation of classroom practices and tools such as GIS that reinforce and develop spatial thinking skills (application), and exploring the influence spatial thinking has on students’ understandings of complex spatial phenomena in geography and science (transfer). Sandra has recently expanded her research interests to include cross-culture inquiries of spatial thinking. Funded by a competitive travel grant, Sandra conducted classroom research in South Korea in the summer of 2008 examining the influence of imagining different perspectives on spatial thinking skills.

Sandra has several years experience as a secondary science teacher. She has also worked with inservice teachers on integration of technology, inquiry, and content. Currently Sandra is an NSF Fellow with Sarah Bednarz’s Graduate Teaching Fellows in K-12 Education (GK-12) program, Advancing Geospatial Skills in Science and Social Science. Through this program Sandra is able to explore the applications of geospatial technologies as a tool to enhance spatial thinking skills.

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Daniele Nardi

Dr. Daniele Nardi is a post-doctoral research fellow in the Temple University Department of Psychology, and in SILC (Spatial Intelligence and Learning Center). He received his Ph.D. at the Bowling Green State University in Verner Bingman’s lab, studying the spatial cognition of the homing pigeon. Dr. Daniele Nardi is interested in the spatial information extracted from the geometric shape of the environment and on the influence of a vertical component in the environment on solving a goal location task. His research focuses on goal representation based on slope and on the role of the different sensory modalities that enable such a representation. His research interests include: spatial cognition, salience of spatial stimuli, geometric information, slope-based spatial representations, perceptual information guiding goal-search behavior on inclined surfaces.

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A nationally recognized expert on cognitive development, Dr. Newcombe’s research has focused on spatial development and the development of episodic and autobiographical memory. Her work has been federally funded by NICHD and the National Science Foundation over 20 years. Dr. Newcombe has served as Editor of the Journal of Experimental Psychology: General and as Associate Editor of Psychological Bulletin, as well as on the Human Cognition and Perception Panel at the National Science Foundation and numerous editorial boards.

Nora Newcombe’s academic interests include: Memory for early childhood, development of spatial cognition, individual differences in spatial ability. Additionally, she is interested in knowing about cognitive neuroscience related to these interests, and educational applications (especially K-12 education and college teaching implications) of these interests and of cognitive research more generally.

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Kristin R. Ratliff

Kristin Ratliff received her B.A. in Psychology in 2001 from the University of Oklahoma, where she worked as a research assistant in the Human Cognition Lab with Dr. Scott Gronlund and Dr. Jennifer Perry. Kristin attended graduate school at Temple University in Philadelphia and received a Ph.D. in Cognitive Psychology in 2007. In her graduate work with Dr. Nora Newcombe, Kristin studied spatial cognition and navigation, specifically the circumstances under which geometric and nongeometric information is utilized during reorientation. Kristin is currently a postdoctoral fellow in the lab of Dr. Susan Levine at the University of Chicago and the Director of Education Research for the Spatial Intelligence and Learning Center. Her research interests include the development of spatial cognition and memory, and applying spatial thinking to early childhood education, specifically within topics such as measurement and geographic learning.

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Thomas F. Shipley

Thomas F. Shipley is an associate professor of Psychology at Temple University. He studied with Robert Rescorla, Henry Gleitman, Elizabeth Spelke, and Philip Kellman. He is interested in visual perception, spatial reasoning, Geoscience education, perception action coordination, and food. His recent research has addressed the question of how human actions are recognized, including limits on the role of previous visual experience; the nature of action representations, and the importance of dynamics. His work on event segmentation grew out of his previous work on object segmentation; He has shown that a subset of event segmentation - path segmentation - is mathematically related to object segmentation. Dr. Shipley is collaborating with Kathy Hirsh-Pasek and Roberta Golinkoff to study event perception in infants. Dr. Shipley and Jeffrey Zacks recently co-edited a book on events. Dr. Shipley is working with Cedric Bouquet and Peter Marshall to study perception-action coupling. This includes research in adults and children on motor contagion (influences of watching someone else act on ones ongoing action), and imitation of novel complex actions. Dr. Shipley is also part of the RISC (Research in Spatial Cognition) group in Nora Newcombe’s Spatial Intelligence and Learning Center where he is working on eye movements in mental rotation, perceptual expertise in Geologists, the role of working memory in spatial visualizations, and segmentation of large spaces. He recently organized international workshop on spatial cognition and learning in Freiburg, Germany that focused on navigation and spatial visualization in education funded by NSF and the DFG.

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Michael Solem is Educational Affairs Director for the Association of American Geographers, where among many initiatives he directs the Enhancing Departments and Graduate Education in Geography (EDGE) project and the Center for Global Geography Education funded by NSF. Dr. Solem is the external evaluator for the University of Colorado’s Geography Faculty Development Alliance and the Graduate Ethics Education for Future Geospatial Technology Professionals project. Michael currently serves as the North American coordinator of the International Network for Learning and Teaching Geography in Higher Education (INLT), is Associate Director of the Grosvener Center for Geographic Education at Texas State University – San Marcos, and leads the AAG’s efforts with the Carnegie Academy for the Scholarship of Teaching and Learning program. He received the Journal of Geography in Higher Education’s biennial award for promoting excellence in teaching and learning for his research with Ken Foote on faculty development in postsecondary geography.

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