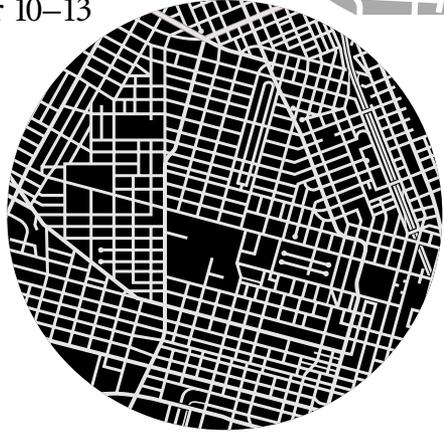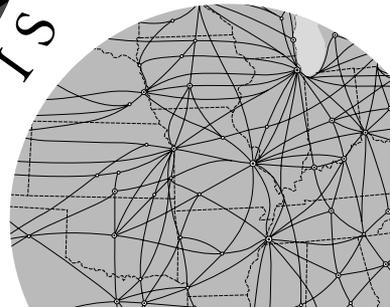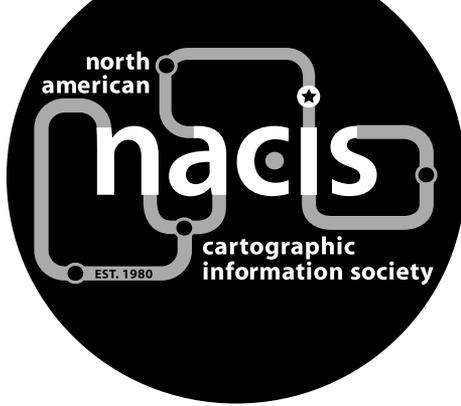Conference Program
NACIS 2007
Hilton St. Louis Frontenac
October 10–13

NACIS 2007

ST. LOUIS

Welcome to Saint Louis!

for the 2007 conference of the North American Cartographic Information Society. Once again, the program shows the breadth of cartographic interests: from antiquarian maps to Web APIs, from detailed utility maps to a relief globe you can sit on. Whether you're learning new techniques from colleagues or making and renewing professional friendships, we hope you'll find this conference both enjoyable and rewarding.

Mike Hermann, Program Chair

NACIS Hospitality Suite: Clayton Wing Room 2216

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

*Next year in Missoula!
October 8–10, 2008*

Practical Cartography Day

Organized by Martin Gamache, National Geographic *magazine*
and Nathaniel Kelso, The Washington Post

8:30 am–9:00 am

Registration and welcome

9:00 am–12:00 noon

ESRI Symbols and Styles
Aileen Buckley, ESRI

FME–Based Cartography Workflows
Hans van der Maarel, Red Geographics

Break

Introducing Natural Earth II
Tom Patterson, U.S. National Park Service

Scale Issues and Cartograms
Eric Wolf, Univ. of Colorado, Boulder

**Illustrator Plug Ins for Cartography: What's New,
What's Missing and How to Make Your Own**
Nathaniel V. Kelso, The Washington Post

12:00 noon–1:15 pm

Lunch

1:15–3:00 pm

Geocart 3
Daan Strebe, Mapthematics

Flex Projector software for designing custom map projections
Bernhard Jenny, Institute of Cartography, ETH Zurich
Tom Patterson, U.S. National Park Service

ESRI Mapping Centre
Charlie Frye, ESRI

3:00–3:15 pm

Break

3:15–4:45 pm

Peer review round table discussions, bring a map!

3:00–5:00 pm

NACIS Board Meeting, Pommard Room

7:00 pm

NACIS Map-Off

Lewis and Clark Real Time "Map-Off" in Missouri

Take a trip down the Missouri River in 1804 and watch as our esteemed cartographers build their maps of the Lewis and Clark expedition—right before our eyes! Maps will be discussed to illuminate the decisions, procedures, and techniques cartographers face in map design and production.

Organized by Virginia Mason, Library of Congress

Participating cartographers:

Dennis Fitzsimons
Neil Allen
James Harlan
Lou Cross
Jeff Craig

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 State Univ.

Character maps and fieldwork
Ming-Chih Hung and Yi-Hwa Wu, Northwest Missouri State Univ.

Legends are made to be broken
Tom Harrison, Tom Harrison Maps

Regional map of metropolitan Chicago
Lenny Walther, Northern Illinois Univ.

"In short, must a map always be a map?"
Steven R. Holloway

State of Oregon: surface management responsibility
Jim Rounds, Paul Fyfield, and Mattye Dahl, Bureau of Land Management

**Time scale, pattern detection, and animation pace:
Map animation as a window into multi-temporal processes?**
Mathew A. Dooley, Univ. of Wisconsin-River–Falls

Cultural topographies of Le Mans
Jan Piribeck, Univ. of Southern Maine

Thoreau-Wabankai trail map
Michael Hermann, Purple Lizard Maps

Mountains of southwest China hotspot: forest cover and clearance
Mark Denil, Conservation International

Cartography and the teaching of quantitative methods
Joseph Poracsky and Heejun Chang, Portland State Univ.

Visualizing sea level rise
*David Braaten, Nathaniel Haas, Xingong Li, and Dave McDermott, Univ. of Kansas;
Kalonie Hulbutta, Josh Meisel, and Rex J. Rowley, Haskell Indian Nations Univ.;
John C. Kostelnick Illinois State Univ.*

The Great Smoky Mountain National Park trail atlas
Boyd Landerson Shearer Jr., outrageGIS mapping

8:30 am–10:00 am

PLENARY BREAKFAST
Welcome all attendees to NACIS 2007
with a breakfast buffet

Annual business meeting
State of the Society
President's message

10:15 am–11:45 am

ONLINE MAPS
**An Online Visualization Tool for
Mapping Asthma Exacerbations**
*Zachary Johnson, Univ. of Wisconsin–
Madison*

**Real-time Traffic Maps:
A New Approach**
Kirk Goldsberry, Michigan State Univ.

Animated Atlas of Flight Traffic
*Michael P. Peterson, Univ. of Nebraska–
Omaha, and Jochen Wendel, Univ. of
Colorado*

INNOVATION AND AUTOMATION
Creating Landmark Maps with GIS
*Aileen Buckley, David Barnes, and
Jaynya Richards, ESRI*

**Automating Label Placement
in Dense Utility Maps**
*Jill Phelps Kern and Cynthia A. Brewer,
Pennsylvania State Univ.*

**ScaleMaster Characterization of
Types of Design Change Through
Scale for Mapping from Multi-
Resolution Databases** *Cynthia A.
Brewer and Jessica Acosta, Pennsylvania
State Univ., Barbara P. Buttenfield,
Univ. of Colorado, Charlie Frye and
Aileen Buckley, ESRI*

11:45 pm–1:45 pm

LUNCH *on your own, two hours*

Cartographic Perspectives **Board Meeting**
Room 2216, Clayton Wing

1:45 pm–3:45 pm

RETHINKING THE MAP
Taking Apart Cartography
Nat Case, Hedberg Maps

What is a Base Map?
*Barbara P. Buttenfield, Univ. of
Colorado, Cynthia A. Brewer,
Pennsylvania State Univ., Charlie Frye
and Aileen Buckley, ESRI*

**Reflections on Maps, Mappings
and Metaphors** *Jörn Seemann,
Universidade Regional do Cariri
(Brazil)/Louisiana State University*

**Design and Production Issues in a
National Population Characteristics
Atlas** *Stuart Allan, Allan Cartography,
Gene Martin, California State Univ.,
Chico (retired), Eric Meyer, Allan
Cartography*

COLLABORATIVE CARTOGRAPHY
Volunteer Mapping: Is It for Real?
Brandon Plewe, Brigham Young Univ.

**How APIs are Redrawing
the Online Map**
*Casey Christo, Univ. of Nebraska,
Omaha*

**Greenspaces Policy
Advisory Committee**
*Matthew Hampton, Metro Regional
Services, Portland, Ore.*

THURSDAY, OCTOBER 11

4:00 pm–5:30 pm

CARTO-HISTORY

Maps in Twentieth-Century Fiction
Adele J. Haft, Hunter College: CUNY

The Emergence of Plain Style Mapping in Early English World Atlases, 1606–1729
Dalia Varanka, U.S. Geological Survey, Rolla, Mo.

The Mississippi in Maps
Robert Holland

CARTO IN THE CLASSROOM

The Cartographic "Apprentice"
Alison E. Feeney, Shippensburg Univ.

Mapping the Sports Geography of Australia
Amy L. Griffin, Univ. of New South Wales, Sydney

5:30 pm

NACIS NIGHT OUT

Join us at St. Louis' Westport Plaza with a variety of restaurants and watering holes.We will meet at one of the spots for a kickoff libation and light hors d'oeuvres, and then those looking for more of an adventure can hop to other establishments in this Bavarian-styled venue. Who knows, there might be a block party, or outdoor festival nearby to drop in on as well. Shuttle buses will run continuously between the Hilton and Westport Plaza until 10 pm.

FRIDAY, OCTOBER 12

MAP DESIGN PANEL
How Mapmakers Think: What the NACIS Map Design Survey Reveals
An hour-long session to spur a lively discussion of modern map design
Tom Patterson
Alex Tait
Martin Gamache
Michael Hermann

ART & CARTOGRAPHY
The Myth and Mythology of Map-Art
Mark Denil, Conservation International

**Encoding the Landscape:
The Le Mans Project**
Jan Piribeck, Univ. of Southern Maine

The Measured and the Immeasurable
*Susanne Slavick, Carnegie Mellon
Univ., Pittsburgh*

**Bomb After Bomb:
Violent Cartography**
*elin o'Hara slavick, Univ. of North
Carolina, Chapel Hill*

**Political/Hydrological:
A Watershed Remapping of the
Contiguous United States**
Lauren Rosenthal, Independent Artist

L U N C H *on your own, one hour, 45 minutes*

NACIS Board Meeting, Pommard Room

2:15 pm–3:45 pm

GIVE ME SOME RELIEF

Building the Earth
Hans van der Maarel, Red Geographic.

**Elevation Derivatives Displayed
with Hillshading**
*Patrick Kennelly, C.W. Post Campus of
Long Island Univ.*

Dynamic 3D mapping
*Roger Smith, Managing Director,
Geographx Ltd, Wellington,
New Zealand*

4:00 pm–5:30 pm

GRATUITOUS MAPPING

Is This Map Really Necessary?
*Stuart Allan, Allan Cartography
Nathaniel Kelso, Washington Post
Alex Tait, International Mapping
Lou Cross, Florida State University*

6:30 pm

B A N Q U E T

Student Web Mapping Competition
Coordinated by Charlie Frye, ESRI

Pecha Kucha　ぺちゃ くちゃ
*Cindy Brewer
Lou Cross
Steven Holloway
Jim Meacham
Dennis McClendon
Daan Strebe
Alex Tait
Derek Tonn*

Geodweeb Geopardy! to follow

Presentations

10:15 am–11:45 am

ONLINE MAPS

An Online Visualization Tool for Mapping Asthma Exacerbations

Zachary Johnson (presenter), Mark Harrower, Evangeline McGlynn, Robert Roth, Andrew Woodruff, and David Van Sickle, Univ. of Wisconsin-Madison

Asthma is a chronic respiratory disease responsible for two million emergency room visits, 500,000 hospitalizations, and 5,000 deaths in the U.S. annually. While many of these attacks result from exposure to allergens, air pollutants, and occupational chemicals, previous geographic analyses of asthma have not been able to examine where the attacks began. A researcher in the Department of Population Health Sciences at the Univ. of Wisconsin–Madison, working with a team of Biomedical Engineering students, has developed a prototype bronchodilator inhaler that uses a GPS receiver to record the time and location where it is used and sends this information to an online database using wireless communication technology. We report on a visualization system designed for the analysis of the inhaler data with the hope of uncovering important spatiotemporal patterns in the frequency of asthma exacerbations. Specific focus will be placed upon: the creation of a visualization system to map real-time data, the separation of map from content, and the inclusion of highly flexible spatiotemporal visualization controls designed to "work" for both experts and novices.

Real-time Traffic Maps: A New Approach
Kirk Goldsberry, Michigan State Univ.

This paper summarizes the creation of a new real-time traffic map for Los Angeles. The project represents a portion of my dissertation in the Department of Geography at the Univ. of California, Santa Barbara. Since traffic congestion in the United States is bad and getting worse, there is an emerging need to deliver real-time traffic information to the public. My research explores key cartographic issues with real-time traffic mapping and presents new methods to deliver real-time traffic information in map form. The key ingredient in real-time traffic maps is real-time traffic data. Recent technological developments in infrastructure and detector technologies have led to the creation of several databases containing robust sets of traffic measurements. Unfortunately, the status quo of traffic maps is unacceptable; this research examines new ways to approach and design traffic maps. Specifically the focus is on technological improvements related to data formats and cartographic design improvements involving generalization, symbolization, and classification. The paper presents a completed version of a dynamic vector-based traffic map for Los Angeles.

Animated Atlas of Flight Traffic
Michael P. Peterson, Univ. of Nebraska at Omaha and Jochen Wendel, Univ. of Colorado

The Animated Atlas of Flight Traffic consists of 70 animations of flight traffic over North America. Each animation shows flight traffic over a 24-hour period by airport, city, airline, aircraft, corridor, and region. The animations are assembled as a movie from 1440 frames and can be played at three different speeds from 30 seconds to just over a minute. File sizes range from 5 to 66 MB and the entire atlas is presented on a 1.6 GB data DVD. Based on data from the Federal Aviation Administration from 2003 to 2005 as displayed by the FlyteTrax program from FlyteComm, Inc., the animations display never before seen patterns. The influence of hubs is clearly visible, and centrally-located hubs also have a well-defined spoke pattern. Commuter traffic is also evident from hubs, especially in the early morning and late evening. Hubs are not visible for some airlines such as Southwest.

Taken together, the animations convey many different patterns that are a part of the daily life in North America but have remained invisible until now.

INNOVATION AND AUTOMATION

Creating Landmark Maps with GIS
Aileen Buckley, David Barnes and Jaynya Richards, ESRI

Landmark maps contain graphics that are easily identifiable as landmarks by the user. These maps are often used for navigation and trip planning. They are a common type of map used by visitors to popular tourist destinations, like Rome, Washington's National Mall area, or Disneyland. They can span a range of scales, be produced in black and white or color, contain detailed or highly abstracted symbols, and can be large format or small, but all of them help the reader immediately identify important cultural features in the landscape. The best landmark maps have a clear and unambiguous association of the graphic mark on the page and the feature on the ground. Mimetic symbols, architectural elevations, and sketches have been used successfully on these types of maps. Such symbols often appear to be more artistic than symbols on other kinds of maps, and they often appear to be hand drawn. In this presentation, we demonstrate how these maps can be created using ArcGIS software and commonly available GIS data. We show how to add images (pictures, sketches or elevations) to the map, how to create mimetic symbols that have an abstract style, and how the 3D capabilities of the software can be used to capture landmark features.

Automating Label Placement in Dense Utility Maps
Jill Phelps Kern and Cynthia A. Brewer, Pennsylvania State Univ.

This paper explores how effectively current GIS software can place labels legibly, without overlap, and with good visual association between features and labels. This evaluation will take place in the context of a densely-featured municipal sewer utility map book. The placement of feature name labels on maps has challenged mapmakers throughout history. Before the development of mapping software, placing labels on paper maps could consume up to 50% or more of overall map production time. The primary research objective is to evaluate the extent to which current GIS software can automate label placement; the research also attempts to identify factors which make manual label placement necessary in order to complete the labeling process. The research compares two sets of map labeling tools from ESRI's ArcMap 9.2: the Standard Labeling Engine and the Maplex extension. Label placement success is assessed by both quantity and quality metrics. Preliminary results indicate that, while Maplex can successfully place significantly more labels than the Standard Labeling Engine (85% vs. 76%), label placement quality for both is quite high. Maplex placed 93% without overlapping, with 98% in their preferred positions. The research will be completed by manually placing all remaining labels and re-evaluating quality metrics.

ScaleMaster Characterization of Types of Design Change Through Scale for Mapping From Multi-Resolution Databases
Cynthia A. Brewer and Jessica Acosta, Pennsylvania State Univ.; Barbara P. Buttenfield, Univ. of Colorado; Charlie Frye and Aileen Buckley, ESRI

ScaleMaster is a conceptual tool for characterizing design and geometry changes needed for mapping at a wide range of scales from multi-resolution databases. We have prepared ScaleMaster diagrams for 1:5,000 to 1:1,000,000 for four map purposes: topographic, zoning, soils, and population density. This paper emphasizes the specifics of 14 basic types of map design changes we identified during this process of creating approximately 120

maps. The types of map design decisions are:

1. (s) size change
2. (c) color change
3. (p) pattern change
4. (t) transparency change
5. (l) modify label appearance
6. (i) improve label positions in relation to nearby features or labels
7. (o) on/off for aspect of symbol or label
8. (r) reclassify features by attribute
9. (f) filter by threshold on feature attribute
10. (e) eliminate layer or eliminate by feature type
11. (a) add layer or add by feature type
12. (x) change layer order
13. (R) use ArcGIS Representation tools
14. (G) geometry change
We will discuss the frequency and positioning of each decision through scale with the intention of building strategies for extending the use of a database through scale and generating maps at all scales from a limited set of databases.

1:45 pm–3:45 pm

RETHINKING THE MAP

Taking Apart Cartography
Nat Case, Hedberg Maps

Cartography has historically been discussed as "Art and Science" or more recently as a rhetorical or discursive form. Although definitions have moved beyond it recently, the heart of cartography and of mapmaking has always been descriptions of the earth's surface. Discussing maps as pictures has been difficult for cartographers, in large part because of the dictums of the fine arts, which have dominated discussions of picture-making. This paper argues for maps as pictures, and for cartography as a graphic tradition, independent of the fine arts. Further, it argues that "taking apart" the map world in terms of subject matter and scale clarifies the position of cartographers as skilled practitioners of a particular set of techniques and styles rather than the definitive recorders of a particular subject matter.

What is a Base Map?
Barbara P. Buttenfield, Univ. of Colorado; Cynthia A. Brewer, Pennsylvania State Univ.; Charlie Frye and Aileen Buckley, ESRI

This question is not intended to recast the debate "what is a map?" which for years drove a sometimes irrelevant distinction between maps and photo-images, verbal descriptions, blueprints, etc. Rather, the intention is to reconsider the functionalities that people expect today in a base map, and the variety and diversity of base maps proliferating with emerging Internet technologies (Google Earth mash-ups), interactive mapping, and lay cartography. The presentation will present a series of analogies: base map as an information framework (reference mapping and pedagogic tool), as a starting point for modeling (historic and future landscapes, environmental design), as a context for story-telling (journalistic maps, fiction), and as a map in the mind's eye (a world view)—all illustrated with examples of past and current base map formats. Cartographers within and beyond the NACIS community will be polled to initiate discussion about how map designers and data producers can respond to changing opinions about what a base map is now, what cartographic services it supports, and what it could become in the foreseeable future.

Reflections on Maps, Mappings and Metaphors
Jörn Seemann, Universidade Regional do Cariri, Brazil/Louisiana State Univ.

More than two decades of fruitful discussions on alternative cartographic perspectives and narratives have led to new ways of conceiving, defining and practicing cartography. Although authors like J.K. Wright, Denis Wood, Janos Szegö and J.B. Harley have made attempts to introduce and emphasize human beings and their actions as essential factors in the process of mapping and mapmaking, cartographers still feel uneasy about social and cultural ways of thinking, perceiving

and representing space and place and how to convert this knowledge into graphic representations. Recent debates on maps, mappings and cartographic metaphors in the social sciences in general and in cultural geography in particular could be beneficial for cartographers and contribute to a better understanding of mapping and mapmaking as a human enterprise. This approach should not be restricted to one's own society, but must take into account different degrees and conceptions of mapmindedness, map-immersion and graphicacy that, in an international context, are culturally and regionally specific. These initial thoughts on "cultural cartographies" will be discussed and illustrated with the support of several mapping examples that resulted from my fieldwork experiences in Brazil.

Design and Production Issues in a National Population Characteristics Atlas
Stuart Allan, Allan Cartography; Gene Martin, California State Univ., Chico, retired; Eric Meyer, Allan Cartography

Extreme disparities of size among statistical units makes choroplethic mapping intrinsically misleading. Proportional symbolization solves this problem, but at the expense of uniformly shaped units and a corresponding loss of geographic identifiability. Proportional symbolization is also subject to its own value range dilemma: the cartographer frequently must choose between symbols too small to allow perception of subtle color distinctions, and symbols so large that they overlap and obscure one another. Often neither of these failings can be avoided.

High-resolution population density data offers a way around these limitations. We used the new MRLC 30m permeability data along with census tract population density thresholds to mask choroplethic census block data. A range of thresholds for both limiting parameters is explored, and the results compared at scales of 1:2.5M, 1:1M, and 1:250,000.

1:45 pm–3:45 pm

COLLABORATIVE CARTOGRAPHY

Volunteer Mapping: Is It for Real?
Brandon Plewe, Brigham Young Univ.

The Wikipedia phenomenon has shown the phenomenal amount of knowledge scattered throughout the general public, and the public's eagerness to contribute to the global knowledge pool. Projects such as OpenStreetMap, WikiMapia, and the National Map Corps are attempting to do something similar for cartography and geographic information, drawing on what appears to be a vast amount of local knowledge and willingness to contribute. Can they succeed? Can they overcome the issues that Wikipedia and other public-contributed services have faced, especially quality control, without losing their desirable characteristics? This paper proposes some simple solutions, including community-based quality control, that could turn volunteer mapping into the paradigm for widespread data collection in the future.

How APIs Are Redrawing the Online Map
Casey Christo, Univ. of Nebraska–Omaha

Besides proving itself a capable medium for map distribution, the Internet is also making cartography a popular endeavor. In the past, map creation was subject to strict financial limitations that confined the discipline to a specialized group of producers. The current online environment, however, puts creative control into public hands. Through the use of Application Program Interfaces, or APIs, anyone with even rudimentary programming and cartographic skills can synthesize spatial information on a computer. The results are map mashups, which can appropriately be described as cartographic blogs. A user decides what is to be mapped and how it will be displayed. Besides the designer's skills, these creations are limited only by data availability and tools for display. This presentation will look at some key aspects of these mashups.

First, it will examine how APIs are popularizing online cartography. Second, it will evaluate the public's contributions to the discipline. In the end, it will look at the directions this process can take.

Greenspaces Policy Advisory Comittee
Matthew Hampton, Metro Regional Services, Portland, Ore.

The Council of the Portland, Oregon, Metropolitan Planning Organization created the Greenspaces Policy Advisory Committee to advise Metro in establishing and protecting a regional network of greenspaces linked by rivers, streams and trails throughout the region. The 15-member committee represents local park agencies, natural resource groups, the homebuilding community and citizen park advocates. This multijurisdictional and citizen-based group worked very hard to create a vision for the region. They envision an exceptional, multijurisdictional, interconnected system of neighborhood, community, and regional parks, natural areas, trails, open spaces, and recreation opportunities distributed equitably throughout the region. The creation of maps from local, regional, county, state, and federal data sources facilitated a regional inventory of parks, trails, public places and recreation facilities. This data was also combined to form composite maps that resource professionals used to define significant ecological resource areas. This presentation highlights the different map products produced in this effort and the cartographic techniques used to satisfy representatives of multiple jurisdictions, environmentalists, home builders and park advocates from the general population.

CARTO-HISTORY

Maps in Twentieth-Century Fiction: A Literature Review
Adele J. Haft, Hunter College, City Univ. of New York

In January, I submitted my 2600-word interpretive essay for the sixth volume of *The History of Cartography.* That essay—one of 670 anticipated entries in the million-word, two-part *Cartography in the Twentieth-Century*—involved the relationship between cartography and twentieth-century literature, particularly poetry and fiction. Because my recent work has focused on verse, I had to spend months tracking down map-obsessed prose in order to explore what novels and short stories have to say about maps. What I found was (1) a treasure trove of map-related fiction spanning the entire century; (2) an explosion, since the mid-1970s, in scholarly analysis of the ways individual authors and texts employ maps; (3) several general works that treat maps as illustrations, objects of discussion, metaphors, and/or structural devices; and, not surprisingly, (4) no single comprehensive work on maps in twentieth-century fiction as a whole. Today's paper complements my interpretive essay by providing a review of (what I consider) the most inspired scholarship on map-obsessed fiction. For if stories and novels (like *The Name of the Rose)* can turn our students and contemporaries onto maps, literary cartographers (like Graham Huggan) open the field to the complexities, beauty, and uniqueness of maps in fiction.

The Emergence of Plain Style Mapping in Early English World Atlases, 1606–1729
Dalia Varanka, U.S. Geological Survey, Rolla, Mo.

Map and text representations in early English atlases changed significantly during the 17th- and early 18th-century in response to changing social views on science, language, and the world. This

research outlines the rise and formation of English world atlases from 1606 to 1729 and analyzes the stylistic principles of atlas design by examining the sections about America through time. The period begins with the influx of Dutch atlases and ends with the beginning of an atlas model that persists through the era of modernism. The representational signs and historical context of stylistic change are traced through specific cartographers and publishers of atlases and prevailing social institutions that advocated a new approach to the literary technology of science and society. The results of the analysis show that atlas transition corresponded to changes in style from an earlier Elizabethan style to one identified by historians of prose as plain, utilitarian style, which was advocated by Baconian empirical science and the Royal Society of London. Though historians of cartography sometimes refer to this transformation as one of "art" and "science," both styles were realistic and iconographic. The emergence of Plain Style cartography was more closely related to social ideology, particularly religion.

Maps of the Mississippi
Robert Holland, Chicago

Maps from the forthcoming book *The Mississippi in Maps* illustrate the discovery and exploration of the Mississippi, the colonization of the Great River's valley, the search for the Mississippi's headwaters, the early charting of the river's delta, the river early in the history of the United States, river commerce and travel, the Mississippi in time of war, federal studies of and attempts to control the river, and nineteenth-century panoramic views of river towns and cities.

4:00 pm–5:30 pm

CARTO IN THE CLASSROOM

The Cartographic "Apprentice"
Alison E. Feeney, Shippensburg Univ.

The encouragement for group work and collaborative learning is supported in education. Simulations, role playing, and games are common techniques to engage students in actively participating in the learning process. Creating the rules and organizing the groups are some of the challenges facing instructors, especially in mapping courses where students vary greatly in both content knowledge and technical skill development. Surprisingly, successful tactics were adopted from the growing fascination of reality TV. "The Cartographic Apprentice" simulated Donald Trump's business tactics to engage students, create competition, and mediate group dynamics. The semester-long game had students working in groups to create posters that were evaluated by faculty and students. Winning teams were rewarded by maintaining their successful group, while losing teams had to meet in the cartographic board room and critically evaluate their projects, which eventually led to someone being fired.

Mapping the Sports Geography of Australia
Amy L. Griffin, Univ. of New South Wales

Last year, I reported on my plans for teaching a general education course structured around creating an *Atlas of Australian Sport* whose aims were to improve students' ability to communicate with visual representations and to allow students to participate in the research process. This year, I will present an evaluation of how well the course design worked along with examples of student work to demonstrate the range of atlas page topics that students pursued, changes between their initial and final draft atlas pages, and an evaluation of the editorial review group process(es) that students used for critiquing each others' maps. I will conclude the presentation with a discussion on changes I plan to make in the next iteration of the course.

Presentations <small>FRIDAY, OCTOBER 12</small>

MAP DESIGN PANEL

How Mapmakers Think: What the NACIS Map Design Survey Reveals
Tom Patterson, National Park Service
Martin Gamache, Alpine Mapping Guild
Mike Hermann, Purple Lizard Maps
Alex Tait, International Mapping

Join Tom, Martin, Mike, and Alex as they reveal results of the NACIS Map Design Survey, conducted online earlier this year. Several hundred respondents from all walks of the mapping community answered candid questions about map design. How well do today's digital maps compare with their manual counterparts? How do mapmakers rate their graphic design ability? Do men or women devote more time to designing maps? Get answers to these and other edge-of-your seat questions as we discuss the survey results. The one hour long session will begin with an explanation of why we created the survey, what we hoped to accomplish, and issues relating to online survey taking. Then, to spur a lively discussion on map design, we will break into small, informal groups for a review of the survey from beginning to end. Some answers will confirm your long-held beliefs about map design. Others will surprise you. At the conclusion of the session participants will have the opportunity to comment on the survey before the entire group.

ART AND CARTOGRAPHY

The Myth and Mythology of Map-Art
Mark Denil, Conservation International

There has been a great deal of interest of late about the nature of the relationship of maps and art. An entire recent issue of *Cartographic Perspectives* was devoted to exploring certain aspects of the topic, and some of the articles sparked a small amount of controversy. Not restricted only to the pages of *CP,* these concerns seem to be in the air. Central to the issue, clearly,

are questions about the mythic belief structure, or ontology, that lies at the heart of any map's recognition and acceptance as a map. The question, then, seems to hinge on an unambiguous determination of what it is that makes a map a map, and not something else. While it may or may not be useful to explore the decide-ability factor between the map and, say, a ham sandwich, because there seldom seems to be decide-ability issues at stake in that instance, there are many instances in the literature and elsewhere of apparent decidability issues between maps and art. The term *apparent* is used here because in reality any decidability problem between maps and art is obviously only an artifact of a faulty understanding of myth, mythology, and the belief structures myth engenders. This talk will focus on the operation of mythic and belief structures in all maps.

Encoding the Landscape:
The Le Mans Project
Jan Piribeck, Univ. of Southern Maine

The encoded landscape, with its layers of natural and cultural features is an overarching theme in my work. I have been involved in a series of projects that connect visual art and geographic information science.

This paper will describe a "cultural mapping" project done in Le Mans, France, with seven students from Ecole Superieure des Beaux-Arts du Mans and three students from Ecole Superieure Des Geometres et Topographes, an engineering and surveying school also in Le Mans. Students identified and made art works in response to sites in Le Mans that contribute to the culture and feeling of the city, but are somehow overshadowed or lost in the public eye. Art and engineering students collaborated using GIS technologies to analyze and map these sites. The mapping of cultural resources serves to give art a more prominent position in the public realm. My long-term intention is to involve students with becoming surveyors and stewards of art and culture within their communities. I am interested in GIS as a

Presentations

means for documenting and preserving creative culture or in using the language of city planners to put art on the map, so to speak.

The Measured and the Immeasurable
Susanne Slavick, Carnegie Mellon Univ.

An artist's account of her attraction and response to cartographies: as foils for the traditional approach to space in painting; as aesthetic abstractions of real and imagined place and space; as embodiments of states of knowledge and world views; as conveyors of ideologies and cosmologies under the guise of objectivity; as enablers and documents of expansionism and imperialism; and as stages for dismantling the privileging of the measured over the immeasurable.

Traces development of artist's work over two decades from aerial views of invented topographies to manipulated diagrammatic spaces. Discusses visual and literary sources such as: architectural and garden plans; maps by Ptolemy, Mercator and Waldseemüller; military diagrams from the Gulf War; and illustrations and narratives by Lewis Carroll and Jorge Luis Borges. Also includes examples from Catalan, Arabic, church-sponsored and contemporary artists' mapmaking and landscape painting. Representations of remembered and invented spaces reveal elements of paradox, the artist's attraction to and dread of absolutes, and the confrontation between and intersection of conflicting realities, especially those pertaining to gender, the powerful and the disenfranchised, and the analytical versus the intuitive.

Bomb After Bomb:
A Violent Cartography
elin o'Hara slavick,
Univ. of North Carolina–Chapel Hill

This project, now a book with a foreword by Howard Zinn, is a series of drawings of places the U.S. has bombed. Working from military surveillance imagery, aerial photographs, battle plans, maps and

mass media sources and using gouache, ink, watercolor, graphite, and other media on paper, the bombed sites are rendered as bleeding, poisoned, destroyed, and endless targets. Accompanied by historical information, the project is a mini-history lesson in U.S. bombing campaigns. Art historian Carol Mavor, who writes an essay in the book, says, "Scratched, smudged, layered like the residue of toppled buildings after an air strike, these maps are worthless for actual navigations. Without legends, without clear markings of any kind, they are, instead, maps for thinking or rethinking. In them, we get lost: which is, in this case, a good place to be." The project illuminates the formal and conceptual processes involved in activist art and addresses issues of propaganda, activism, history, the ethics of representation and the toxic residue of war.

Political/Hydrological:
A Watershed Remapping
of the Contiguous United States
Lauren Rosenthal, Independent Artist

My most recent artwork, "Political/ Hydrological: A Watershed Remapping of the Continental United States," is a river-centered atlas created using GIS. As an artist, I capitalize on the visual language and historical significance of maps to express my ideas about the world. My background as an environmentalist shapes my worldview and it is from this place that my particular maps emerge. With "Political/Hydrological," I have imagined and illustrated a new socio-political structure for America based around freshwater systems. In this ecocentric vision, watershed divides act as state boundaries, allowing citizens to locate themselves within the river networks upon which they depend instead of the arbitrarily bounded political districts within which American identities are currently formed. This project moves rivers from margin to center, positioning them at the heart of each political entity within the United States. In this way, rivers are given priority, not as resources to be exploited,

but as an integral part of the health of a social/biological system. By offering this alternate organizational model, I question dominant ideologies and propose a new, more ecologically integrated vision of the world in which we live.

2:15 pm–3:45 pm

GIVE ME SOME RELIEF

Building the Earth
Hans van der Maarel, Red Geographics

Over the course of the past year, Red Geographics has been involved in producing a map for Oolaalaa's "La Chaise Ronde", a spherical chair that regains its original shape when you get out of it. The production of these maps went through a couple of stages, design-wise, and had to solve a couple of technical problems. These technical problems not only involve the basic question of how do you produce globe gores, but also how to cope with the stretching of the fabric and how to best accomodate the production process. Since the chairs come in six different sizes, the production process had to take that in account as well, while still be manageable. This presentation discusses the production process and the decisions that were made along the way.

**Elevation Derivatives
Displayed with Hillshading**
Patrick J. Kennelly, C.W. Post Campus of Long Island Univ.

Numerous derivative maps can be created using neighborhood operations from any smooth continuous surfaces such as a digital elevation model. These include first derivatives such as slope or aspect, and second derivatives such as planimetric or profile curvature. Such metrics are often used in geomorphic analyses of terrain. First derivative products also provide subtle enhancements to hill shaded maps. For example, some maps combine oblique and vertical illumination, with the latter representing variations in slope.

This study illustrates how second derivative maps can be used in conjunction with hill shading to enhance topographic detail. Simple conic models indicate that edges where slope or aspect varies by less than one degree are easily visible on curvature maps. Terrain displays combined with curvature enhance the continuity of naturally occurring edges, especially in strongly illuminated areas. Variations in planimetric and profile curvature seem to be especially effective at highlighting drainages and edges of geologic units, respectively. By shading second derivative maps in a consistent manner with illumination models, detail can be added to hill shaded terrain maps in a visually harmonious manner.

Dynamic 3D mapping
Roger Smith, Geographx Ltd, Wellington, New Zealand

What we are doing with dynamic 3D mapping down in New Zealand.

4:00 pm–5:30 pm

GRATUITOUS MAPPING

Is This Map Really Necessary?
Stuart Allan, Allan Cartography; Nathaniel Kelso, Washington Post, *Alex Tait, International Mapping, Lou Cross, Florida State Univ.*

Not every topic deserves a map, nor does every mapping technique help convey a useful message. The panel will illustrate with some personal favorites out of the infinite supply of maps that should have been replaced with graphs, or greatly simplified, or entirely re-thought. We will then invite comment and discussion on the general principles of appropriate mapping that these examples suggest.
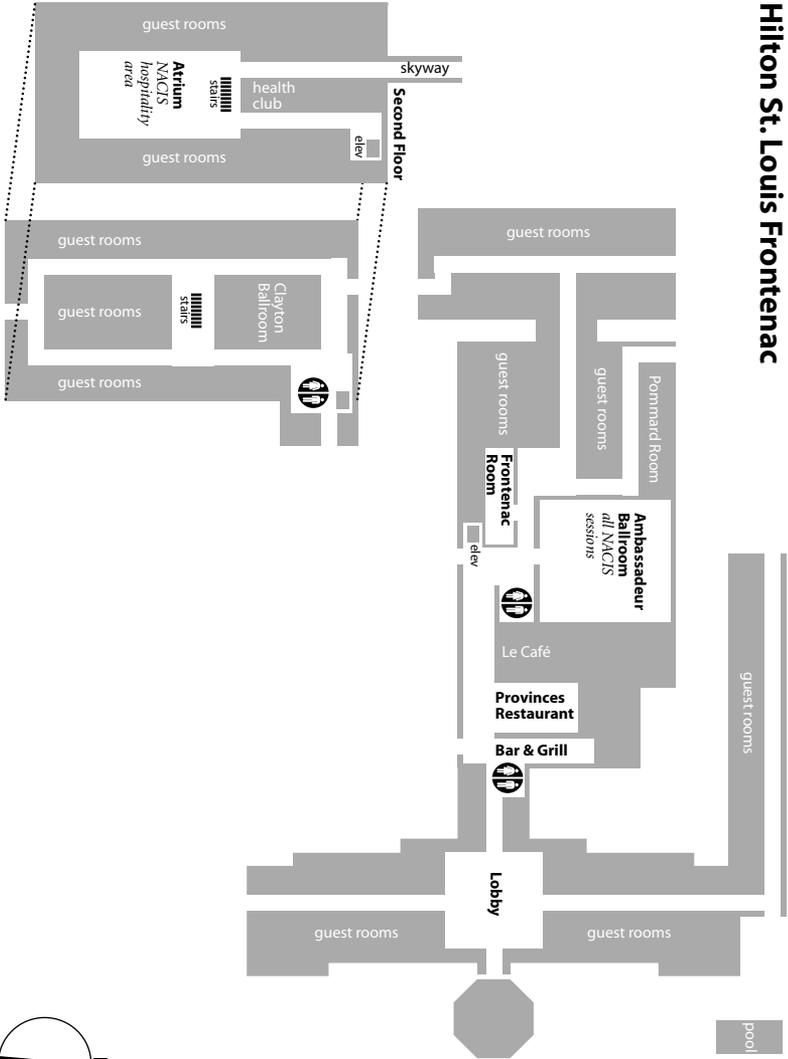
6:30 pm

B A N Q U E T

Pecha Kucha

Student Web Mapping Competition
Coordinated by Charlie Frye, ESRI

Hilton St. Louis Frontenac

Trattoria Branica ↑

guest rooms

Atrium
NACIS hospitality area

stairs

health club

skyway

Second Floor

elev

guest rooms

guest rooms

cross-walk at signal

C L A Y T O N   R O A D

guest rooms

guest rooms

stairs

Clayton Ballroom

guest rooms

guest rooms

guest rooms

guest rooms

Pommard Room

guest rooms

Frontenac Room

elev

Ambassadeur Ballroom
all NACIS sessions

Le Café

Provinces Restaurant

Bar & Grill

guest rooms

Lobby

guest rooms

guest rooms

pool

N

L I N D B E R G H   B O U L E V A R D