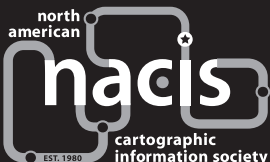# NACIS 2005

Salt Lake City
October 12–15

north
american

nacis

cartographic
information society

EST. 1980

CONFERENCE PROGRAM

Welcome to Salt Lake City . . .

for the 2005 conference of the North American Cartographic Information Society. This year, we're celebrating the 25th NACIS conference with a special emphasis on historical mapping. In addition, several conference events take advantage of the city's dramatic setting at the foot of the Wasatch Mountains. Whether you're taking in the mountain scenery, learning new techniques from colleagues, or making and renewing professional friendships, we hope you'll find this conference both enjoyable and rewarding.

Dennis McClendon, Program Chair
Brandon Plewe, Local Arrangements Coordinator

NACIS Hospitality Suite
Cedar Room, third floor

First-time NACIS attendees can be spotted
by the globes on their name badges.
Make them feel welcome!

Practical Cartography Day

8:30 am–9:30 am

Registration and welcome

9:30 am–12:00 noon

Man vs. Machine: 3D by hand vs. Sketch-up
Gerry Krieg, Krieg Mapping and Steve Spindler, Bikemap.com

Creating annotated indexes using InDesign
Nat Case, Hedberg Maps

Workflow solutions and tips
Colin Fleming, Adobe Systems

12:00 noon–1:00 pm

Lunch

1:00–3:00 pm

Manipulating GeoTIFFs in Photoshop
Doug Smith, Avenza Systems

Introduction to Natural Earth Data
Tom Patterson, National Park Service

Outsourcing and cartography
Martin Gamache, Alpine Mapping Guild

Cartographic Labeling of Cultural Features
Aileen Buckley, ESRI

3:00–3:15 pm

Break

3:15–4:45 pm

Peer review round table discussions, audience participation

3:00–5:00 pm

NACIS Board Meeting, Red Butte Room

7:30 pm

NACIS Map-Off

Fivel cartographers work on the same map subject, then present the finished products to commentators and the audience for discussion of design and content choices.

Organized by Martin Ganache

Participating cartographers:
Tanya Buckingham & Team XNR
Michael Grossman & Team ESRI
Dale Sanderson (Dexmedia)
Lou Cross & Team FREAC
Erin Aigner (New York Times)
James Woods (California State University, Long Beach)

Judging panel:
Virginia Mason (Library of Congress)
Margaret Pearce (Ohio University)
Nick Springer (Springer Cartographics, Cartotalk Webmaster)
Hans van der Maarel (Red Geographics, Cartotalk Moderator)

Opening reception and poster session

Following the Map-Off, check out the poster sessions and vendor displays while renewing friendships over drinks and hors d'oeuvres.

POSTER DISPLAYS

Coordinated by Fritz Kessler, Frostburg Univ.

Simplifying the Shape of the Nation
Jessica Dobrowolski, U.S. Census Bureau

GeoLiteracy and GeoMath: Ventures into Cartography for Children
Barbara Trapido-Lurie, Arizona State University

Adventure Cycling Association Maps—30 Years of Evolution
Carla Majernik, Adventure Cycling Association

2006 Census Test Listing and Mapping Instrument
Andrew McIntire, U.S. Census Bureau

Captured German Military Maps of WWII
Scott R. McEathron, University of Kansas

T in O Map Sculptures
Pat Gilmartin, University of South Carolina

Mapping Metropolitan Phoenix
Stephanie Deitrick, Barbara Trapido-Lurie, Robert Edsall, and Richard Aspinall, Arizona State University

Cartography in an online GIS Master's program
James L Sloan II, Doug Miller, Brian Bills, Steve Crawford, and Jon Voortman Dutton, Penn State University

Maps as the gateway to online, interactive decision support tools
James L Sloan II, Doug Miller, Brian Bills, Steve Crawford, and Jon Voortman Dutton, Penn State University

Atlas of Yellowstone
Jim Meacham, University of Oregon

Rogue River Float Guide
Paul Fyfield and Mattye Dahl, Bureau of Land Management

Are Rising Temperatures Threatening California's Snowpack?
Cassie Hansen and Kevin McManigal, Humboldt State University

Wisconsin's European Ancestry
Bill Buckingham, University of Wisconsin–Madison

Bike There!
Matthew Hampton, Metro Planning Department, Portland, Ore.

8:30 am–10:00 am

PLENARY BREAKFAST

Welcome to NACIS 25, annual society business meeting

NACIS past, present, and future   *Tom Patterson, former NACIS President*

10:15 am–12:15 pm

MAP LIBRARIES
Moderator: Trudy Suchan

The Future of the New York Public Library Map Division
Matthew A. Knutzen, New York Public Library

Online Displays of Texas Bird's Eye Views
Ron Tyler, Univ. of Texas at Austin

Creating Customized Library Collections with Interactive Mapping Sites for Course and Research Support
Abraham Parrish, Yale University

MAP DESIGN
Moderator: Dennis McClendon

On-the-Fly Map Generalization and Scale-Aware "Smart" Maps
Mark Harrower and Matt Bloch, Univ. of Wisconsin–Madison

Old Methods for New Maps
Aileen Buckley and David Barnes, ESRI

Dasymetric Mapping Using Satellite Imagery
Amy L. Griffin, Univ. of New South Wales

Mapmaking for "The Great American Sports Atlas"
Alex Tait, International Mapping

12:15 pm–1:45 pm

LUNCH *on your own, 90 minutes*

1:45 pm–3:45 pm

MAPS FOR TEACHING
Moderator: Erik Steiner

Does Saturation Matter in Maps for Children?
Bill Buckingham, Univ. of Wisconsin

Maps for Textbooks
Valerie Krejcie, Cartographic Consultants

Interactive Maps in Utah Studies Classrooms
Whitney Fae Taylor, Brigham Young Univ.

Visualizing "Great Roads" of History
R. Maxwell Baber, Samford Univ.

MAPS AND USERS
Moderator: Patricia Gilmartin

Cartographic and GIS Services for Congress
Ginny Mason, Library of Congress

Multimodal GIS Interfaces
Adrian A. Cox, Sven Fuhrmann, Alan M. MacEachren, The Pennsylvania State University

The National Map: Where Public Policy and Geospatial Information Intersect
Maeve Boland, Colorado School of Mines

The History of Maps on Cloth
Judith A. Tyner, California State Univ., Long Beach

4:00 pm–5:30 pm

SOFTWARE SHOWCASE
Moderator: Patrick Florance

**MapAnalyst Software
for Analysis of Old Maps**

*Bernhard Jenny, Swiss Federal Institute
of Technology*

**Novacell Topodex
for Viewing Historical Maps**
John Novak, Novacell Technologies

**New Cartographic Representation
in ArcGIS**
Paul Hardy, ESRI

MAP DESIGN PANEL
**What Goes On Before
You Make the Map?**

*Panel organized by Barbara Buttenfield,
Univ. of Colorado*

Alex Tait, International Mapping

Stuart Allan, Allan Cartography

*Dennis McClendon, Chicago
CartoGraphics*

Tom Patterson, National Park Service

5:30 pm

NACIS NIGHT OUT
Choose from a buffet of options taking advantage of the conference's setting:

Gallery tour	Visit to used bookstores	Sunset hike up Ensign Peak
Architecture and history walking tour	The city's best brewpubs and clubs	Downtown's science and history museums
Mormon Tabernacle Choir rehearsal	The world's largest genealogical library	Bike along the Bonneville Shoreline Trail

5:30 pm

CARTOTALK DINNER
In-person gathering of an online community.

8:30 am–10:00 am

PRODUCTION
Moderator: Brandon Plewe

**The Art of Automating
Relief Image Production**
Rachael Johns, Brigham Young Univ.

Automation in Map Production
Hans van der Maarel, Red Geographics

**Using a Geodatabase for
Recurring Map Projects**
*Jacob Blair and Erik Steiner,
Univ. of Oregon*

FREELANCE CARTOGRAPHY
ROUNDTABLE
Panel organized by Martha Bostwick, maps.com

10:15 am–12:00 noon

HISTORICAL ATLASES
Moderator: Jenny Marie Johnson

The Design of Historical Atlases
Mike Hermann, The Univ. of Maine

**History in the Census Atlas
of the United States**
*Trudy Suchan, U.S. Census Bureau, Alex
Tait, International Mapping Associates*

**A Database to Support Collaborative,
Multimodal Historical Atlases**
Brandon Plewe, Brigham Young Univ.

**Historical Cartography
at the Newberry Library**
John H. Long, The Newberry Library

VISUALIZATION
Moderator: Joanna Mensher

New Physical Modeling Techniques
*Charlie Kershner, U.S. Army Topographic
Engineering Center*

**Shading Choropleth Maps
for 3-D Effects**
*James Stewart, Queens Univ.; and
Patrick Kennelly, Long Island Univ.*

**Geovisualization Design
for Unreachable Users**
*Anthony C. Robinson and
Alan M. MacEachren,
The Pennsylvania State University*

Starplot Maps
Frank Hardisty, Univ. of South Carolina

12:15 pm–1:45 pm

L U N C H *on your own, 90 minutes*

1:45 pm–3:30 pm

MAPPING HISTORY
Moderator: Virginia Mason

**Preservation of Historic
USGS Topographic Maps**
*Greg Allord and Jaime Martindale,
Univ. of Wisconsin–Madison*

**Set in Stone: Recreating Historical
and Modern Boston in Granite**
Patrick Florance, Harvard Map Collection

**Using Historical Maps to Trace Boston's
Made Land and Original Shoreline**
Nancy S. Seasholes, Boston University

THE FUTURE OF MAP DESIGN
*Panel organized by Margaret Pearce,
Ohio University*

**Two New Map Design Textbooks
Critiqued**
*Stuart Allan, Cynthia Brewer, Peter Keller,
John Krygier, George McCleary,
and Denis Wood*

4:00 pm–5:30 pm

MAPS AND SOCIETY

**Maps as Metaphors in
20th Century Poetry**
*Adele J. Haft, Hunter College,
City Univ. of New York*

**Map Imagery in
American Political Rhetoric**
Robert Edsall, Arizona State University

SPECIALIZED CARTOGRAPHY

Mapping Lakes and their Environs
Richard Lycan, Portland State Univ.

Marine Mapping Standards Workshop
Mark Denil, Conservation International

300 Years of Medical Mapping
Tom Koch, Univ. of British Columbia

4:00–6:00 pm

NACIS Board Meeting, Red Butte Room

6:30 pm

BANQUET

Student Web Mapping Competition
Coordinated by Charlie Frye, ESRI

The Past and Future of Mapping.
David Rumsey, President, Cartography Associates, San Francisco

Geodweeb Geopardy! to follow in the hospitality suite, Cedar Room, 3rd floor

MAP LIBRARIES

The Future of the New York Public Library Map Division
Matthew A. Knutzen,
New York Public Library

The Map Division of The New York Public Library, established in 1898, holds some 430,000 maps, 20,000 atlases and books about cartography. The collection is international in scope, and dates from the 16th century to the present, with a focus on cities, especially New York City. The Map Division is now undergoing a renovation aimed at providing the collections with ample room for growth and the public with an enhanced workspace. Augmented lighting will illuminate the transformation of this beautiful landmarked 1911 Carrère & Hastings space, undertaken as part of as extensive restoration of its Beaux Arts chandeliers, inlaid tables, mahogany woodwork and decorative carving, cabinetry, masonry, marble & metal work.

In this presentation, Matthew Knutzen, assistant chief of the Map Division, will share background on the project's history and evolution, and will provide a visual progress report on work completed to date. Additionally, Mr. Knutzen will give a sneak preview of special projects, digital and otherwise, that the NYPL Map Division is currently working on and developing.

Online Displays of Texas Bird's Eye Views
Ron Tyler, Univ. of Texas at Austin

In post–Civil War America, more than 50 itinerant artists traveled around the country and produced more than 2,000 views of cities. These clearly promotional images are also fascinating documents of the growth and development of cities during the latter half of the 19th century, and 11 artists produced more than 70 views of Texas cities. This presentation will deal with that phenomenon—the artists and how they made the views—as well as the new web site that the Amon Carter Museum has established, which presents 59 of the Texas views.

Creating Customized Library Collections with Interactive Mapping Sites for Course and Research Support
Abraham Parrish, Yale University

The process of creating customized library collections online via interactive mapping web sites will be discussed. There are four customized collection examples I will show as an end product: an historic site for New Haven, Connecticut, an archaeology/geology site for Guilford, Connecticut, a political science/environmental site for Vieques, Puerto Rico, and a genocide studies site for Cambodia. These sites were created using ArcIMS, Maplicity, and ArcSDE for course support/research and contain vector and raster data. What makes them significant is the fact that various data sets came from many different sources outside of the Yale Library, yet were able to be combined together calligraphically, which presented the end user with a much richer array of information in one interface without the need for processing and combining the data themselves (one of the most time-consuming tasks for GIS users). The end result was an arranged collection of cartographic data customized toward a specific theme, area of research, or course. This allowed patrons to view and analyze cartographic data from various sources through one access point and the limited ability to create their own layers and export maps.

I will discuss how I coordinated with other organizations to pull together all this data into a single access point. My goal is to show that combining data collections from various organizations provides more analysis opportunities and makes that combination of data more useful to everyone while stressing the idea that it is not necessarily how much data you may have in a particular organization(s), but how you organize and provide access to it.

With advancing technology in digitization, GIS, and networking, there are many more possibilities with respect to how collections can be arranged and accessed by patrons.

10:15 am–12:15 pm

MAP DESIGN

On-the-Fly Map Generalization and Scale-Aware "Smart" Maps
Mark Harrower and Matt Bloch, Univ. of Wisconsin–Madison

A major challenge in the development of Web-based mapping services is the creation of smart maps that can be displayed on a variety of devices (such as cell phones, laptops and printers) without compromising legibility or aesthetic appearance. To address this problem, we created a web application for simplifying and smoothing vector lines on-the-fly. Our software converts source data to an appropriate level of generalization before sending it to a Flash map running in a user's web browser. By reducing line detail on the server, we achieve high rates of data compression (1:100 or better), greatly reducing the time needed for network transmission and map rendering.

We also present a Flash-based WYSIWYG editor for generalizing vector layers. An efficient implementation of the Douglas-Peucker algorithm enables cartographers to adjust the degree of line simplification interactively, even for large datasets. Currently, the application supports importing ESRI Shapefiles and exporting .SHP, .AI, .EPS and .AS files. Shapefile polygons are automatically converted to a topological format in order to maintain shared borders. Users can select critical points to be preserved, so important details remain visible as the level of simplification is increased. In addition to global simplification controls, a brush tool lets cartographers fine-tune the degree of line simplification and smoothing in individual parts of a map.

Old Methods for New Maps
Aileen Buckley and David Barnes, ESRI

Methods for mapping on historical maps may have relevance for modern cartography: blending the old with the new can help to create an informationally richer and visually more intriguing map. In this presentation, we travel back in time to explore the evolution of symbology and labeling that are the predecessors of some of our current high tech mapping techniques. We also rediscover some interesting cartographic feature types and we experiment with modern methods for generating these cartographic relics. Our journey of rediscovery allows us to visit old places with new eyes, new tools, and greater insights where we find a world full of coastal and mudflat vignettes; yew trees, osiers, and coppices; hedgerows and row houses; loose rock, outcrops, boulders and scree; cliff hachures and hairy caterpillars; and more. The techniques for mapping some of these features are redeveloped using GIS and geospatial data, and the results are integrated into modern maps with surprising results.

Dasymetric Mapping Using Satellite Imagery
Amy L. Griffin, Univ. of New South Wales

Dasymetric mapping is a technique that can be used to improve traditional choropleth maps by apportioning population counts into areas that are smaller than an original census aggregation. This apportioning typically requires the use of ancillary data such as land use or land cover classifications to redistribute the population. Most recent applications of this technique have used land use/land cover maps that were generated through manual air photo interpretation and that have minimum polygon areas of between 2.5 and 10 acres. This minimum mapping unit size guarantees that land use or land cover contents of many polygons are not homogeneous. High-resolution satellite imagery can be used to generate land cover

information that is not limited by such large minimum mapping units. However, the use of pixel-based classifiers often does not provide satisfactory classification accuracies for high-resolution urban and suburban imagery. In this paper, I demonstrate the use of an object-oriented image classification system for generating land cover information that improves classification accuracies by considering the context of pixels. This ancillary data can then be used for improved dasymetric mapping.

Mapmaking for "The Great American Sports Atlas"
Alex Tait, International Mapping

This talk will provide an overview of the production process for a special 32-page map section in the 2004 yearend issue of *Sports Illustrated* magazine. Topics covered will include mapping sub-optimal statistical datasets, design challenges of creating map variety while maintaining data presentation standards, and client relations with the staff of a popular audience magazine. Particular emphasis will be placed on meeting client demands in the custom mapping environment.

1:45 pm–3:45 pm

MAPS FOR TEACHING

Does Saturation Matter in Maps for Children?
Bill Buckingham, Univ. of Wisconsin

Do children understand maps in the same way that adults do? It has been postulated that they both perceive the map and interpret the data differently than adults. These perceived differences have led many publishers and cartographers to create maps for children differently than they would for adults. This research focused on one aspect of these differences: saturated colors versus subdued, desaturated colors. The purpose of the research was to determine: does color affect a child's ability to understand the content of the map; do children have preferences for particular colors? Approximately 250 fourth- and fifth-grade students were tested on two different color series to determine if bright colors are critical to childrens map perception.

Maps for Textbooks
Valerie Krejcie, Cartographic Consultants

Textbook map programs have many masters to please. They hope to satisfy the expectations of their market: the school district, the teachers (and their students) and still meet state standards. The maps themselves are limited by space, subject matter and other restrictions. However, maps sell and they are an important component of the social studies curriculum. High school textbooks can weigh in at five pounds and have over 1300 pages; it may seem nothing is left out. How are the maps produced and who decides the issues of content and design? It is a balancing act for the map editor to accommodate the various customers of educational publishing, the managers in editorial, design, production and marketing departments. The role of the in-house map editor will be described and how the maps for four textbooks for a major educational publisher of social studies materials for the high school and middle school were developed. In addition to writing/researching the initial map orders from which an out-of-house vendor created the maps, the map editor was responsible for checking various stages of proofs and creating maps for the ancillary products such as outline maps, map transparencies, and geography practice maps. Although the system is far from perfect the product is amazingly accurate and beautiful; how well the maps teach geography is another matter much more difficult to measure.

Interactive Maps in Utah Studies Classrooms
Whitney Fae Taylor, Brigham Young Univ.

The purpose of the research is to examine the ability of interactive maps to improve the learning process in social studies classrooms. This study specifically focuses

on the effects of using standalone interactive maps. A two-group experiment was conducted in six classes of Utah Studies; the experimental group was given an interactive map to use, and the control group was given a series of paper maps. The maps focused on Utah settlement and hypothetical geographical attractors. Students knowledge was tested before and after they used the maps. At the conclusion of the unit, students rated their feelings about the unit and their assigned maps on a bipolar adjective scale. Students using the interactive map showed significantly better improvement on the matching and multiple-choice sections of the test. The cognitive processes and the types of knowledge the questions tested likely contributed to this result. Although no significant difference was found for the attitude assessment, the slow speed of the computers may have increased students' frustration with the interactive map and consequently negatively impacted their attitude about the unit. This research provides support that standalone interactive maps can be a great learning resource in promoting an environment in which students learn more effectively and are more interested in social studies. As schools update their technology with higher speed computers, social studies educators should implement more of these types of learning-enhancing tools.

Visualizing "Great Roads" of History
R. Maxwell Baber, Samford Univ.

Spatial data visualization is enlivening student learning and research experiences in introductory history courses at Samford University. A combination of natural, man-made, and thematic data layers deliver a geographic tableau providing insight into human-environment interactions and their influence on settlement. Given virtual environments for selected historic Great Roads, students research locations and events associated with historical actions that occurred within these corridors. The ability to visually explore the spatial contexts of past events excites student interest and promotes better understanding of historical eras. Geographic visualization works well with this Great Roads approach, which teaches regional history in microcosm. Using visualization to teach history and stimulate student research makes such survey classes more interactive and engaging for students. Here is evidence that GIS is transforming not only the way historians use maps, but also the way they teach. GIS project development of these Great Roads experiences for history education is supported by the Academic Excellence and Geographic Information Systems (AEGIS) Project, funded by the National Science Foundation. The AEGIS Project supports Samford University faculty from a variety of fields (history, political science, classics, chemistry, biology) in the use of geographic technologies with lower-division undergraduate students for interactive discipline-specific learning experiences.

1:45 pm–3:45 pm

MAPS AND USERS

Cartographic and GIS Services for Congress
Ginny Mason, Library of Congress

The Congressional Cartography Program (CCP) in the Geography and Map Division of the Library of Congress was established in summer of 2003 with the goal to provide Congress with on-request cartographic products and services. Traditionally, the Geography and Map Division has been involved only with the acquisition and storage of maps; CCP breaks this tradition by being the sole map producers in the Library of Congress focusing strictly on congressional staff rather than public patrons. Certain challenges result in this institutional shift. From a programmatic standpoint, business needs are rapidly changing to respond to the fast-paced congressional climate. Therefore it is necessary to develop a plan and requirements to build upon. From a customer standpoint, awareness of and use

of Geographic Information Systems within Congress in recent years has been limited to only a few congressional offices, with limited coordination between them. CCP begins this coordination effort by marketing to and educating congressional staff on the potential that cartography and GIS can have on policy decision-making. This presentation will discuss the various user groups involved with the program, the type and nature of various congressional requests, and a review of the cartographic products delivered and planned for in order to serve congressional members and policy requirements.

Multimodal GIS Interfaces
Adrian A. Cox, Sven Fuhrmann,
Alan M. MacEachren,
The Pennsylvania State University

Improving the use and usability of Geographic Information Systems (GIS) has been an area of interest within the GIScience community for some time. Improvements would have significant positive effects in areas such as crisis management where lives and property are at risk. The Geo-Collaboration Crisis Management project (GCCM) in the GeoVISTA Center at The Pennsylvania State University is playing an important role in the development of an improved. map-based multimodal interface to GIS. A multimodal interface is defined as an interface that uses two or more means of modalities to interact with a computer. These modalities can include speech and gesture. It is believed that multimodal interfaces can potentially give users more expressive power and flexibility as well as better tools for controlling sophisticated visualization and multimedia output capabilities. The research we will present focuses on assessing this contention for large-screen maps as an interface to geospatial information provided by a GIS.

The GCCM project is presently assessing and extending a Dialogue Assisted Visual Environment for Geoinformation (DAVE_G) that uses a combination of speech and hand gesture as the means of interacting with a large screen digital map. Recently, the component of DAVE_G responsible for hand gesture recognition was replaced. The new component uses two fixed cameras working in stereo for capturing gesture as opposed to a single active camera used in the previous generation DAVE_G systems. Because of this change, a usability study was conducted in order to determine how the introduction of this component affected the system usability. One of the main goals of the study was to determine how introduction of the new gesture recognition component has affected the way in which the user is able to interact and manipulate the large-screen digital map produced by the GIS.

In this presentation we report on our results from the usability study. We found that the updated gesture recognition component did not improve the usability of the DAVE_G system substantially. However, our combined statistical and qualitative analysis of participant interaction with the system has provided several insights on strengths and weaknesses in the interface. Results are being used by the GCCM team to support a range of improvements that will increase the naturalness and success of user-map interaction.

The National Map: Where Public Policy and Geospatial Information Intersect
Maeve Boland, Colorado School of Mines

The National Map is a U.S. Geological Survey program that aims to provide seamless, current, consistent, digital, basic geospatial data for the nation. The National Map represents a major change in USGS's role in the geospatial sector. The Survey will no longer be a primary producer of information but will guarantee, coordinate, and provide access to data from a wide range of sources in the public, private, and nonprofit sectors. The National Map is a significant policy initiative by the USGS, in addition to being

a technical program. This talk examines the strengths and weaknesses of The National Map from a policy perspective, and emphasizes the importance of understanding the broader societal context in which GIS programs, such as the National Map, operate if such programs are to succeed.

The History of Maps on Cloth
Judith A. Tyner, California State Univ., Long Beach

The most familiar type of cloth maps are the so-called escape maps printed on silk for military use during WWII. In fact, the term *cloth map* has become synonymous with such maps, although maps have been made on fabric for centuries and for a variety of purposes. Maps have been made on cloth for durability, as metaphors, as souvenirs, and for education. The maps have been painted on silk, woven as tapestries, printed on cotton and silk, and embroidered. This paper looks at fabric maps, their origins, their functions and types, through history.

4:00 pm–5:30 pm

SOFTWARE SHOWCASE

MapAnalyst Software
for Analysis of Old Maps
Bernhard Jenny, Swiss Federal Institute of Technology

MapAnalyst is a new tool for the computer-based analysis of old maps. Its main purpose is the computation of distortion grids and error vectors that illustrate the precision and distortions of old maps.

The software uses pairs of control points on an old map and on a new reference map. The control points are used to construct distortion grids, which are very illustrative representations of local distortions of old maps, and error vectors, which indicate the quality of individual control points. As a by-product, MapAnalyst also computes the old maps scale, rotation, and statistical indicators.

Sample applications of distortion grids and error vectors include the identification of areas of similar precision which may give valuable hints on the origin of the different base-maps that were used to compile the map or the estimation of the positional accuracy of vanished items that were reconstituted from old maps (such as cultural landscapes, villages, roads, buildings etc.).

This presentation will demonstrate MapAnalysts capabilities by means of exemplary old maps. It is the first free open-source software of its kind that provides a user-friendly interface. More information about MapAnalyst is available on www.ika.ethz.ch/mapanalyst

Novacell Topodex
for Viewing Historical Maps
John Novak, Novacell Technologies

New Cartographic Representation
in ArcGIS
Paul Hardy, ESRI

4:00 pm–5:30 pm

MAP DESIGN PANEL

What Goes On Before
You Make the Map?
Panel organized by Barbara Buttenfield, Univ. of Colorado

This panel is about the creation and ideation that goes on in the mind's eye. Discussion will focus on the decisions that production cartographers make as they initiate a large design process, illuminating map conceptualization and ideation from the point of view of practice (instead of pure theory, which is the way that most textbooks treat it). Panelists will talk briefly about how they develop that internal vision for the final product, before the physical production process begins. A related issue is how they refine the vision as the product begins to come together. There will be time for audience response and discussion.

Presentations FRIDAY, OCTOBER 14

8:30 am–10:00 am

PRODUCTION

The Art of Automating Relief Image Production
Rachael Johns, Brigham Young Univ.

With the development of DEMs and GIS tools, it has become relatively easy for cartographers (and non-cartographers) to produce technically accurate relief images. However, these are not always visually appealing and are easily misunderstood by the map user. In many cases, proper human perception of terrain needs more than mathematical exactness. Shelton, Imhof, and others demonstrated that terrain mapping is as much an art as a mathematical science, but the techniques they employed are not easily reproducible. Recent cartographers have developed digital analogues to the manual techniques that merge the technical and artistic to produce superior relief images. However, these techniques are complicated to reproduce effectively and unavailable to many cartographers and GIS professionals. Relief Wizard is an ArcGIS-based tool that aids GIS cartographers in creating high-quality relief images. It includes standard tools for managing terrain data and generating shaded relief, but also automates more advanced techniques like resolution bumping and texturing. Resolution bumping combines data of differing resolutions to establish a visual hierarchy of terrain, by making larger landforms more prominent while retaining smaller details in a subdued form. Land cover texturing applies a dimensional texture to the map that suggests realistic land cover. Users can interactively set the parameters to visually control the appearance of their relief, while the wizard employs best-practice information to make suggestions. The purpose of Relief Wizard is to promote good cartographic design, while allowing for creativity, flexibility and individuality in maps.

Automation in Map Production
Hans van der Maarel, Red Geographics

If maps have to be made of the same area at regular time intervals (once every x months) or a series of maps of different areas, it pays to make the process as automated as possible, thereby ensuring that every map is (in terms of style) the same as the others and that the amount of manual work needed to finish the map is minimal.

Obviously this has some unwanted side effects in the field of cartographic quality and it is influenced by the available source data, the status of that data (either own data or third party) and to a lesser degree the software used.

Using a Geodatabase for Recurring Map Projects
Jacob Blair and Erik Steiner, Univ. of Oregon

At the InfoGraphics Lab, creating and updating the cartographic publications for our campus community is one of our longest-running duties. Parking, safety, schedules, event-related maps have widespread thematic uses, yet all have major attributes in common, including the extent of coverage and base geometry. We have been developing a model to economize the creation, updating, and placement of map features and annotation through the use of an ESRI SQLServer2000 Geodatabase.

While the geodatabase paradigm is not always well-suited for single map products, the model is particularly effective for centralizing and managing edits on map series. Whether producing a sequence of maps of campus at the same scale, or a 100-page atlas of campus trees, we rely on distributed topic experts and ever-changing base data. (Plus, we tend to publish the same maps every year.) The clean data management in the geodatabase enables us to save time creating new iterations of our products, allowing us to concentrate more time and energy on

higher-level design issues. Finally, in the educational context of the Lab, students are genuinely able to focus more learning time on solving design challenges rather than juggling incompatible, out-of-date, or faulty data.

8:30 am–10:00 am

FREELANCE CARTOGRAPHY ROUNDTABLE

Panel organized by Martha Bostwick, maps.com

10:15 am–12:00 noon

HISTORICAL ATLASES

The Design of Historical Atlases
Mike Hermann, The Univ. of Maine

Historical atlases are unique design projects for several reasons. The subject matter is often controversial, data is elusive or incomplete, and maps are asked to tell multiple stories. The readership spans a broad audience including academics, amateur historians, curious tourists, and K-12 students. The maps engage multiple forms of cartographic design, and integrate with statistical graphics, antiquarian maps and imagery. Balancing this diverse set of data with minimal narrative presents complex information design challenges. This paper illustrates how the designers and authors of the *Historical Atlas of Maine* (forthcoming) are responding to these challenges.

History in the Census Atlas of the United States
Trudy Suchan, U.S. Census Bureau, Alex Tait, International Mapping Associates

This presentation concentrates on the historical maps in the *Census Atlas of the United States.* Of the nearly 800 maps in the Census Atlas, 15 percent show data from 1990 or earlier. You will see the historical maps we selected that provide contrast with or context for Census 2000 maps. We discuss briefly historical data availability and the sources for historical data at and outside of the Census Bureau.

We highlight issues in comparability of data over time. For instance, the question on veteran status at one time included Civil War widows; for some decades was asked of men only; variously has been tallied for the population 16 or 18 and older; and in some decades was not asked at all. Should we make a map series from these data? We show how we handled classification when data on a topic from several time points are widely disparate. We show how the historical county base maps were created and will discuss pros and cons of making the project base maps available for other uses.

A Database to Support Collaborative, Multimodal Historical Atlases
Brandon Plewe, Brigham Young Univ.

Recent major atlas projects, such as the *Atlas of Oregon,* have shown the enduring value of print atlases, as well as the increasing value of electronic atlases. However, producing both is usually prohibitive in cost and time. Also, the publication of detailed historical information raises issues of uncertainty and differences in interpretation. To overcome these issues, we are designing the *Atlas of Utah's Past* as a historical cartographic database, from which multiple products can be quickly produced, including a large print atlas, abridged paperback student atlases, wall maps, and interactive sites on the Internet or CD-ROM. The common database will also enable ongoing collaborative research, in which scholars can collect and discuss their findings (even those that conflict with others), enabling the continual updating of the database and its products. This living atlas will encourage research, learning, and interest in Utah's past by scholars, students, and the general public.

Historical Cartography at the Newberry Library
John H. Long, The Newberry Library

With few exceptions, modern historical atlases are stand-alone works; compared to

others, each one is more likely to offer alternative or contrasting approaches and features than to share important characteristics. One of those exceptions is the quartet of historical atlases and other historical maps produced over the last 35 years at the Newberry Library. First was the *Atlas of Early American History* (1976), succeeded by the *Atlas of Historical County Boundaries* (1984, 1991-present), the *Atlas of Great Lakes Indian History* (1987), and finally the *Settling of North America* (1995). The historical maps in the *Encyclopedia of Chicago* (2004) are the most recent addition to this lineage. This paper will focus on some fundamental aspects of the parent atlas and how they influenced the historical cartography in the works that followed. Points to be emphasized will include purpose and intended audience, definition of subject area, selection of content, treatment of traditional subjects, training of compiler, sources, relationship between compiler and cartographer, and the role of the publisher. The presentation will be illustrated by images from the atlases. The author has firsthand knowledge of the projects named.

10:15 am–12:00 noon

VISUALIZATION

New Physical Modeling Techniques
Charlie Kershner, U.S. Army Topographic Engineering Center

**Shading Choropleth Maps
for 3-D Effects**
James Stewart, Queens Univ.; and Patrick Kennelly, Long Island Univ.

Cartographers have displayed choropleth maps as three dimensional (3-D) models for enhanced visual effect. These prism maps, however, are typically oblique views of the data with inherent problems such as hidden surfaces. Planimetric displays are possible, but traditional shading algorithms that work well for terrain do not add much detail to 3-D choropleth maps. Surfaces represent different values, but all of these elements are flat. Lacking

any slope or aspect information, shading using a point source of light will not help to differentiate areas of different values, unless shadows that mask underlying information are included.

We apply more advanced illumination models to planimetrically correct 3-D choropleth maps to create softer and more realistic shadowing. These shadows provide important visual cues to the relative height of adjacent areas, and do not mask information. Such shading can be incorporated with colors assigned to classes. This technique is similar to using layer tinting in combination with hill shading for terrain representation. The resulting choropleth maps vary colors with ranges of values, soft shadowing with relatively large changes in values in local areas, and shading of borders with small changes of values in adjacent areas.

**Geovisualization Design
for Unreachable Users**
*Anthony C. Robinson and
Alan M. MacEachren,
The Pennsylvania State University*

Cartographers focused on designing new tools for geographic visualization are faced with multiple, often competing considerations. One important challenge for cartographers is to create solutions that efficiently and elegantly match what the end-user requires. Often, the best solution for this problem is to elicit feedback directly from users in each stage of the design process.

In this presentation we focus on the particularly difficult design challenge of creating a toolkit for intelligence analysts for the Advanced Research and Development Activity (ARDA). This use context is particularly challenging because we are not allowed access to users or their data, and for the most part we do not know the specific tasks we need to support. We will describe a design strategy that employs the use of exemplars, role-playing, background research, and iterative interactive prototyping to address this

challenge. We will also outline a method for presenting these prototypes for anonymous comment, by users who have access to the internet but cannot using the E-Delphi tools developed at the GeoVISTA Center.

Starplot Maps
Frank Hardisty, Univ. of South Carolina

Starplots are a multivariate representation strategy that has been used in the statistical graphics community for 30 years. Until now, there are no instances available of interactive starplots in geographic maps in the literature (that the author is aware of) or available to the public. This research presents a flexible platform for displaying any kind of symbol, or glyph, for point features (including starplots) in a map. Therefore, this platform, part of the MapBean project (www.mapbean.org), can be used as a testbed for arbitrary kinds of symbols for point features, including starplot maps. This software is freely available over the Internet in four forms: as a Java applet that runs inside suitably configured web browsers; as a Java Web Start internet-delivered desktop application; as an executable library suitable for inclusion into other programs; and in source code form.

1:45 pm–3:30 pm

MAPPING HISTORY

Preservation of Historic USGS Topographic Maps
Greg Allord and Jaime Martindale, Univ. of Wisconsin–Madison

The U.S. Geological Survey has set a goal of developing a digital archive of USGS historic topographic maps within five years. Historic quadrangles are a USGS map not currently for sale by USGS in printed paper format. Initial steps include creating an on-line catalog providing map scale, edition date and geographic extent of maps dating back to 1879. Goals include using this catalog to identify and organize efforts underway throughout the nation in order to coordinate and avoid duplicating efforts. USGS will archive full resolution scans at National Archives and Records Administration and anticipates serving views of these maps, possibly in cooperation with other agencies.

A pilot project has been initiated with the University of Wisconsin—Madison's Arthur H. Robinson Map Library. The Map Library's extensive collection of USGS maps will be used to test process, procedures, storage, compression and metadata. USGS and the Robinson Map Library will work closely with the Library of Congress to ensure proper metadata development standards are implemented during the creation of the digital library of map images. The project at the Robinson Map Library will begin with the scanning of Wisconsin topographic maps at 1:24,000, 1:62,500, 1:100,000, and 1:250,000 scales.

Set in Stone: Recreating Historical and Modern Boston in Granite
Patrick Florance, Harvard Map Collection

Boston, one of the oldest cities in North America, rests on over 50 percent made land. Originally founded in 1630 by Puritan settlers on the Shawmut Peninsula, the citys landscape underwent tremendous change throughout the centuries as it experienced colonization, revolution, industrialization, and depression. Out of dirt and refuse emerged a large land mass that would become a leading intellectual and industrial center.

This presentation will explore the creation of a map depicting Boston in the year 1775 overlaying the modern city. The goal is to situate the modern city within its historical context in order to provide visitors with a sense of the chronological and topographical transformation of Boston. The final map will be 7 by 6 feet, composed of granite, and set in the ground of the new park in the North End. Historic maps, old street name dictionaries and gazetteers, secondary sources, modern GIS data, and consultations with historians contributed

to the construction of the map. A variety of geospatial and digital image processing techniques were also employed.

Using Historical Maps to Trace Boston's Made Land and Original Shoreline
Nancy S. Seasholes, Boston University

In a recent book, *Gaining Ground: A History of Landmaking in Boston* (MIT 2003), a study of all the filling done to create the land on which Boston is located, the presenter used many historical maps to trace the course of this filling, or landmaking. In a forthcoming book, tentatively titled *Gaining Ground Walking Tours* (MIT 2006), historical maps were used to reconstruct Boston's original shoreline, which was then superimposed on current street maps. Historical maps were also the basis of a series of computerized maps showing changes in Boston's shoreline from 1630 to 1995 that appeared in an earlier book in which the presenter has a chapter: *Mapping Boston* (MIT 1999). This paper will examine the criteria used to select, from the plethora of historical maps of Boston, those that best trace the course of landmaking and/or most reliably reconstruct the original shoreline criteria that may perhaps be applied to similar research questions about other cities.

1:45 pm–3:30 pm
THE FUTURE OF MAP DESIGN
Panel organized by Margaret Pearce, Ohio University

This is a critical examination of the state of map design education today. We begin with a panel of three critics who will comment on two new map design texts published this year: John Krygier and Denis Wood's *Making Maps: A Visual Guide to Map Design for GIS,* and Cynthia Brewer's *Designing Better Maps: A Guide for GIS Users.* In contrast to traditional cartographic texts, these two new books are designed to include the growing audience for map design education outside of academic cartography in academic GIS

courses and in private sector GIS and design firms. Three panelists will critique the two texts for both the map design principles put forth as well as the way in which these books diverge from conventional texts. How do we teach, learn, and practice cartographic design today, and how different is this from map design 25 years ago? Do traditional cartographic design curricula still hold true? The three authors will then have opportunity to respond.

To conclude, panel and audience will identify the arenas of map design most urgently in need of attention. What gaps exist between cartography as it is taught in higher education and cartography as it is practiced? Which elements of good design have been lost or gained because of technological change, and how effectively are academic cartographers integrating these elements into design education? And, can new audiences for map design education foster new cartographic languages and promote cartographic diversity across society?

4:00 pm–5:30 pm
MAPS AND SOCIETY

Maps as Metaphors in 20th-Century Poetry
Adele J. Haft, Hunter College, City Univ. of New York

Phillip and Juliana Muehrcke set the bar high when they published "Maps in Literature" in 1974. An interdisciplinary tour de force, the article in *Geographical Review* reflected their passions for maps and literature, particularly the novels popular in the last century. In it, Hardy's Wessex novels rub shoulders with Faulkner's Yoknapatawpha County, while *Lord of the Rings* nods at *Treasure Island.* Although these works contain maps as illustrations, the Muehrckes left reproductions to others. Like J.B. Post, whose 1973 *Atlas of Fantasy* featured maps in science fiction and fantasy. Or Jules Zanger, whose 1982 article "Harbours Like

Sonnets: Literary Maps and Cartographic Symbols" offered readers of the literary journal *Georgia Review* much of what the Muehrckes had outlined for geographers: namely, how writers describe maps and use them metaphorically to establish hierarchies, lend verisimilitude, stimulate the imagination, stop time, or peer into the future. Poets come off poorly, however. Zanger names Donne; while the Muehrckes add Herrick, Wordsworth, and Howard McCord. But McCord was not the only 20th-century poet writing about maps nor the most representative. To remedy this oversight, my paper quotes selections from 25 poets who use maps metaphorically and in ways unexamined by Zanger or the Muehrckes.

Map Imagery in American Political Rhetoric
Robert Edsall, Arizona State University

Map imagery is often used in the promotion of specific forms of political and social doctrine. An examination of recent American campaign materials, political advertising, and popular political graphics reflects the polarized society: materials promoting Republican and so-called conservative candidates or values tend to feature images of the U.S., while more left-leaning materials tend to feature images of the globe. I examine advertising and images from politically ideological periodicals (such as *Mother Jones, New Republic, Insight on the News, National Review,* etc.), political materials from campaigns from the 2004 election, images and graphics (available on the Internet or through catalogs) on t-shirts and bumper stickers, and logos and other graphics from companies and organizations with political points of view. I speculate about the broader motives and implications of the use of these map images, and offer this as a case study for a more general framework of graphical criticism and analysis as it applies to maps and map-like imagery in popular culture.

4:00 pm–5:30 pm

SPECIALIZED CARTOGRAPHY

Mapping Lakes and their Environs
Richard Lycan, Portland State Univ.

In simplest form a map of a lake is a polygonal area with an outline, a blue fill, and a name. Seeing a familiar lake on a quadrangle sheet may bring back familiar memories to the viewer of pleasant days spent on the water or the lakeshore. A fisherman may wonder what quarry lies below the water. A cottage owner may recall family gatherings at the lake. A limnologist will think about the complex physical and biological systems taking place in the lake's waters. Some years ago the author participated in the publication of an atlas of lakes in Oregon and now is looking forward to the possible updating and revision of this volume. The original volume was principally directed at issues of water quality but was written in such a way that it would attract a popular audience. It even got a review in *Outdoor Life* magazine. This paper will review a variety of publications that feature the mapping of lakes to assess their intended market and how they were designed to meet the users needs. It will attempt identify different communities of interest among the viewers of lake maps and to find commonalities in their needs.

Marine Mapping Standards Workshop
Mark Denil, Conservation International

A workshop to take place in early 2006 proposes to address cartographic issues attendant upon marine biodiversity conservation mapping. These issues center upon the questions of what is to be expected of these maps, and what will constitute an acceptable map of those situations. In a three-day workshop, the participants—cartographers, biologists, conservationists, and others—will establish a baseline on the current state of marine mapping, a projection of what is possible, a

Presentations

prioritization of feasible needs, and a roadmap for future development. The focus of the workshop is on the cartographic concerns of useful, usable and reliable map products; conversely, purely data-centric issues attendant upon particular projects or initiatives should be handled in other forums. This talk will be an introduction and invitation to participation in the workshop, and hopefully open general discussion of marine mapping issues.

300 Years of Medical Mapping
Tom Koch, Univ. of British Columbia

Medical mapping is the stepchild of the health sciences. Everyone wants maps to illustrate their articles but most experts in the health-related disciplines—and many in medical geography—see medical mapping as an illustrative adjunct to disease studies, not a critical tool for exploration. This presentation reviews 300 years of medical mapping from a new book, *Cartographies of Disease,* to argue mapping held and holds a critical place in the understanding of epidemic and endemic disease. The failure to consider the map's critical role has been caused in part by assumptions about the nature of mapping in general and misunderstanding of its symbiotic relationship with numerical data.

6:30 pm

B A N Q U E T

Student Web Mapping Competition
Coordinated by Charlie Frye, ESRI

The Past and Future of Mapping
David Rumsey, President, Cartography Associates, San Francisco

A Day at Snowbird

Come experience Utah's unparalleled outdoors with us at the Snowbird Resort! The Wasatch Mountains have plenty of autumn adventures. The trip price includes an all-day pass on Snowbird's summer rides: the alpine slide, the 1000-foot zip line, the euro bungee, and the tram to the top of Hidden Peak. If thrills aren't your style, then relax in the full-service spa or meditate on an 11,000 foot mountaintop (guru fee not included). For the more adventurous, guided tours on horseback, ATV, or bicycle are available (for an additional fee, not operated by NACIS). Sign up at the registration desk. The activity fee of $40 includes transportation and activities pass.
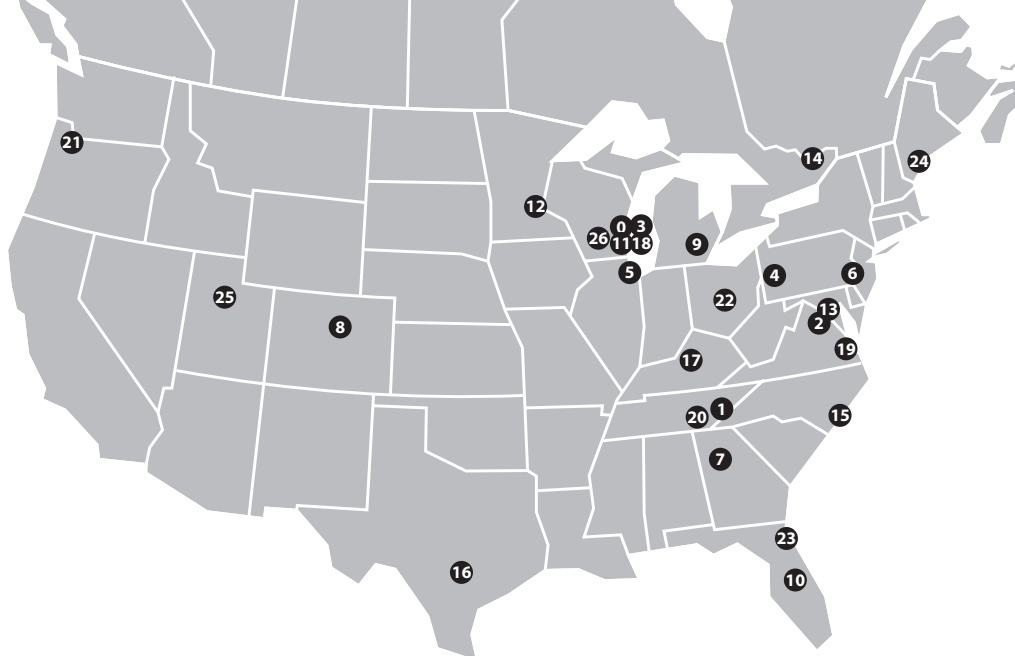
25 years of NACIS conferences:

0	Oct. 2–4, 1980	Milwaukee, WI
1	Sept. 30–Oct. 3, 1981	Gatlinburg, TN
2	Oct. 21–24, 1982	Arlington, VA
3	Oct. 20–22, 1983	Milwaukee, WI
4	Oct. 17–20, 1984	Pittsburgh, PA
5	Nov. 10–13, 1985	Chicago/Skokie, IL
6	Oct. 15–18, 1986	Philadelphia, PA
7	Oct. 28–31, 1987	Atlanta, GA
8	Oct. 12–15, 1988	Denver, CO
9	Oct. 11–15, 1989	Ann Arbor, MI
10	Oct. 24–27, 1990	Orlando, FL
11	Oct. 19–23, 1991	Milwaukee, WI
12	Oct. 14–17, 1992	St. Paul, MN
13	Oct. 20–23, 1993	Silver Spring, MD
14	Aug. 10–13, 1994	Ottawa, ON
15	Oct. 25–28, 1995	Wilmington, NC
16	Oct. 2–5, 1996	San Antonio, TX
17	Oct. 1–4, 1997	Lexington, KY
18	Oct. 7–10, 1998	Milwaukee, WI
19	Oct. 20–23, 1999	Williamsburg, VA
20	Oct. 11–14, 2000	Knoxville, TN
21	Oct. 3–6, 2001	Portland, OR
22	Oct. 9–12, 2002	Columbus, OH
23	Oct. 8–11, 2003	Jacksonville, FL
24	Oct. 6–9, 2004	Portland, ME
25	Oct. 12–15, 2005	Salt Lake City, UT

MARK YOUR CALENDARS:
Oct. 18–21, 2006   Madison, WI

Downtown Attractions

Abravanel Hall. Home of the Utah Symphony (not playing this week), and an impressive modern building featuring a Dale Chihuly sculpture in the lobby.

Capitol Theatre. Home for opera, ballet, dance and plays. See *Events*.

Clark Planetarium. A digital planetarium, a 3-D IMAX theater, and science museum. Open Mon.-Thur. 10:30-9, Fri.-Sat. 10:30-11, Sun. 10:30-8.

Family History Library. The worldwide mecca for genealogists, containing information on 2 billion people, and four million documents. Open Mon. 8-5, Tue.-Sat. 8-9.

Gallivan Center. Party Central during the Winter Olympics, still the place for entertainment, with free concerts and parties (nothing this week). Open until 10 pm.

Joseph Smith Memorial Building. In the historic Hotel Utah, contains the FamilySearch Center, the best place for genealogy novices to start. Mon.-Fri. 9-9, Sat. 9-5.

LDS Church Office Building. The tallest building in Salt Lake offers tours to the observation deck for the best views of the city. Mon.-Fri. 9-4:30. Call 801-240-2190.

LDS Conference Center. One of the largest auditoriums in the world (seats 21,000 with no internal columns), with an award-winning rooftop garden. Also the temporary home of the Choir while the Tabernacle is remodeled. Choir rehearsal is Thursday night 8-9:30.

LDS Museum of Church History and Art. The best place to learn about the LDS church on your own terms (i.e., no missionaries). An excellent collection of art and rare artifacts. Open Mon.-Fri. 9-9, Sat.-Sun. 10-7.

The Leonardo at Library Square. An eclectic museum of art (especially photography), culture, and science, currently showing "Exodus," photos by Sebastião Salgad of refugees. Open Tue.-Sat. 10-6 (Wed. & Fri. until 9), Sun. 1-5.

Museum of Utah Art and History. A large nonprofit multicultural museum, but only open Tue.-Sun. 11-3.

Patrick Moore Gallery. Current show: Arts of Fiber 2005.

Rio Grande Depot. State Art Gallery, History Museum, and Archives. Open Mon.-Fri. 9-4:30, Sat. 9-1.

Rose Wagner Center. Art gallery and experimental theater. Open Mon.-Fri. 8-5. See *Events*.

Salt Lake Art Center. A contemporary art gallery; Scott Fife sculptures in street-level gallery, new Jun Kaneko exhibition opens Oct. 15. Hours Tue.-Sat. 10-5 (Fri. until 9), Sun. 1-5.

State Capitol. A half-mile north on State Street. Closed through 2008 for renovation.

Temple Square. Includes the world-famous LDS Temple and Tabernacle (currently under renovation to earthquake standards), and two visitors centers. Free tours start every few minutes at the flagpole.

Unknown Gallery. Current show: Media Fear, a solo exhibition by Max Grundy. Open Tue.-Sat. noon-7.

Union Pacific Station. Now a reception center, the 1908 French Renaissance building contains huge murals and stained glass windows depicting Utah history.

Visitor Information Center, with adjacent gift and souvenir shop, in the Salt Palace. Open Mon-Fri. 8-5, Sat.-Sun. 9-5.

Restaurants

In case you're wondering, there isn't really an authentic "Utah Cuisine," unless you count Jell-O, ice cream, Funeral Potatoes, and Fry Sauce. Dutch oven cowboy food is about as native as it gets, and very good, but rare in restaurants.

Also in case you're wondering, almost all downtown restaurants serve alcohol.

Salt Lake has dozens of restaurants downtown. The hotel restaurant is good but pricey. These are some of the best and most popular spots near the hotel:

The downtown malls, **Crossroads Plaza** and **ZCMI Center,** have the standard fast food courts.

The Gateway, downtown's newest shopping center, has a large food court, but also several nicer restaurants, including:

■ **Biaggi's** (Italian)
California Pizza Kitchen
Costa Vida (Mexican)
■ **The Dodo** (Soup/Sandwich)
Fleming's (Steak)
Happy Sumo (Sushi)
McGrath's (Seafood)
Rumbi Island (Polynesian)
Samba Grill (Brazilian)
SkyBox Sports Grille
Thaifoon (Asian Eclectic)
Z-Tejas (Tex-Mex)

Absolute (European gourmet). 52 W. 200 South, 801-359-0899

■ **Baba Afghan** (Afghan/Middle Eastern). 55 E. 400 South, 801-596-0786

Baci Trattoria (Italian). 134 Pierpont, 801-328-1500

Bambara (eclectic). 202 S. Main, 801-363-5454

Benihana (you know Benihana). 165 S. West Temple, 801-322-2421

■ **Blue Iguana** (Mexican). 165 S. West Temple, 801-533-8900

Ginza (Sushi). 209 W. 200 South, 801-322-2224

Hong Kong Tea House (Chinese), good dim sum. 565 W. 200 South, 801-531-7010

■ **Lamb's Grill** (upscale diner), Utah's oldest operating restaurant. 169 S. Main, 801-364-7166

■ **Market Street Grill** (Seafood). 48 Market St, 801-322-4668

Martine (Spanish/Tapas). 22 E. 100 South, 801-363-9328

■ **Metropolitan** (upscale eclectic). 173 W. Broadway (300 South), 801-364-3472

■ **The New Yorker** (upscale steak/continental). 60 W. Market, 801-363-0166

■ **Redrock Brewing Company** (brewpub), voted best in America once or twice. 254 S. 200 West, 801-521-7446

Rio Grande Cafe (Mexican). 270 S. Rio Grande, 801-364-3302

■ **Siegfried's Delicatessen** (German). 69 W. 300 South, 801-355-3891

■ **Shogun** (Japanese/Sushi). 321 S. Main, 801-364-7142

Squatters Pub (brewpub). 147 W. Broadway (300 South), 801-363-BREW

Spencer's (upscale steakhouse), consistently on those "10 Best in America" lists. 255 S. West Temple, 801-238-4748

Taj India (Indian). 73 E. 400 South, 801-596-8727

■ **Tony Caputo's Deli** (NY-style deli), great lunch, but busy. 308 W. 300 South, 801-531-8669

Xiao-Li (Chinese). 307 W. 200 South , 801-328-8688

■ *Best choices*

CLUBS (BARS)

Without too much explanation, in Utah, bars are called "private clubs." For $4-5 (often included in the price of the first drink), you generally get a temporary "membership." After that, it's a normal bar.

Redrock Brewing Company (brewpub)

Squatters Pub (brewpub), beer names are cuter than Redrock.

O'Shuck's

Bar-X-Inn, a classic dive

Bourbon Street

Lumpy's (Sports)

Murphy's (Irish)

Port O'Call (Dance/Rooftop/Sports)

Tavernacle (Dueling Pianos)

Shaggy's Livin' Room
(College Lounge/Music)

EVENTS THIS WEEK

Tickets can be purchased at www.arttix.org

Mormon Tabernacle Choir weekly rehearsal, LDS Conference Center. Free; come as you are, Thursday, 8 pm.

Utah Opera presents "Romeo and Juliet" at the Capitol Theatre. Saturday, 7:30 pm

Latin American Dance Spectacular at the Rose Wagner Center, Saturday, 7:30 pm

Wonder of the World (off-Broadway comedy) at the Rose Wagner Center, Friday and Saturday, 8 pm

SHOPPING

ZCMI Center. Downtown's first (and smallest) mall. ZCMI (Zions Cooperative Mercantile Institution) was the world's first "department store" in 1868, although it is now part of Macy's. Open Mon.-Fri. 10-9, Sat. 10-7.

Crossroads Plaza. A large mall with a wide variety of stores. Open Mon.-Sat. 10-9, Sun. 12-6.

The Gateway. Salt Lake's new, trendy outdoor mall. Open Mon.- Sat. 10-9, Sun. 12-6 (restaurants open later).

Sam Weller's Zion Bookstore. Salt Lake's big new/used bookstore; go raid the atlases! Open Mon.-Sat. 10-8, Sun. 10-4.

Ken Sanders Rare Books. Good collection of western and Mormon antiques as well as normal stock. Open Mon.-Sat. 10-6.

State Wine Store. One of the nation's largest (30,000 bottles). Open Mon.-Sat. 11-7.

DOWNTOWN SALT LAKE CITY

660 FEET

N

Hong Kong Tea House

Patrick Moore Gallery

Gateway

Union Pacific Station

Rio Grande Cafe

Rio Grande Depot

Rio Grande

PIONEER PARK

Clark Planetarium

400 West

Unknown Gallery

Pierpont

Broadway

Caputo's Deli

300 West

100 South

Delta Center

South Temple

RADISSON HOTEL

North Temple

Salt Palace Convention Center

Abravanel Hall

Family History Library

LDS Museum

LDS Conference Center

200 South

Xiao Li rest.

Ginza Sushi

Redrock Brewing Company

Rose Wagner Center

300 South

200 West

Visitor Info

West Temple

Salt Lake Art Center

TEMPLE SQUARE

Taber-nacle

Temple

LDS

Shaggy's Livin'Room

Pierpont

Lumpy's

Squatter's Pub

Baci Trattoria

Absolute rest.

Blue Iguana rest.

Benihana rest.

Siegfried's Deli

Spencer's rest.

Crossroads Plaza Mall

Capitol Theatre

Metropolitan rest.

400 South

to Sandy

Port O'Call

500 South

O'Shuck's

New Yorker rest.

Market Street Grill

Market

Sam Weller's Zion Bookstore

Bambara rest.

Main

Murphy's

Martine rest.

Museum of Utah Art & History

ZCMI Center Mall

Social Hall

Joseph Smith Memorial Bldg

Beehive House

LDS Church Office Bldg

to State Capitol

1st Ave

Baba Afghan rest.

Shogun rest.

Exchange

Bourbon Street

Taj India rest.

Lamb's Grill

Gallivan Center

Regent

Plum Alley

Orpheum

State

City & County Bldg

Edison

Bar-X Inn

Ken Sanders Rare Books

200 East

The Leonardo

Library

Tavernacle

300 East

State Wine Store

400 East

Trax Light Rail Line (free within map area)

to University of Utah