Welcome!

This year marks the twentieth annual meeting of NACIS, or "N2X". On behalf of the NACIS Board and the Local Arrangements Committee, I would like to welcome you to Knoxville.

This year we feature many of the program items which will be familiar to previous attendees, such as papers, workshops and fieldtrips. A record number of abstracts were submitted and this year we are extending the session length (and starting earlier!) in order to accommodate them. I am also very pleased to draw your attention to the Small Business Roundtable following its successful inauguration last year.

So what's new? This year we are partnering with a Pre-conference Symposium on "Maps and the Internet," organized by Michael Peterson of the University of Nebraska Omaha. The topic of online mapping also features in the main NACIS program, notably a special presentation on Internet GIS by ESRI.

Many of you are also probably familiar with the National Geographic Society's Map Machine (http://www.nationalgeographic.com/maps/) and it is my great pleasure to introduce our Opening Speaker, Allen Carroll, Chief Cartographer at NGS to tell us about it. Please also welcome Dr. Jan F. Simek, Professor of Anthropology at UT who has kindly agreed to address the conference at the Banquet on Friday evening on the topic of prehistoric cave art.

Other special sessions include a "Cartographic Conversation," an informal Open House at the Geography Department of the University of Tennessee, and a first for NACIS, a riverboat dinner cruise Thursday evening.

As always we will be featuring a special set of posters and displays which will open after the opening session. These have been kindly organized by my GSU colleague Jeff McMichael. A special exhibit this year will feature cartographic tools and materials from the "old days" (the 1980s!) when computers were still largely unknown. Try your hand in the "scribe-off" (prizes for the steadiest hand!). A number of attendees here were present at the very first NACIS in 1980 and they (and first time attendees) are recognized by special name tags.

My thanks to all who are participating in the conference, to the Local Arrangements Committee of Jim Minton, Chris Pelton, Will Fontanez, and Becky Fontanez and at the home office Sona Andrews, Susan Peschel and Chris Baruth. Thanks to everyone for making this conference such a success!

Jeremy Crampton
Program Chair and Vice-President

WEDNESDAY, OCTOBER 11

PRE-CONFERENCE SYMPOSIUM
MAPS & THE INTERNET
co-sponsored by NACIS and the Maps & Internet
Commission of the International Cartographic Association

8:00 am - 5:00 pm
University of Tennessee Conference Center Auditorium
(across the street from the Knoxville Hilton)

CONFERENCE REGISTRATION
Begins at 2:00 pm
Mezzanine 2nd Floor

NACIS BOARD MEETING
3:00 pm - 5:00 pm
Board Room 3rd Floor

OPENING SESSION
The NGS Map Machine
Allen Carroll
National Geographic Society

7:30 pm - 9:00 pm
Cherokee Ballroom Salon D & E

POSTER SESSION, EXHIBITS & RECEPTION
9:00 pm - 11:00 pm
Great Smoky Mountain Center

THURSDAY, OCTOBER 12

POSTER SESSION & EXHIBITS
8:00 am - 3:00 pm, Great Smoky Mountain Center

SESSION A: CARTOGRAPHIC EXPERIMENTS & TESTING
7:45 am - 10:15 am, Bentley's 1st Floor

SESSION B: CARTOGRAPHY & EDUCATION
8:00 am - 10:00 am, Sequoyah 2nd Floor

SESSION C: MANAGING PUBLIC DATA
10:30 am - Noon , Bentley's 1st Floor

SESSION D: INTERNET GIS
10:30 am - Noon , Sequoyah 2nd Floor

LUNCHEON & ANNUAL BUSINESS MEETING
Noon - 1:30 pm, Cherokee Ballroom

SESSION E: ARTISTIC MAPS OF VISTAS & LANDSCAPES
1:45 pm - 3:15 pm , Bentley's 1st Floor

SESSION F: MAPS, GIS & IMAGERY
1:45 pm - 3:15 pm, Sequoyah 2nd Floor

SESSION G: ATLASES
3:30 pm - 5:30 pm , Bentley's 1st Floor

SESSION H: VISUALIZATION & ANIMATION
3:30 pm - 5:30 pm, Sequoyah 2nd Floor

RIVERBOAT DINNER CRUISE
5:45 pm - 9:00 pm
meet in hotel lobby

FRIDAY, OCTOBER 13

POSTER SESSION &EXHIBITS
8:00 am - Noon , Great Smoky Mountain Center

SESSION I: SOFTWARE SOLUTIONS & TECHNIQUES
8:00 am - 10:00 am, Bentley's 1st Floor

SESSION J: ALTERNATIVE CARTOGRAPHIES
8:00 am - 10:00 am, Sequoyah 2nd Floor

SESSION K: SMALL BUSINESS ROUNDTABLE
10:30 am - Noon , Bentley's 1st Floor

SESSION L: CONCEPTUAL ISSUES
10:30 am - Noon, Sequoyah 2nd Floor

CP EDITORIAL BOARD MEETING
Noon - 1:15 pm, Board Room 3rd Floor

CARTOGRAPHIC CONVERSATIONS
Noon - 1:15 pm, Hospitality Suite (TBA)

LUNCH (ON YOUR OWN)
Noon - 1:15 pm

SESSION M: MAPS & THE INTERNET PANEL
1:30 pm - 3:30 pm, Bentley's 1st Floor

SESSION N: HISTORY OF CARTOGRAPHY
1:30 pm - 3:30 pm, Sequoyah 2nd Floor

NACIS BOARD MEETING
3:45 pm - 5:30 pm, Board Room 3rd Floor

INFORMAL OPEN HOUSE
The University of Tennessee Geography Department Facilities
4:00 pm - 5:30 pm
map available at NACIS Registration Desk

ANNUAL BANQUET
Pre-Historic Cave Art in the Southeast
Dr. Jan F. Simek
Professor, Anthropology, The University of Tennessee-Knoxville
6:30 pm - 10:00 pm
Cherokee Ballroom

SATURDAY, OCTOBER 14

WORKSHOPS

8:30 am - 5:00 pm
Avenza MAPublisher:
Putting GIS To Work in your MAP App
GIS Lab, Room 206, Burchfiel Geography Bldg.
University of Tennessee
map available at NACIS Registration Desk

8:30 am - Noon
Animated & Interactive Cartography
with Macromedia Director
Advanced GIS Lab, Room 404, Burchfiel Geography Bldg.
University of Tennessee
map available at NACIS Registration Desk

1:30 pm - 5:00 pm
Illustrator 9—A New Illustrator for Cartography
Cartography Lab, Room 209, Burchfiel Geography Bldg.
University of Tennessee
map available at NACIS Registration Desk

FIELDTRIPS

9:30 am - 12:30 pm
Continental Aerial Survey
meet in hotel lobby

9:30 am - 2:30 pm
Museum of Appalachia
meet in hotel lobby

POSTER PARTICIPANTS
AND
PAPER SESSION ABSTRACTS

WEDNESDAY, OCTOBER 11

Poster Session
**Wednesday 9:00 pm - 11:00 pm, Thursday 8:00 am - 3:00 pm,
Friday 8:00 am - noon**

◆

*Wisconsin's Past & Present: A Historical Atlas:
The Making of a Historical Atlas*
Amelia Janes, Wisconsin Cartographers' Guild / Midwest Educational Graphics, arjanes@globaldialog.com

*Cartography and the Art of Data Communication:
Bringing Chile Closer to Chileans*
Sebastian Araya, Humboldt State University, andino@northcoast.com

Cartographic Activities at the University of Tennessee
Will Fontanez, Department of Geography, The University of Tennessee, wfontanez@utk.edu

One Pixel Resolution Map
Steven R Holloway, Department of Geography, The University of Montana, oikos@selway.umt.edu

Visualizations of End-of-Century Electoral Volatility
Steve Lavin & Clark Archer, Department of Geography, University of Nebraska-Lincoln, slavin@unlserve.unl.edu

Intergraph Corporation
Shanthi Lindsey, Intergraph Corporation. smlindse@ingr.com

Recent Work by the Cartography Research Laboratory

Jeff McMichael, Department of Anthropology & Geography, Georgia State University, JMcMichael@gsu.edu

Cartographic "Atrifacts"

Donna Schenstrom, Cartography and Geographic Information Sciences Center, University of Wisconsin-Milwaukee

Interactive Mapping in a Flash!

Erik Steiner, Department of Geography, Pennsylvania State University, ebs110@psu.edu

Planning a First Atlas of Census 2000

Trudy A. Suchan, Population Division, U.S. Census Bureau, Washington DC
Cynthia A. Brewer, Census Bureau & Dept. of Geography, Pennsylvania State University, cab38@psu.edu

Cartographic Activities at Arizona State University

Barbara Trapido-Lurie, Department of Geography, Arizona State University, btl@asu.edu

United States Geological Survey

U.S. Department of the Interior

Barrington Atlas of the Greek and Roman World

Keith Winters, Editor, Mapquest.com, kwinters@mapquest.com

THURSDAY, OCTOBER 12

Session A: Cartographic Experiments & Testing
8:00 am - 10:00 am

Can Normal-Vision Map Readers Accurately Estimate Quantitative Information from Haptic Sensations?
♦

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Virtual reality environments now permit cartographers to more easily create maps using haptic (touch-based) sensations. However, little is known about the effectiveness of haptic thematic maps. Most cartographic psychophysical research on haptic maps has been carried out with visually impaired subjects. Thompson (1983) studied whether range-graded graduated point symbols were an effective symbolization in maps for the visually impaired. He determined that range-graded graduated point symbols were an effective symbolization for visually impaired map readers if a full legend (one containing an exemplar of each symbol size used on the map) was included. Because his study contained a full legend, it did not allow subjects to estimate the data value represented by the map symbol, and therefore did not reveal whether subjects were indeed capable of doing so. It is not known whether either normal-vision or visually impaired map readers can accurately estimate quantitative information from haptic symbols. This paper reports on two experiments that were designed to determine whether normal-vision map readers can accurately estimate quantitative information from haptic sensations. In order to compare the accuracy of subjects' value estimations for both visual and haptic symbols, each subject was asked to first estimate quantities from a haptic map and then a visual map that were based on the same data. To test whether estimation accuracy increases when both vision and touch are used, in a second experiment, subjects were instructed to use both vision and touch to estimate quantitative information from a map that represented data both visually and haptically.

Signs & Maps (No, Not Signs on Maps)
♦

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In the earliest days of automobile travel there was no systematic numbering of roads, much less labeling of road numbers on signs. Rand McNally travel guides, in fact, showed pictures of routes in its earliest city-to-city route guides and was one of the mapping organizations that developed early road numbering and the posted signs to aid motorists (McNally 1977). What ever happened to that intimate connection between road signs and maps? What is the history of government entities taking over the signage business? What about street signs? There are interesting historical questions associated with signs and maps, but our main concern is a rather different one. Lobben (1999) has found that the most important predictor of map navigation skills is the ability to utilize clues to solve navigation problems. In other words, sleuthing is what gets us from one place to another using a map. This finding means that the most important help we can give navigators is not in the map itself but in the environment—signs that allow the sleuthing process to proceed. We speculate that improved road and street signs would do far more for navigators than any modification to map design. A psychologist studying wayfinding problems encountered by drivers has come to a very similar conclusion (Burns 1998). Our paper will be an essay exploring the basic concepts of the relationship between signs and maps in the process of wayfinding.

References:
Burns, Peter C. 1998. Wayfinding errors while driving. *Journal of Environmental Psychology*. 18:2 (June), 209-217.

Lobben, Amy K. 1999. The impact of cognitive map-reading tasks on the ability to navigate with a map. Ph.D. dissertation, Michigan State University, Department of Geography.

McNally, Andrew, III. 1977. Rand McNally in the world of American cartography. *The American Cartographer*, 4:2, 101-110.

Expert Land Evaluation Using Maps vs. Orthophotomaps
♦

C. Peter Keller (pkeller@uvic.ca) and Ian J. O'Connell (ioconnel@office.geog.uvic.ca), Department of Geography,
University of Victoria, Victoria,
British Columbia, Canada V8W 3P5 • + 250 721 7333

A three year project to determine value of land for tourism and outdoor recreation included a section which asked experts in the tourism industry to evaluate the relative value of land for tourism by getting them to identify and mark land parcels of homogeneous value on topographic maps and orthophotomaps using a five point scale. This presentation will introduce the research conducted and share our observations of experts performances and reactions to working with topographic maps at various scales vs. working with orthophotomaps.

SESSION B: CARTOGRAPHY & EDUCATION
8:00 am - 10:00 am

Thinking Visually at Humboldt State
◆

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Mary Beth Cunha, Department of Geography, Humboldt State University,
Arcata, CA 95521 • mbc7001@humboldt.edu

At Humboldt State University we are exploring ways to make graphical literacy and critical visual thinking central to the geography curriculum. With the support of an NSF CCLI grant, we are working on four goals: 1) to expand and transform the method of teaching cartography from manual to digital methods, and to move from the map as end-product to the map as a tool for exploring geographical information visually; 2) to expand and transform the geography curriculum to include online geography modules, as well as mapping or visualization components; 3) to promote collaboration with other departments sharing an interest in mapping and visualization; and 4) to provide a space for students to create posters and presentations for geography courses and professional conferences. This paper presents our progress to date.

Teaching Mapping with the World Wide Web
◆

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This presentation reviews the integration of the World Wide Web (WWW) into introductory and advanced cartography courses. There are a growing number of sophisticated mapping and GIS sites on the WWW, and these sites have been integrated into exercises for my introductory mapping course. Benefits of using the WWW in this manner include real computer mapping experiences for the students (to complement lectures), and the ability for students to complete exercises at home or in general university computer labs (thus no devoted GIS and Mapping lab need be provided). The WWW is also a great source of data, as well as a vital new presentation medium for mapping. My advanced mapping course engages students in a series of interrelated exercises: data gathering on the WWW, downloading the data, processing it, importing into ArcView, mapping it, exporting and animating the maps, then embedding the animated maps in a series of WWW pages the students create. The final product is then placed on the WWW. Student evaluations and reactions to the integration of the WWW into my mapping courses are reviewed, as are problems and benefits of using the WWW for teaching mapping.

Teaching Principles of Map Design
♦
Dennis Fitzsimons, Department of Geography, Southwest Texas State University, San Marcos, TX 78666
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With the increasing numbers of courses in Visualization and Geographic Informa-tion Systems, the role and function of cartographic principles in the map-making and map reading processes should be continually under review. Offered here is a series of exercises designed to stimulate student thinking about map elements and their role in map design. The exercises incorporate several different facets of the educational process to 'force' student decision-making in a context of appropriate cartographic convention. The exercises assume no correct answers until the student has progressed through several map design stages: 1.Map Purpose Worksheet (working from specifications, details, organization, project manage-ment, reality: costs, time, equipment, materials, personnel); 2.Pencil Layout Designs (rough and detailed); 3.Presentation of Design; 4.Informal Critique; 5.Formal Critique and Map Editing; 6.Feedback and 7.'Bailout' project.

Web Course Tools Working in a New Map Use Environment
♦
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Web-based course tools are being adopted in universities and the K-12 environ-ment. These tools provide students asynchronous access to content presentations, interactive quizzes, bulletin boards and tests from anywhere at any time. The tools provide a unique map use environment because maps are used in the context of a course and students can get immediate feedback on interpretations of the maps. Instructors can follow students work and can give credit for progress, so there is a motivation factor not found in the usual web browsing environment. With these tools maps can be integrated into courses in ways one could only dream about a few years ago. The author employs WebCT in 'Earths Dynamic Weather,' a general education course. All material normally presented in lectures has been put into WebCT. Students are expected to work through this material on their own. Lecture periods are given over to content review, problem solving, interac-tive quizzing as well as traditional testing. Ignorance of the earth and maps portraying earth limits the ability of many students to understand the nature of global weather and climate. To address this ignorance, the course is built on a foundation of learning about earth and the maps portraying weather and climate. Within WebCT students work with animated maps of temperature and precipita-tion, rotating spheres, and maps with moving clouds. Using Java Script other maps are designed to have students interact with the map and get instant feedback. Maps from the text are presented in pieces. Cartographers need to develop the interfaces with maps in the web based course tools coming on the market.

SESSION C: MANAGING PUBLIC DATA
10:30 am - Noon

Building an Archive of Local
Government Geodata Resources
♦

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The North Carolina State University Libraries has initiated a plan for acquisition and archiving of local government geospatial data resources for North Carolina. The initial plan calls for the acquisition of available data for fifty of North Carolina's one hundred counties. In addition, a directory of county data availability and relevant data contacts will be assembled for the entire state. The acquisition of data for the remaining counties as well as for cities, metropolitan planning organizations and councils of government will also be explored. Core data resources that are available from county governments frequently include: land parcel and assessment data; street centerlines; and digital orthophotography at resolutions of six inches to two feet. Additional data resources are often available for other infrastructure, physical, and cultural features. County geodata resources are typically managed by either the tax administration department or by a separate GIS unit or coordinator. Obstacles to data acquisition include: the reluctance of local agencies to distribute data; technical barriers to transfer of very large amounts of data; the absence of metadata or other data documentation; restrictions on redistribution; and the need to account for frequent updates to data resources. Long-term archival efforts will need to account for changes in media and file formats. The long-term stability of media formats is also an issue. The presentation will provide an overview of the NCSU Libraries data acquisition program to date.

Matching Map Sheets Between
Annotation & Verification Phases
♦

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Census Bureau mapping projects often include annotation and verification phases. Our sponsors usually request that the map sheets match exactly between the phases, to facilitate verification. In our high-volume production we can only guarantee the same scale and map size. Sheet layout will match only if there are no boundary changes between phases. Now we are developing the

capability to match sheet layouts between map projects. This will be a generic, "user defined sheet", capability to assist with other related enhancements. We will match map sheets by defining minimum and maximum latitude and longitude for individual sheets. Because this capability will be generic, numerous issues need to be addressed, and automated QA checks implemented to deal with them.

  Interaction between map size (in map units), map area (in ground units), and scale: two of these can be independently determined, forcing the value for the third. Currently we determine map size and scale, which then determine map area. Soon we will determine the map area and scale, which may result in some odd map size values. Ensuring that each sheet definition matches exactly with all of its neighbors. Overlaps and gaps must be avoided. Changes in the subject area between phases. If the subject entity annexes significant territory, the pre-defined sheets might not cover all the new area. How do we determine the map sheet for this area? Conversely, if the subject entity de-annexes significant territory, what do we do with any sheets that no longer cover the subject?

A Board of Equalization Application

♦

Robert M. Shankman, GIS & Mapping Services, Fairfax County Government, 12000 Government Center Parkway, Suite 117, Fairfax, VA 22035 • 703-324 - 3516 • rshank@co.fairfax.va.us

In Fairfax county VA residents are given the opportunity to contest the tax bill. In order to rebut the amount the homeowner is able to provide comparable proper-ties that have and are taxed at a lower value. This is done with either sales comparables or uniformity comparables. The comparables submitted by the homeowner are then compared to the comparables used by the county. All of these comparables and the subject property are then plotted on a map and placed into a case that is presented in front of the Board of Equalization where a determination is made as to the amount of increase if any to the taxes of the subject property. This application aids the appraiser in the creation of the map to support their case. In previous versions of this application, the digital base map was a scanned raster image of the tax map book that is at a scale of 1:200. When the appraiser was working in a small area the pixelization was very evident. The only way an appraiser could locate a property was by their knowledge of what page (of the tax map book) the parcel was on and then they had to manually create the symbology to highlight the subject and all of the comparables. This meant that the user had to know how to use ArcView and could easily get lost in all of the tools and buttons that the full version of ArcView presented. The new version of this application is a fully customized version of ArcView, with the use of dialog designer and scripts. With this application being served through a CITRIX server we have enabled the entire Department of Tax Administration to be able to access the application with out any local installs of any kind. We provided only 1 hour of training for all of the appraisers, we have been able to aid in the creation of a map that depicts the property locations correctly and with very few edits involved which creates more time for the appraiser to complete their other tasks.

SESSION D: INTERNET GIS
10:30 am - Noon

♦

Tom Wesp, Sr. Technical Marketing Representative, ESRI San Antonio, Texas • twesp@esri.com

This presentation will explore how cartographers can become involved in new developments in online mapping. It will describe some of the recent efforts towards sharing maps and spatial data over the Internet, such as ESRI's new Geography Network, and examine the implications for the future.

SESSION E: ARTISTIC MAPS OF VISTAS & LANDSCAPES
1:45 pm - 3:15 pm

The Art of the Landscape: Heinrich Berann's Panoramas for the U.S. National Park Service

♦

Tom Patterson, Department of Publications, Harpers Ferry Center, Harpers Ferry, WV 25425-0050 • 304-535-6020 • t_patterson@nps.gov

The late Heinrich Berann, from Austria, was generally regarded as the most accomplished panoramist of all time. During the decade before his retirement in 1994, Berann painted four panoramas for the U.S. National Park Service (NPS) that demonstrated his genius for landscape visualization. This paper examines the widely admired, but little understood, vocation of panorama making, with emphasis on Berann's NPS pieces. Special attention is given to his landscape visualization techniques that have application in today's digital production. Explanation is offered about how the panorama for Denali National Park, Alaska, was planned, compiled, sketched, and painted—starting from a blank sheet of paper. Berann's techniques for landscape manipulation are then analyzed, including his unorthodox habit of rotating mountains and widening valleys and his unique interpretations of vertical exaggeration. His graphical special effects used for portraying realistic environments are reviewed. The paper finishes with illustrations that compare Berann's panoramas to digitally-generated landscapes.

Blaeu's City Vignettes

♦

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Early in the seventeenth century, the Netherlands was a new state in Europe. The Twelve Years Truce with Spain (1609-1621) was a formal signal of the country's independence after decades of revolt and open warfare. An economic boom had begun in the 1590s with the Dutch dominating trade in the Baltic Sea and an increasing amount of urbanization in Holland, the state that dominated the entire republic. Amsterdam was becoming a center of inter- and extra-European trade, and the Dutch merchant fleet was expanding. Amsterdam was also a center of mapping. William Blaeu began to publish maps in 1605. He published four continental maps in 1617 and 1618, Europe, Asia, Africa, and America. Each of these plates follows a formulaic design, a continental map in the center with five ethnographic illustrations of native people or local costumes on each side and nine city "vignettes" across the top. These maps appear unchanged in each edition of Blaeu's world atlas beginning with the *Appendix* of 1630. The cities selected for display across the top are of special interest. They are not all capital cities; many may have been Dutch strongholds or somehow connected to Dutch economic activities. Some cities are shown as a plan while others employ a perspective technique. The decision to specifically illustrate particular cities would have been deliberate and may have been driven by then-current events. Selected cities from the continental map plate borders will be discussed in the context of Dutch involvement in world affairs. This discussion will be illustrated with slides of maps from the Univ. of Illinois' recently received 1647/1649 two-volume *Novus Atlas*.

"You Are Here"
A Look at Wayside Exhibit Maps

♦

Betsy Erlich, National Park Service, Harpers Ferry Center, P.O. Box 50, Fillmore Street, Harpers Ferry, WV 25425 •
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Over 260 million Americans and foreign travelers visit the U.S. National Park System annually to see the most unique natural, historical, cultural and recreational resources in the nation. These resources are dedicated and set aside by law to be preserved for the benefit and enjoyment of people in such a manner as will leave them unimpaired for future generations. Wayside exhibits (outdoor interpretive signs) provide critical orientation to park facilities and resources twenty-four hours a day, every day of the year, year after year. Maps are an essential component of orientation waysides which assist the visitor in getting from point A to point B. Unlike published maps, wayside maps can only be used on-site and cannot be carried away with for further reference. Since waysides are used by visitors who are out of their cars, standing in the elements, they must be simple, easy to read and easy to remember. They are typically thematic maps focused on trails, rather than roads. The National Park Service's Interpretive Design Center has developed a set of Wayside Map Standards which can be best demonstrated in a series of over 40 maps that were developed for Zion National Park. When visitors get out of their cars and onto the new Zion Canyon shuttle system, it is through a series of orientation waysides, printed maps and other materials that aid the visitor in wayfinding. I will present a number of examples from the project.

SESSION F: MAPS, GIS & IMAGERY
1:45 pm - 3:15 pm

A Three Dimensional GIS Model for a Forest Preserve in the Hudson Highlands
♦

Mark Wiljanen, Department of Geography, SUNY - New Paltz, New Paltz, NY 12561 • 914-257-2993
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The Black Rock Forest, a nonprofit forest preserve located in the Hudson Highlands of New York (an hour-and-a-half north of New York City), recently flew high resolution, full color aerial photography of its 1530 hectare expanse. Much of this area consists of fairly rough terrain on eroded metamorphics. A DEM computed from the triangulated aerial photography was used to create a three dimensional GIS model of the forest preserve. Various GIS layers (hypsometric tints, hydrography, and the full color aerial photography) were draped over the three dimensional model to create very effective visualizations of the forest topography and vegetation. Applications of the three dimensional model include visitor education in the Forest's new Nature Center and research projects focused on watershed analysis and biohabitats.

Assessing and Mapping the Impact of Eco-tourism on Mt. Kilimanjaro
♦

H. Hugh L. Bloemer , Dept. of Geography , Ohio University , Athens, Ohio 45701 • 740-593-1150 • bloemer@ohio.edu

Mountains are zones of high productivity and seats of vital resources. They are primary sources of water, agricultural land, favorable climates and centers of biological diversity. They have scenic grandeur and great tourism potential. Mt. Kilimanjaro is one of the most fascinating mountains on the face of the earth. Its majestic appearance is underscored by the fact that the nearly 5,900 meter high mountain rises dramatically above a rather vast plain about 80 kilometers east of the eastern branch of the Rift Valley. As the highest mountain on the continent of Africa and one of the highest volcanoes in the world, Kilimanjaro merits special attention in the realm of ecotourism. About 15,000 tourist attempt to climb to Uhuru Peak (19,340 feet) annually. In addition, an average of four guides, porters and cooks accompany each of these adventurers. Most of the hikers travel the Marungu Route (also known as the Coca Cola Route) which offers the best limited services of any of the available routes. Hence, the impact of tourism is most readily recognized along this route. Thematic Mapper Images dated 2/25,87 and 2/17/93 are used to assess the potential differences in land use below the park entrance and along the Marangu Route. ArcInfo, IDRISI, and ArcView are used to fine tune the variations between the two dates. CorelDraw7 will render the final cartographic presentation of the findings. Standard overlay techniques will be used to highlight the impact and automated cartographic techniques will assure a visual presentation that will do this majestic mountain justice.

Mapping for Decision-Makers:
Modeling Rural Land Allocation in the Indigenous Community of Cuzalapa, Mexico
♦

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Although decision-making using GIS techniques has been a topic within the scholarly literature for over a decade, there are few papers which discuss its actual application within various fields of research. This presentation will examine the application of a raster-based GIS in preparing a decision support land allocation model for an indigenous community within the Sierra de Manantlan Biosphere Reserve (SMBR), Jalisco, Mexico. This region of Mexico is a microcosm for current problems in implementing sustainable land management policies, where choices must be made between conserving the natural environment or exploiting its resources for socio-economic development. Because of the need to convey information to all stakeholders in a clear and concise manner, maps can play a key role in the management process. Results from this research illustrate that cartographic output from a GIS program can be a meaningful tool for planners in examining alternative land allocation choices. The decision support techniques employed are based on IDRISI's multi-criteria evaluation (MCE) and multi objective land allocation (MOLA) modules, including the use Saaty's pairwise comparison matrix method for weighting factors related to each land use. The study was conducted in collaboration with researchers and managers at the SMBR, who provided valuable information concerning land use issues in the Reserve. Strengths and weaknesses of the approach, along with the problems of obtaining relevant data, will be examined. Finally, suggestions for improving the procedure for future users will be discussed.

SESSION G: ATLASES
3:30 pm - 5:30 pm

The Boston Atlas
♦

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The Harvard Map Collection is developing a world wide web-based atlas of Boston, Massachusetts. The atlas will allow users to investigate information about Boston in fields as disparate as crime, mortality, election returns, and education. As it will be based on data gathered by a local foundation whose mission is to empower local neighborhoods and planning groups, the atlas will need to be understandable by those unaccustomed to working with maps and those just learning to use computers. Yet the application will include sophisticated GIS-like tools such as data querying, data reclassification, and distance measurement as well as overlaying reference information such as major streets, neighbor hood boundaries, and rivers.

Wisconsin's Past & Present: A Historical Atlas:
The Making of a Historical Atlas
♦

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Amelia Janes and 5 other cartographers formed a guild, wrote and obtained grants, and worked with numerous historians and editors-including the renowned Dr. Arthur Robinson-to design, write and illustrate Wisconsin's new historical atlas. Published by the University of Wisconsin Press for the 1998 Wisconsin Sesquicentennial, the Atlas has gone into its second printing and became the #1 1999 U.S. Academic Library Bestseller. Her talk will highlight the grant writing process, the experience of working in collaboration with other cartographers, and the challenges of designing and producing a thematic historical atlas. She will also present the Guild's new companion publication to the Atlas, Mapping Wisconsin History-a teaching guide and collection of student materials for 4th grade history, geography and social studies instruction.

Interactive Functions of Electronic Atlases

♦

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Electronic atlases constitute a fairly new form of cartographic publication. Although the term 'Electronic Atlas' appeared in print as early as in 1984 (E. Siekierska), it was not until the early 1990s that first general reference electronic atlases appeared on the market (Smith 1999). It can be easily noticed that functions included in atlases of this kind require rethinking the concepts of thematic structure, scale and relationships between different elements of the system. In an earlier paper (Okonek 1997) the concepts of scale and thematic structure of cartographic presentation in electronic atlases were discussed. The intention of this one is to provide a systematic analysis and a classification of interactive features included in such publications. While there have been a few papers devoted to the classification of electronic atlases published to date, most of these seem not to notice the shift in the way that printed and electronic atlases function. On the basis of the type of information produced by the particular interactive features, we propose to discern the following classes of functions: Navigation, Identification, Orientation, Measurement, Analytical Functions and Communication.

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Barrington Atlas of the Greek and Roman World

♦

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The first authoritative "Atlas of the Classical World" in more than a century. A presentation of the development, design, cartography, manufacturing and archiving of the Barrington Atlas project. The project spanned approximately 12 years. Principles involved, and involved in this presentation, include the contractor; the American Philological Society - Dr. Richard Talbert, Director - the cartographic house; Mapquest.com, Inc. - David Stong, Project Manager and Keith Winters, Account Manager. The presentation of information regarding the archiving and future uses of the material from the atlas by Thomas Elliot, research assistant, and director of the Ancient World Mapping Center, UNC. Through the use of different media, including PowerPoint, the "Making of the Barrington Atlas" will be broken down into the following categories: 1. Project start-up (choosing a cartographer, map design, compilers), 2. Cartographic production (layout, base for compilers, content design, production, printing) and 3. Archiving (Ancient World Mapping Center, future of the Barrington Atlas).

SESSION H: VISUALIZATION & ANIMATION
3:30 pm - 5:30 pm

Maps and Navigational Charts to
Explore the Flows of Information
♦

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This paper offers a cartographic perspective for conceptualizing and formalizing the rapid developments that are taking place in information visualization. We adopt a systematic approach to classify the large array of visual forms emerging mostly from the computer graphics community to visualize the World Wide Web. Drawing on the concepts of scientific visualization information visualization (InfoVis) has emerged in the last five years or so within the human-computer interaction field as a visual strategy to navigate, explore and extract information from rapidly growing, distributed data warehouses (Card et al., 1999). Examples of such multivariate and dynamic data archives are time-sensitive socio-economic databases, such as analog and digital communication flows, business transactions, medical records, or very large structured or unstructured document collections, such as the World Wide Web. Two distinctive design elements can be identified for information visualizations. First and most importantly, the use of space and spatial metaphors as a data generalization and visualization strategy to reduce domain complexity for knowledge discovery. Secondly, the highly interactive nature of the data spaces are increasingly based on sophisticated direct-manipulation graphic user interfaces (Ahlberg and Shneiderman, 1994) that allow the navigation and pro-active data exploration of multidimensional data spaces in real-time. Considering the emphasis on spatial representation as an abstraction and visualization vehicle it is surprising that the developments in information visualization have mostly taken place without the input of the Cartographic/Geographic Visualization/GIScience community. A few exceptions, however, are Couclelis (1998), Dodge (2000), Dodge and Kitchin (2000), (Fabrikant (2000), Fabrikant and Buttenfield (1997), MacEachren (1998), and Skupin and Buttenfield (1996, 1997). After an initial phase of graphic ideation (Dent, 1999) and creative exploration of a huge and very diverse set of visual forms (e.g. 2/3D, immersive, semi-immersive or manipulable data spaces etc.), information visualization now seems mature enough for synthesis. We believe that fundamental design issues like symbology, scale, perception and cognition of graphic forms employed in InfoVis work need to be examined using a cartographic design approach. The construction of a solid theoretical design framework based on empirical evaluation is also necessary. As argued in this paper cartography is well suited for such a task, as the formalization of a visual language for geographic representation based on semiotic and semantic principles are already in place (Bertin, 1967, 1977; MacEachren, 1995).

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Visualization, Animation & Interactive Mapping for a Northern Region of Canada: The Interactive Iqaluit Mapping Project

♦

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This paper presents the preliminary results of the ongoing Iqaluit Multimedia Mapping Project conducted by the Mapping Services Branch of Geomatics Canada, Natural Resources Canada in Ottawa. The convergence of digital mapping and the Internet is paving the way for new mapping and other sophisticated interactive applications. It is an Research and Development Iqaluit project aiming to investigate and test various methods and tools for a more effective knowledge and use of the Internet for cartographic visualization. The resulting cartographic products may be used for decision-support applications in selected relevant areas such as mapping, city planning and environmental studies and sustainable development.

The area of study is Iqaluit, the fast-growing capital city of the Canadian newborn territory of Nunavut in the Baffin Island, 2000 km north of Ottawa. The bustling economic activities of the region require large amounts of geo-spatial information for the management of natural resources, the protection of wildlife and environment and for new economic activities such as eco-tourism. These issues are investigated in this project, as well as new mapping application concepts such as Distributed Geographic Information (DGI). Regarding methodology and outcomes, conventional cartographic products such as vector maps, 2D raster images (aerial photographs, remote sensing, imaging radar) and Digital Elevation Models (DEMs) are being used as inputs to generate new generation of cartographic information. Those include ortho-mosaics, colour oblique stereo-models, composite Terrain images, 3D animation and fly-bys. The project is also investigating multimedia components with voice maps, videos, and places name. Final results will be made available in an educational Web site for the general public and also the scientific community.

Animated Maps as Tools for Policy Evaluation: An Assessment of the Effects of Chapter 91 in Massachusetts

♦

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The regulation of activities in coastal and wetlands areas in Massachusetts is entrusted to the Wetlands and Waterways Program of the state's Department of Environmental Protection (DEP). The Program administers and enforces the Public Waterfront Act (Chapter 91), designed to protect public rights in Massachusetts waterways and adopted in 1866. Under Chapter 91, license or permits must be obtained in order to place new structures or fills, or change the use of existing structures or fills. Since 1866, the Wetlands and Waterways Program has issued about 20,000 statewide licenses and permits. Each license contains textual and cartographic information, showing the location, shape, and size of proposed structures. Licenses are available exclusively on paper, but the DEP plans to convert them to a digital format to facilitate public access. The feasibility of the overall project is currently being tested on about 500 permits, issued in the coastal areas of New Bedford and Pleasant Bay (Cape Cod). As part of the project, DEP would like to assess how the Program has accomplished its objectives in the over 130 years since its inception. Given the nature of the information, we have proposed the use of dynamic maps as a support tool to assess the public benefits of the Program. To do so, we are creating a database of the permits (searchable by date, type of structure, and location), and a series of animated maps reconstructing the evolution of human intervention on the New Bedford and Cape Cod coastlines. The animated maps will make it easier to study the history of the Program, since its inception and at specific times. If the results are positive, we plan to extend our area of study to the entire Massachusetts coastline.

Multimedia vs. Conventional Maps:
Meeting Stakeholders' Needs in Water Management

♦

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In France, the development of public participation in the process of water management has fostered the emergence of new, visible stakeholders who have varying information needs. These new information needs differ from those usually met by the institutionalized and technical information typically portrayed in water management maps, like in water quality maps, for example. In light of this emerging decision-making context, the following question needs to be addressed: What kinds of maps can help a broader public to better understand spatio-temporal phenomenon thereby enabling them to participate more actively in the water management process? To address this question I have administered a series of tests to both university students and water management specialists. The specific aim of the tests was to evaluate the limits and possibilities of multimedia cartography compared with more conventional cartography for communicating spatio-temporal information to different kinds of stakeholders. The results of these tests help to clarify the kinds of contributions different maps make to understanding time and space. They suggest, furthermore, that there may be complementarity rather than opposition between the usefulness of different types of maps (e.g. static, animated, interactive). Finally, the results demonstrate that the skill of the cartographer is still more important than the development of particular cartographic technologies. To synthesize these results, I have made a multimedia atlas of water quality. This atlas was presented to a group of water management stakeholders to evaluate their interest in this kind of information tool. Analyzing their receptiveness will help to evaluate the role that multimedia cartography could take in various kinds of public participation projects, beyond those specifically dealing with water management.

FRIDAY, OCTOBER 13

SESSION I: SOFTWARE SOLUTIONS AND TECHNIQUES
8:00 am - 10:00 am

Using Dasymetric Techniques to Improve Choropleth Maps in the Western United States

♦

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Choropleth maps are one of the most common types of map produced today, largely due to the ease with which they can be created with GIS software, the widespread availability of demographic information, and especially their power in visualizing complex spatial patterns in the variation of attributes. However, they have significant disadvantages, including the Ecological Fallacy and the Modifiable Areal Unit Problem, both of which arise from the limited spatial resolution of the districts being mapped and the subsequent assumption that the districts are internally homogeneous. While problems with this assumption can arise anywhere, they are extremely significant in the Western United States, which has a very heterogeneous settlement pattern and very large districts. Standard choropleth maps in this area frequently lead to serious misinterpretations, some of which may serve ulterior motives. Wright (1936) proposed the use of dasymetric techniques, incorporating additional spatial and attribute information to refine the demographic information used to make the map. Although his results were significant, even in relatively homogeneous Cape Cod, and although most cartography students are introduced to his techniques, they are rarely used in everyday applications. By using a modified and simplified form of Wright's techniques in standard GIS software, choropleth maps of areas in the Western U.S. can be significantly improved, showing spatial patterns of many demographic variables much more accurately, aiding both expert and naïve interpretation. This technique included ancillary variables identifying known uninhabited areas, which had a profound effect on the spatial patterns apparent in maps of variables such as population density, population growth, and income, at many scales. However, this technique can also be abused, and several issues must be dealt with carefully to limit the chances of misinterpretation.

References:

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Introducing Earth to Map: Software for
Understanding the Mathematics of Map Projections

♦

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Map projections are often difficult for students to comprehend, especially for those needing to visualize a process before understanding it. Specifically, discussing the mathematics behind projection equations is often avoided in the classroom. This is unfortunate since the parameters of the equations control the appearance of the projection. This paper presents Earth to Map - new and potentially useful software designed for teaching and understanding the mathematics of map projections. A common approach for teaching map projections is to utilize software that permits projection parameters to be specified (e.g., location of the central meridian). While this approach is suitable for creating and displaying map projections, it does not perform well as a teaching tool. For example, user input of projection parameters is often on pull-down menus or separate forms that are not always visible. This often confuses users when trying to recall the parameters that were specified in relation to the map displayed. Earth to Map offers a new interface design allowing students to quickly explore parameters of map projection equations and visualize the results. For instance, Earth to Map's interface allows students to iteratively change one parameter of a projection equation while holding all others constant and instantly see the results of their parameter specification. By employing this new interface design, Earth to Map helps students understand the mathematics behind the appearance of a projection, how specific parameters influence that appearance, and the numerical range of parameters that are permissible for different projections.

Building a Commercial Map: "World Astronomy Map . . .
a skywatcher's guide to planet Earth"

♦

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Map Link is frequently asked to provide assistance to companies and individuals looking for a partner with which to publish a new map or atlas. When an idea seems appropriate Map Link will operate as a project manager to see the item to reality. We will discuss how these ideas take shape and how we evaluated the risk and estimated the expected sales and profitability. We determined that an unseen perspective was the earth from space, from the point of view of the astronomer. The new map will depict historic and active astronomical observatories, planetariums and other space science related sites around the world, within their global context. Explanatory text and location guides will also be provided. For the first time, skywatchers will see the earth, and the constellation (if you will) of study centers throughout the world. A cartographer, Magellan Geographix, was chosen to produce the new map from data, illustrations and editing from Map Link. We will discuss the text, data, illustration and other sources used to compile the map and the methods by which the geographic information was integrated into a finished, commercial product. Map Link is responsible for public relations, marketing and distributing copies to its customers. We will discuss marketing to existing & finding future distribution channels from the perspective of this new map.

The Third Dimension in Street Maps

♦

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When we think about the challenges of describing a three-dimensional world on two-dimensional maps, we're usually thinking about representations of terrain. But complex cities are full of three-dimensional objects that need to be shown on street maps: landmarks used for orientation and wayfinding, multilevel street systems, subway systems, mixed-use buildings. We'll look at how these objects can be symbolized in ways that are understandable to map users while maintaining accuracy and integrity of the underlying map data.

SESSION J: ALTERNATIVE CARTOGRAPHIES
8:00 am - 10:00 am

Maps Outside the Main Stream Flow

♦

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What determines a mainstream map is changing in our time; not unlike the changes that happened from T-O maps to Portlan charts. Maps, just as art, can fall outside of the mainstream. Maps change through changes in technologies, para-digms, platforms, economics, distribution, and the edge of the known worlds. All these factors work together to determine the nature of what a map is and what it is not. But mainstream maps are not the only maps. Outsider art, Art Brut, art by the insane and children are examples of what has been termed "outsider art." Likewise maps exist outside the main stream flow. This paper discusses what maps are the maps in the main stream, and what maps are outside the flow today.

The Poet as Mapmaker:
(Di)versifying the Teaching of Geography, III

◆

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New Year's Eve of 1934 found Elizabeth Bishop recuperating from the flu. Out of her isolation, the recently orphaned 23-year-old created "The Map." Inspired by a map of the North Atlantic, Bishop's exquisite poem alludes to the "seashore towns" and coastal waters of childhood home, Nova Scotia. Arguably the *seminal* twentieth-century poem about maps, Bishop's "The Map" has inspired a host of other map-poems. In this paper, the third in a series advocating the use of poetry in the teaching of geography, I will attempt to elucidate Bishop's masterpiece and present two works influenced by "The Map." All three recognize an intimate connection between poets and cartographers. After "The Map" opened Bishop's 1955 Pulitzer-prize winning collection, Howard Nemerov composed "The Map-Maker on His Art" (1957). Like Bishop, Nemerov views cartographers as kindred spirits whose observation and language, technical skills and artistry, can transform a blank piece of paper into a unique creation that delimits and orders the world it reflects. Bishop and Nemerov understand that maps, like poems, are cultural artifacts produced by individuals. Nemerov even adopts a defensive persona when comparing himself to the explorer whose notes he translates into his map/poem. In 1963, Mark Strand composed his own poem "The Map," which contrasts the world beyond his window with the unchanging, unified, and idealized version on his map. For Strand, a friend/scholar of Bishop, the map is a poem "a diagram/ of how the world might look could we/ maintain a lasting,/ perfect distance from what it is."

Cartography & Qualitative Research Methodology
for Mongolian Altay Rock Art Study

◆

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Located in northwest Mongolia is an extensive complex of petroglyphs and prehistoric cultural surface features. The spatial extent and richness of the complex necessitated the development of a qualitative research methodology with a strong cartographic component for documenting, analyzing, and interpreting the petroglyphic images. This study aims to develop a picture of the transitions in human activities from the pre-Bronze Age to the Early Iron Age with changes in paleoenvironmental conditions since the Late Pleistocene. The research methodology builds a bridge between the disciplines of art history/archeology and cartography, greatly shaped by geographical and paleoenvironmental considerations. The cartographic methods have contributed to the spatial and thematic organization of images for description, analysis, and display. Cartographic displays and analysis have allowed for the confirmation of field-derived impressions, the revealing of new spatial patterns and relationships, and the refinement of research questions as the project progresses. Petroglyphic images are categorized in terms of subject, style, and spatial context. Patterns of interrelationship among cultural and paleoenvironmental transitions over the last 12,000 years in this region have been revealed. This paper is developed out of the research effort led by Professor Esther Jacobson, Center for Asian and Pacific Studies, University of Oregon.

Constructing THE Milky Way

◆

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Speaking as a Designer/Researcher with the responsibility of creating a vision of our Milky Way Galaxy, these are the considerations toward a 3D electronic model instead of a painting. Step 1: contact the scientists who worked on the mysterious structure of the Milky Way in the 60's and 70's, and ask how would they build "The Beast" with today's knowledge from the latest fleet of instruments. Step 2: contact artist (chosen for his talent in illustrating complex images using 3D software), and ask would he be interested in constructing the Milky Way Galaxy and learning about basic astronomy. Step 3: contact museums, government agencies, and companies that have astronomical data sets, and ask them would they share their data sets in order for us to create a supplement for the National Geographic; typically we offer an overrun of the printing at cost. Questions, guidance, patience, luck, and a little money. Now you just need to control the information so that normally unaware people can enjoy and be interested in our true "Home in Space".

SESSION K: SMALL BUSINESS ROUNDTABLE
10:30 am - Noon

◆

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Discussion facilitators;
Steve Spindler, Steve Spindler Cartography, Philadelphia, PA
Dennis McClendon, Chicago Cartographics, Chicago, IL
Larry Bowring, Bowring Cartographic, Arlington, VA
Dan Van Dorn, Magellan Geografix, Santa Barbara, CA

Informal discussion of issues related to the business of custom cartography with a focus on the changing (or unchanging!) aspects of the marketplace. Possible topics: the demand for Internet maps, project work flow, partnerships with other firms (cartographic, graphic design, publishing), differences and overlap between GIS and Custom Cartography and Custom Cartography.

Session L: Conceptual Issues
10:30 am - Noon

A Framework for the Geographical Meanings of Maps
◆

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This paper proposes a conceptual framework for the geographical content and meanings of maps. This work thus seeks to extend cartography's theoretical domain beyond questions concerned with perception, communication and representation. It begins by calling into question the standard and meaningless couplet of thematic and general-reference maps (along with other lesser terms), and poses instead terms created by Bertin and Petchenik, among others: inventory, analytical and synthesis maps. The utility of these terms lies less in their use in any kind of taxonomy of maps. Rather, these new terms become meaningful when linked to the semantic and cognitive activity of question-asking as a means for meaning-making, whether such activity occurs in the creation of the map or in the use of the map. This framework may thus serve as a step towards grounding the geographical meanings of maps, and not just their representation, in a theory of knowledge.

Tables, Graphs, Maps: Some Visual Connections
◆

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The design of non-map graphic presentations of numeric data — what are generally known as graphs and charts — has traditionally been the domain of graphic designers, statisticians and engineers. However, the first group commonly knows little about the manipulation of numbers and the second two groups commonly know little about design. The most notable exception to this rule in the past two decades has been Edward Tufte and his pioneering work in graphic design. In recent years the widespread availability of software has led to greater use of numeric graphics by a growing number of people trained in neither numeric data handling nor design. This presentation explores some of the ways graphs, charts and tables can be conceptualized as spatially-organized data, akin to maps. In so doing, it becomes possible to apply many of the map design guidelines developed by cartography, to the design of other forms of numeric graphics. A strong argument can be made that these parallels make cartography the most appropriate disciplinary home not just for maps, but for numeric graphics in general. More active involvement by the cartographic community in numeric graphics would seem to be an appropriate role for the discipline to take on, and the expansion of courses in this area is a key first step.

An Investigation Into Other 'Geographies' & Their Depiction

♦

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A research program currently being undertaken at RMIT University, Australia. It involves researching definitions of space and place and how these definitions relate to the Internet, WWW or 'cyberspace'. Within the current era of globalization there has been much discussion and dissemination of the shifting foundations of identity. It has been argued that there are major cultural and political changes taking place around the world that are leaving no one person unaffected. The research is questioning these arguments and addressing such issues as access, ownership and power in relation to the new virtual sites that are being produced. Also, it is examining contemporary theoretical and practical models of cyber-geographical maps that are being published by academics and Internet Service Providers (ISPs) alike. The history of change within the science of cartography and the cultural production of maps (primarily within western culture) forms a basis of the research. Telecommunications, transport and economics are the major catalysts for transformations occurring on a global scale, and it is these issues that are being examined most thoroughly within the project. Indeed, personal experience is the basis from which we form our opinions of the spaces and places we inhabit, so the project will also examine the role of Virtual Reality and its implications for conceptions of identity and embodiment 'outside' of physical confines. Outcomes from the research are hoped to be used to gain and make available unchartered information on different ways that networks and webs operate, and how to actively participate within a culture of global change. This paper will outline the basic concepts underlying the research, provide information regarding work being carried out in this developing area and make available initial results for discussion.

Session M: Maps & the Internet Panel
1:30 pm - 3:30 pm

♦

organized by Michael Peterson
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The Maps and Internet Commission of the International Cartographic Association provides a global forum for discussion about mapping through the Internet and facilitates the transfer of new cartographic technology and knowledge between researchers in different countries. The commission promotes international cartographic research to address scientific and applied problems related to web-based cartography and GIS. The commission was formed in 1999 at meetings of the International Cartographic Association in Ottawa, Canada. This roundtable will summarize the one-day symposium that was held on Oct. 11, and provide information for future meetings in China, Austria, and South Africa.

SESSION N: HISTORY OF CARTOGRAPHY
1:30 pm - 3:30 pm

Col. George Wright's Campaign of 1858: Mapping & Illustrating Military Activity on the Columbia River Plateau
◆

Paul D. McDermott, Montgomery College, 776 Kimberly Ct. E, Gaithersburg, Md 20878
• 301-926-9098 • mapmcd@aol.com
Ronald Grim, Geography and Map Division, Library of Congress, Library Of Congress, G & M Div.,
6973 Deep Cup, Columbia, Md 21045 • 202-707-8532 • rgrim@loc.gov

In August of 1858, Col. George Wright was ordered to curtail hostile activities in eastern Washington Territory. These activities were in violation of treaties signed by Isaac Steven's in 1855. The force left Ft. Walla Walla and proceeded northward across the Palouse and other sections of the Columbia river plateau. In the next two months, two engagements took place, each was within a short distance of what today is Spokane, Washington. Minor losses were incurred by Native Americans and new peace accords were enacted. Fortunately, the expedition was well documented by both maps and illustrations. Wright took great pains to assure the each battlefield was mapped properly and this activity was done by Leut. John Mullan an officer in the topographic engineers. Mullan was accompanied by Gustavus Sohon, a brillant artist who created a series of unique drawings illustrating the assorted events and activities of the expedition. They are shown here for the first time. Each is unique because it was rendered at the time that the activity was occurring. Because of this they represent a unique contribution to our understanding of the American West in the 19th century.

Reproducing Historical Documents for Digital Spatial Research: The 1899 Royce Report
◆

William J. Gribb, Department of Geography and Recreation, University of Wyoming,
Laramie, WY 82071 • planning@uwyo.edu
Daniel G. Cole, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560
• 307-766-3311 • cole.dan@nmnh.si.edu

In 1899 Charles Royce produced a report that chronicled the American Indian treaties with the United States government that established their land holdings. The report identified each treaty, the tribal entities involved, and produced the first maps detailing the location of lands delineated in the treaties. This project is an attempt to revisit the work of the Royce report and reproduce the document in a digital relational format integrating website applications and compact disc technologies. In this way, on an electronic medium, researchers will have the ability to query by tribe, treaty or spatial location the pertinent information concerning the treaty, participants and boundaries. By creating a relational database between these elements, individual treaties or tribes can be searched so that one may capture a more comprehensive view of all tribal groups in a specific

treaty or all of the treaties involving a specific tribal group. Further, a digitally enhanced version of Royce's report produces the actual treaty and both the original map and a cartographically corrected map. In this manner, the researcher has access to the actual treaty with all of its detail and can extract the specific information needed. The revised map utilizes the corrected position of the boundary, current cadastral and geodetic data, and a uniform projection scheme. The relational data base configuration allows the researcher to capture both the direct and complementary materials that will enhance their knowledge of treaty land delineation and the participating tribal groups. Digital spatial research has the ability to link a wide range of information; this project demonstrates that capability and the data model for organizing the information.

Tasting the Nectar: Identifying Cartographic Primary Sources for Researchers

♦

John M. Anderson, Cartographic Information Center, Department of Geography & Anthropology, Louisiana State University, Baton Rouge, LA 70803 • 225-388-6247 • janders@lsu.edu

A graduate seminar was discussing historical essays and evaluating primary source documents. One of the students said that the essays were dull but the primary source documents were exciting. The venerable professor smiled and said "Ah! You have tasted the nectar!" This paper will explore the relationship between the Coast & Geodetic Surveys topographic and hydrographic surveys used to update nautical charts and the published charts. Understanding this relationship is important to historical, geographical, and legal researchers. Further, map librarians must understand the relationship between the surveys and the finished charts in order to lead patrons to the proper interpretation of cartographic sources. For example, since a whole nautical chart is not updated with each edition, the map librarian must make a consultant preparing to testify in a land ownership lawsuit aware that although the statement "The canal appears on a chart dated 1888" may be true, it does not necessarily follow that the canal was completed in that year. Researchers may not realize that only small portions of the chart or only the navigational aids are current to the edition date and that they must determine the date of the information on their study area. The discrepancy between the edition date and the actual date of the information for an area will be illustrated during the presentation by showing a time sequence of when areas on a nautical chart were updated. This will demonstrate that the date of the information can easily be much as fifty years older than the edition date. The paper will also present guides to identifying and obtaining the primary source surveys.

Historical Cartographic Research in an Electronic Future

♦

Kathryn L. Engstrom, Geography and Map Division, Library of Congress, 101 Independence Ave., SE,
Washington, D.C. 20540-4680 • 202-707-8545 • keng@loc.gov

This paper will look briefly at the past and present of historical cartographic research and focus more in-depth on how the advent of the electronic age will affect the ability to do the same research in the future. It will look at the general issue of archiving electronic resources for future reference use; but, it will also look at several current developments that pose potential hazards for historical cartographic research in the future, i.e. NOAA's print-on-demand proposals, cuts in GPO funding for the depository program, the limitations of the online National Atlas and the Census Bureau's American Fact Finder site, and possibly a couple of others. The topic for this paper stems from the non-answers and blanks looks given in response to the question continually raised by the author of this paper at the NACIS conference in Williamsburg in October 1999 regarding agency plans for archiving their electronic data. Rather than providing answers to that question, the purpose of this paper will be to pose more specific questions that need to be asked of the developers of web-sites, electronic products, and technology so that historical cartographic information will be preserved and usable for future generations of researchers.

SATURDAY, OCTOBER 14

WORKSHOPS
8:30 am - 5:00 pm

Avenza MAPublisher:
Putting GIS To Work in your MAP App.
♦

Lou Cross, Florida State University Tallahassee, Freac, Ucc2200, Fl 32306-2641
• 904-644-5447 • lcross@admin.fsu.edu

MAPublisher is a suite of Xtras for Macromedia FreeHand and plug-ins for Adobe Illustrator that bridges Geographic Information System (GIS) technology with high-end graphics software for high-resolution printing and electronic publishing. Come and learn how cartographic quality map production can be faster and easier when pre-existing GIS data and imagery is introduced into your map-making process. Workshop attendees will learn how to import multiple vector GIS file formats (with all attributes intact) into the graphics application, followed by step-by-step exercises that will demonstrate how to manipulate the imported points, lines and polygons without leaving the program. Tasks often regarded as challenging such as re-projection, changes in scale, or registration of geo-referenced imagery are made easy. A working knowledge of FreeHand and/or Illustrator is recommended. This workshop will introduce many features of this fast, intuitive system, so your map can transcend the ordinary and become a powerful and informative work of art.

8:30 am - Noon

Animated & Interactive Cartography
with Macromedia Director
♦

Mark Harrower, Pennsylvania State University, 600 Pollock Rd #2507, State College, PA 16801
• 814-865-3433 • mah282@psu.edu

This workshop will be an introduction to creating interactive and animated maps with Macromedia Director and it's scripting language, Lingo. Director is one of the most popular and powerful multimedia authoring tools on the market - it is used to create games (i.e. Myst and You Don't Know Jack), CD-ROM magazines (i.e. Launch), and cutting edge content for the web (using Shockwave). Topics will include: Director's stage-and-play authoring metaphor, sprites, channels, frame rates, scripting behaviors and interactivity, and coordination of multimedia elements such as sound and motion. The workshop will finish with strategies for optimizing the delivery of content over the web or by CD-ROM.

1:30 pm - 5:00 pm

Illustrator 9—A New Illustrator for Cartography
♦
Steve Gordon, Cartagram, 136 Mill Creek Crossing, Madison, Alabama 35758
• 256-772-0022 • stevengordon@cartagram.com

This workshop begins with an overview of Illustrator 9's new features and their relevance to cartographic design and production. The workshop moves into specific, hands-on training and discussion, including: building complex symbols with Appearances; streamlining production through Styles and custom keyboard shortcuts; organizing maps with hierarchical Layers, thinning linework with Simplify; and enhancing map design with Transparency, Opacity Masks and Effects (feathering and drop shadows). In addition, the workshop covers the use of Brushes and Gradient Meshes, relating these Illustrator 8 features to the new features in Illustrator 9. The workshop concludes with a discussion of printing issues and the current state of the software application (bugs, fixes, etc.).

FIELDTRIPS

9:30 am - 12:30 pm
Continental Aerial Survey

Continental has been in the aerial survey and mapping industry since 1968. Their in-house services include digital topographic mapping, orthophotos, aerial photography, GPS surveying, remote sensing, infrared photography, and satellite imagery.

9:30 am - 2:30 pm
Museum of Appalachia

The Museum of Appalachia has been called "the most authentic and complete replica of pioneer Appalachian life in the world." NACIS 2000 coincides with the Museum's annual Fall Homecoming, when hundreds of artisans, musicians, and mountain folk gather to celebrate Appalachian culture.

1980 NACIS Founding Meeting Attendees*
(with their affiliation at that time)

Gerald L. Alexander
New York Public Library

Martin A. Bacheller
Hammond, Inc.

Chris Baruth
AGS Collection

Deloris A. Biron
Racine County, Wisconsin

Norman Bliss
University of Wisconsin- River Falls

Charles Case
National Geographic Society

Walter J. Chappas
National Ocean Survey

Jon Corson-Rikert
Dane County, WI Regional Planning

Charles Croom
U.S.G.S., N.C.I.C.

Mike Czechanski
Wisconsin Geological Survey

Don Daidone
Virginia Tech

Ed Dahl
Public Archives of Canada

Roman Drazniowsky
AGS Collection

Mary E. Fortney
Northwestern University Library

Michael J. Fox
State Historical Society of Wisconsin

Wayne T. Furr
Oklahoma Geological Society

Mary Galneder
University of Wisconsin-Madison Map Library

Joseph Gregory
Central Intelligence Agency

June Harris (Crowe)
Detroit Public Library

Barbara Hartmann
Texas Bureau of Economic Geology

Al Herman
Library of Congress

Thomas Hodler
Western Michigan State University

Phil R. Hoehn
University of California - Berkeley Library

Mike Holland
South Carolina State Cartographer

Karen Jacoby
National Geographic Society

Miriam Kerndt
University of Wisconsin- Madison Geography Library

Jon Lenerenz
Rand McNally

Dorothy McConnell
Louisiana D.O.T.

Patrick H. MacHaffie
Kentucky Geological Survey

Michael Marini
Brown County, WI Planning Dept.

James Minton
University of Michigan Map Library

those in attendance at this year's meeting have silver ribbons on their name tags

Susan L. Nichols
Nevada Bureau of Mines

Gary North
USGS

Ray Parker
Intercontinental Maps and Charts, Ltd.,
Ontario

Ronald R. Pemberton
Milwaukee Map Service

Susan Peschel
AGS Collection

Barbara Petchenik
RR Donnelly & Sons

J.B. Post
Free Library of Philadelphia

Karl H. Proehl
Pattee Lib., Penn. State Univ.

Jean M. Ray
Southern Illinois University Library

Christine Reinhard
State Cartographers Office, Wis.

Joseph A. Reney
Reney Bros., Inc., Worcester, Ma.

J.E. Renshaw
Intercontinental Maps and Charts, Ltd.,
Ontario

William Roselle
University of Wisconsin-Milwaukee
Library

Marily Schucki
Genge Aerial Surveys, Sacramento, CA

John R. Schroeder
Library of Congress

LeRoy C. Schwartzkopf
University of Maryland Library

Daniel Seldin
Indiana University Geography & Map
Library

Marsha Selmer
University of Illinois at Chicago Circle
Map Library

Arlyn Sherwood
Illinois State Library

Jermaine R. Small
Real Property Listers, Rock County, WI

Mark J. Steuer
Milwaukee Map Service

Lawrence Stipek
Kane Co., Illinois

Paul Stout
Ball State University Map Library

John Sutherland
University of Georgia Map Collection

Fred E. Townsend
Univ. Of Wisconsin- Madison

Jon L. Walstrom
Minnesota Historical Society

Dennis White
Harvard Lab

Charles Wilson
Env. Research Institute of Michigan

Timothy P. Wood
Ministry of Trans. & Communications,
Ont.

David Woodward
University of Wisconsin-Madison

Barbara M. Young
Upper Mississippi River Basin Comm.

Kathleen Zar
University of Chicago

Please make a special effort to welcome first-time NACIS confer-
ence attendees and make this the most memorable conference they
have attended. They are identified by small globe stickers on their
name badges.

As is the tradition at NACIS meetings, the Hospitality Suite is a
place to sit, relax and converse with friends. Check with the NACIS
registration desk for Hospitality Suite room number.

Hope to see you at
NACIS XXI

Portland, Oregon
Oct 3-6, 2001