

NACIS

NORTH AMERICAN CARTOGRAPHIC INFORMATION SOCIETY



IMAGES OF THE EARTH

CONFERENCE PROGRAM AND ABSTRACTS

Fifth Annual Meeting

CHICAGO

Holiday Inn of Chicago-Skokie

NOVEMBER 10-13, 1985

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NACIS V

FIFTH ANNUAL MEETING OF THE
NORTH AMERICAN CARTOGRAPHIC INFORMATION SOCIETY

Program Summary

Sunday, November 10, 1985

Gallerie	1:00 - 7:30 p.m.	Registration
Salon Boudin	1:00 - 4:00 p.m.	NACIS Committee Meetings
Salon Monet	2:00 - 4:00 p.m.	Special Session: Map Exhibits
Salon Monet	7:30 - 9:00 p.m.	Opening Session
		Address: Living Through A Revolution or Two by Bernard Gutsell
Holidome	9:00 p.m.	Reception and Cash Bar

Monday, November 11, 1985

Gallerie	8:00 a.m. - Noon	Registration
Salon Renoir	10:00 - Noon	Exhibits Open
Salon Monet	8:30 - 10:15 a.m.	Paper Session: Navigating the Environment
Salon Matisse	8:30 - 10:15 a.m.	Workshop: A Demonstration of the Use of Apple II Microcomputers in Cartographic Education
Gallerie	10:15 - 10:30 a.m.	Refreshment Break
Salon Monet	10:30 - 12:15 p.m.	Paper Session: Historical Map Information
Salon Matisse	10:30 - 12:15 p.m.	Workshop: DIAS: Microcomputer Software for Remote Sensing Education
	1:00 - 5:00 p.m.	Field Trip A: Rand McNally
	1:00 - 5:00 p.m.	Field Trip B: Chicago Art Institute
Gallerie	6:00 - 8:00 p.m.	Registration
Salon Monet	7:00 - 9:00 p.m.	Special Poster Session: Products and Resources of University Cartographic Laboratories
Salon Monet	7:00 - 9:00 p.m.	General Poster Session
Salon Renoir	7:00 - 9:00 p.m.	Exhibits Open
Gallerie	8:00 - 9:00 p.m.	Reception and Cash Bar

Tuesday, November 12, 1985

Gallerie	8:00 a.m. - Noon	Registration
Salon Renoir	8:30 a.m. - Noon	Exhibits Open
	9:30 a.m. - Noon	Field Trip: The Newberry Library
Salon Monet	8:30 - 10:15 a.m.	Paper Session: Digital Cartographic Data
Salon Matisse	8:30 - 10:15 a.m.	Seminar: NCIC Affiliate Network
Gallerie	10:15 - 10:30 a.m.	Refreshment Break
Salon Monet	10:30 - 12:15 p.m.	Paper Session: Concepts of Cartography
Salon Matisse	10:30 - 12:15 p.m.	Paper Session: Map Production
Gallerie	1:00 - 5:00 p.m.	Registration
Salon Renoir	1:00 - 5:00 p.m.	Exhibits Open
Salon Monet	1:45 - 2:45 p.m.	Paper Session: Satellite Applications
Salon Matisse	1:45 - 2:45 p.m.	General Paper Session
Gallerie	2:45 - 3:00 p.m.	Refreshment Break
Salon Monet	3:00 - 4:45 p.m.	Annual Business Meeting
Gallerie	6:00 - 7:00 p.m.	Cash Bar
Salon Monet	7:00 - 9:00 p.m.	Annual Banquet
		Address: Historical Development of
		Commercial Cartography in Chicago by
		Michael Conzen
Holidome	9:00 p.m.	Reception and Cash Bar

Wednesday, November 13, 1985

Gallerie	8:00 a.m. - Noon	Registration
Salon Renoir	8:30 a.m. - Noon	Exhibits Open
Salon Monet	8:30 - 10:15 a.m.	Paper Session: Map Literacy
Salon Boudin	8:30 - 10:15 a.m.	Workshop: Employment Opportunities with
		the U.S. Defense Mapping Agency
Salon Matisse	8:30 - 10:15 a.m.	Workshop: Laboratory Management for
		University Staff Cartographers
Salon Van Gogh	8:30 - 10:15 a.m.	Seminar: Curriculum Development in
		Cartography: The Chicago Neighborhood
		History Project
Gallerie	10:15 - 10:30 a.m.	Refreshment Break
Salon Monet	10:30 - 12:15 p.m.	Paper Session: Geographic Information Systems
Salon Boudin	10:30 - 12:15 p.m.	Centers for Cartographic Education
and Van Gogh		
Salon Matisse	12:30 - 2:00 p.m.	Luncheon
		Address: Cartography and Maps in the
		Department of State: Their Status, Use,
		and Disuse
		by George Demko

The Holiday Inn of
Chicago - Skokie
November 10-13, 1985

Conference Participants:

Welcome to Chicago, site of NACIS V -- the fifth annual meeting of the North American Cartographic Information Society. The goal of NACIS is to bring together professionals from government, academic, and private organizations, who all share a common interest in cartographic information, and to promote communication, co-ordination, and co-operation among them.

The theme of this year's meeting, IMAGES OF THE EARTH, is reflected in various special sessions, paper sessions, and workshops. IMAGES are applicable to graphic representations, remotely sensed information, and mental pictures, all key components of cartographic information today. How do we present or exhibit a collection of historical or contemporary maps to the public? How can we promote map literacy? How do we best utilize imagery from remote sensing? How do we construct and comprehend those maps created for navigating the environment? How can we use cartographic maps to influence the mental or cognitive map in someone's mind? These are just some of the questions we will be discussing for the next few days.

I hope you will have an opportunity while you are in Chicago, to appreciate its significance as a cultural, industrial, and financial center and also as a cartographic center in the United States. Chicago has a large number of commercial cartographic firms such as Rand McNally, R. R. Donnelley and Sons, Denoyer Geppert, Nystrom, Sidwell, Replogle Globes, and Chicago Aerial Survey. In addition, Chicago is the home of the Newberry Library, which supports the Hermon Dunlop Smith Center for the History of Cartography.

I would like to thank the members of the 1985 Conference Committee and the Executive Board who have assisted in the planning and organization of NACIS V. Thanks are also due to the many speakers and participants in this year's program for their co-operation and enthusiasm. I would also like to acknowledge the generous support of West Virginia University and the University of Kentucky during my year as Conference Director.

Thank you for attending and participating in NACIS V.

Ruth Anderson Rowles
NACIS V Conference Director

The Holiday Inn of
Chicago - Skokie
10-13 November 1985

Participantes al V Congreso:

Bienvenidos a Chicago, sede del V Congreso anual de la Sociedad de Información Cartográfica. El objetivo de nuestro V Congreso es el de reunir a especialistas de las principales organizaciones privadas, gubernamentales y académicas con el fin de intercambiar experiencias y de promover la comunicación, coordinación y cooperación entre ellas.

El tema del congreso es IMAGENES DE LA TIERRA, el cual será analizado, en profundidad, a través de sesiones especiales, mesas de trabajo y seminarios. El estudio de IMAGENES es aplicado en las representaciones gráficas, en la producción de información por sensores remotos, y en la elaboración de mapas mentales, tres elementos fundamentales de información cartográfica hoy en día. ¿Cómo podríamos exponer una colección de mapas históricos o contemporáneos al público? ¿Cómo podríamos promover el estudio de mapas? ¿Cómo podríamos sacar mejor provecho a las imágenes obtenidas por sensores remotos? ¿Cómo podríamos elaborar y comprender mapas que nos guíen al recorrer el medio ambiente? ¿Cómo podríamos utilizar mapas cartográficos para influenciar el mapa mental de cada quien? Estos son algunos de los temas que discutiremos en los próximos días.

Espero que tengan la oportunidad de apreciar la importancia de Chicago, no solo como centro cultural, industrial y financiero sino también como centro de información cartográfica en los Estados Unidos. Esta ciudad cuenta con muchas compañías comerciales de producción cartográfica como Rand McNally, R.R. Donnelley and Sons, Denoyer Geppert, Nystrom, Sidwell, Replogle Globes, and Chicago Aerial Survey. En Chicago también se encuentra la Newberry Library la cual cuenta con el Hermon Dunlop Smith Center for the History of Cartography.

Quiero expresar mi agradecimiento a los miembros del Comité Organizador por su valiosa colaboración en la puesta en marcha de este proyecto. Al mismo tiempo, quiero dar las gracias a los ponentes y participantes al congreso de este año por compartir con nosotros sus conocimientos y sus más recientes trabajos. Finalmente, quiero hacer un especial reconocimiento a la desinteresada colaboración prestada por West Virginia University y University of Kentucky durante mi período como Directora del Congreso.

Gracias por su interés en participar en nuestro V Congreso.

Ruth Anderson Rowles
Directora del Congreso

CONFERENCE NOTES

Registration Hours

The Registration Desk is located in the Gallerie Cezanne in the Conference Center of the Holiday Inn. Registration hours are:

Sunday, November 10: 1:00 - 7:30 p.m.

Monday, November 11: 8:00 a.m. - Noon
6:00 - 8:00 p.m.

Tuesday, November 12: 8:00 a.m. - Noon
1:00 - 5:00 p.m.

Wednesday, November 13: 8:00 a.m. - Noon

The registration fee for the entire conference includes:

- conference folder
- conference program with abstracts
- admission to exhibits
- admission to all formal sessions; including paper and poster sessions, workshops, and seminars
- choice of one field trip or technical tour
- annual banquet with speaker
- annual luncheon with speaker
- refreshment breaks

Individuals are responsible for their own expenses for cash bars.

Representatives of Related Professional Organizations

Inter-organizational co-operation and information sharing is an important aspect of NACIS meetings. Officers of closely related societies and associations are invited to identify themselves at the Registration Desk, so that they can be so identified on their name tags. In this way NACIS would like to encourage informal exchanges of information and views.

SUNDAY, NOVEMBER 10, 1985

NACIS Committee Meetings

1:00 - 2:00 p.m., Board of Directors (Salon Boudin)
 2:00 - 3:00 p.m., Membership Committee (Salon Matisse)
 2:00 - 3:00 p.m., Publications (Salon Van Gogh)
 2:00 - 3:00 p.m., Conference Planning 1986 (Salon Boudin)

Special Session: Map Exhibits (Salon Monet)

2:00 - 4:00 p.m., Sunday, November 10, 1985

Organizer: Christopher Baruth
 AGS Collection
 University of Wisconsin-Milwaukee Library
 Box 399
 Milwaukee, WI 53201

Christopher Baruth is a member of the Map and Imagery Library staff of the American Geographical Society Collection. Though a native of Wisconsin, Mr. Baruth moved from Oregon in 1979 to join the AGS Collection staff. He received his B.S. in Geography and M.A. in Library Science from the University of Wisconsin-Madison, and his M.S. in Geography from the University of Wisconsin-Milwaukee, where he is currently a doctoral candidate. Mr. Baruth's interest in cartography and the preservation of cartographic materials is a natural outgrowth of his research in the history of cartography, and is sustained by his daily contact with aging and antique maps and atlases.

The problems and pleasures of map exhibits will be discussed by representatives of various types of map collections, a map retailer, and an individual who has staged his own exhibit. Exhibits will be discussed in terms of audience, purpose, level of effort, design, display considerations and publications.

Panel:

Andrew J. Cosentino
 Exhibits Office --Adams Bldg.
 Library of Congress
 Washington, D.C. 20540

Roman Drazniowski
 AGS Collection
 University of Wisconsin
 P.O. Box 399
 Milwaukee, WI 53201

Barbara Fine
 The Map Store, Inc.
 1636 I Street NW
 Washington, D.C. 20006

Robert Karrow
 The Newberry Library
 60 West Walton St.
 Chicago, IL 60610

Mary Larsgaard
 Asst. Dir. for Spec. Collections
 Arthur Lakes Library
 Colorado School of Mines
 Golden, CO 80401

Barbara McCorkle
 Map Curator
 Yale University Library
 New Haven, CT 06520

Michael Mikos
 Dept of History
 University of Wisconsin
 Milwaukee, WI 53201

Jeremiah B. Post
 Free Library of Philadelphia
 Philadelphia, PA 19103

Opening Session (Salon Monet)

7:30 - 9:00 p.m., Sunday, November 10

WELCOME

Raymond M. Brod, Local Arrangements Director
 Staff Cartographer
 Dept. of Geography
 University of Illinois at Chicago
 Box 4348
 Chicago, IL 60690

Ray Brod is the Staff Cartographer for the Geography Dept. at the University of Illinois at Chicago. He has held this position for 13 years. Previously he was a cartographer for the federal government and World Book Encyclopedia. Mr. Brod has also been an instructor in cartography and design with the Geography Dept. of Roosevelt University for 14 years. His interests include map design, general cartographic history, and the works of Matthew Seutter and Johann B. Homann.

NACIS V: IMAGES OF THE EARTH

Ruth Anderson Rowles, Conference and Program Director
 Dept. of Geography
 University of Kentucky
 Lexington, KY 40506

Ruth Anderson Rowles received a B.S. in Geography from Clark University (1971) and an M.S. in Geography from the University of Wisconsin-Madison (1976). She was a cartographer in the City Manager's Office of Planning and Community Development in Worcester, MA (1973-1974) and was manager of the Clark University Cartographic Laboratory (1974-1976). From 1977 to 1985 she taught cartography at West Virginia University and was the cartographer and assistant editor of The Historical Atlas of United States Congressional Districts: 1789-1983. In July 1985 she moved to Lexington, KY, and entered the Ph.D. program in geography at the University of Kentucky. She is also cartographer for the forthcoming Atlas of Political Party Representation in the United States Congress: 1789-1987. She has published several articles and received the Charles Thomson Prize for 1984 for the best essay based on archival research in the broadest possible spectrum of American history from the Organization of American Historians and the National Archives. In 1984 she was local Arrangements Director for NACIS IV in Pittsburgh, and this year she is President-Elect and Conference Director for NACIS. She is a member of NACIS, AAG, CCA, and ACSM/ACA.

OPENING ADDRESS: LIVING THROUGH A REVOLUTION OR TWO

Bernard Gutsell
 Winters College
 York University
 4700 Keele St.
 Downsview, Ontario
 Canada M3 J1 P3

PRESIDENT'S ADDRESS: NON-GRAPHIC CARTOGRAPHIC INFORMATION

John D. Stephens, President of NACIS
Department of Geography
University of Miami
P.O. Box 248152
Coral Gables, FL

John D. Stephens received his Ph.D. in Geography from Michigan State University in 1975. He is currently Associate Professor of Geography at the University of Miami, where he is responsible for instruction in cartography. Prior to his appointment at the University of Miami, he served on the faculties of Indiana University of Pennsylvania, Virginia Tech, UCLA, and as a Fulbright-Hays Professor in Finland. His research interests include analytical cartography, bibliography of cartography, and geo-processing systems, topics on which he has presented and published papers. He is a member of the AAG, ACSM/ACA, and NACIS.

Reception and Cash Bar (Holidome)

9:00 p.m., Sunday, November 10

MONDAY, NOVEMBER 11, 1985

Exhibits Open (Salon Renoir)

10:00 a.m. - Noon, Monday, November 11

Paper Session: Navigating the Environment (Salon Monet)

8:30 - 10:15 a.m., Monday, November 11

Chair: Dennis L. White, National Cartographic Information Center, USGS

Howard Diamond

National Oceanic and Atmospheric Administration/

National Ocean Service

8060 13th Street, Room 1113

Silver Spring, MD 20910

THE NATIONAL OCEAN SERVICE'S ROLE IN MSAW: A DIGITAL TERRAIN MODEL FOR AERONAUTICAL SAFETY IN THE U. S.

Ronald M. Bolton

Aeronautical Chart Branch

National Oceanic and Atmospheric Administration/National Ocean Service

6010 Executive Boulevard, Room 100

Rockville, MD 20852

Ronald M. Bolton is the Chief of the Aeronautical Chart Branch of the Aeronautical Charting and Cartography Office at the National Ocean Service (NOS), in Silver Spring, Maryland; he also serves as the Project Officer for the Aeronautical Chart Automation Project. He received the B.S. from the District of Columbia Teachers College in 1963. He served as a computer specialist and cartographer in the Navy Oceanographic Office, Suitland, Maryland, from 1963 until 1974. He joined NOS in 1974 as a computer specialist and cartographer. He was an instructor in programming and computer science at the U.S. Department of Agriculture Graduate School, Washington, DC, from 1966 until 1972. He was also an instructor at George Washington University from 1979 to 1982. Since then, he has been an instructor of computer science at Montgomery College. He is a member of the Institute of Navigation, ACSM, and NACIS. He served as president of NACIS in 1984.

THE CHALLENGES OF BUILDING DIGITAL MAPS AND CHARTS FOR AUTOMATED VEHICLE NAVIGATION SYSTEMS

Computer-aided vehicle navigation equipment is entering the market and a major sales effort will develop by the end of this decade. Potential cost, regulatory, legal, and technical barriers have been identified. Automated vehicle navigation will require the cartographer to develop new and better database and distribution systems.

The principle requirements associated with charts and displays utilized for navigation are rapid, timely, and accurate updating to allow users to see changes that affect safe navigation in the area depicted. Keeping abreast of revisions to the electronic chart and the navigation system used to position the vehicle will require extensive data collection, data validation and communication of changes to systems users. Product liability looms as a major barrier in the implementation and operation of such systems.

The problems confronting the cartographer involved with automated vehicle navigation products are unprecedented. This is the greatest challenge for innovation and rapid system development ever presented to our profession.

Kathryn L. Ford
Department of Geography
Michigan State University
East Lansing, MI 48824-1115

Kathryn Ford is a Ph.D. student in the geography program at Michigan State University in East Lansing. She is a native of Muncie, Indiana and holds a B.A. in geography from Ball State University in that city. She received an M.A. in geography from Queen's University at Kingston, Ontario in 1983. She was employed by the New York State Department of Transportation, Mapping Services Bureau from 1981 to 1984. Her research interests are map perception, map design, and map user abilities. She is a member of NACIS, ACSM and AAG.

MAP READING, DIVIDED ATTENTION, AND LIMITED VIEWING AREA

This study is an attempt to discover how well people trace routes across a map under less than ideal conditions. The conditions of visual distraction and limited viewing are encountered in the use of auto navigation information systems. In some of these systems the map user extracts map information from a small dash-mounted CRT screen while driving.

Fifteen subjects were asked to trace routes across a map under four conditions of visual distraction and limited viewing area. It was hypothesized that subjects would require more time to complete the task and would make more errors when a smaller area of map was visible at any one time and when they were distracted. Visual distraction was created by asking the subjects to identify objects in slides while they were tracing routes.

The only significant difference in mean performance (t 1.85) was between the time required to trace a route when a small map area was viewed without distraction and with distraction. There was also a significant difference (F 4.25) in the variance of the times required to trace the route when a large area was visible and when a small area was visible.

Workshop: A Demonstration of the Use of Apple II Microcomputers in Cartographic Education (Salon Matisse)

8:30 - 10:15 a.m., Monday, November 11

J. Clark Archer
Department of Geography
University of Nebraska
Lincoln, NE 68588

J. Clark Archer is an Assistant Professor in the Department of Geography, University of Nebraska (402/472-1945). He received his Ph.D. in geography at the University of Iowa in 1974, and has professional interests in cartography, political geography, and urban geography. Within cartography,

his interests focus on interactive digital mapping and geographical data bases. He has authored or coauthored articles for such journals as The American Cartographer, Environment and Planning, Geographical Perspectives, The Journal of Geography, Political Geography Quarterly, Progress in Human Geography, and The Professional Geographer.

Ellen R. White
Department of Geography
Michigan State University
East Lansing, MI 48824

Ellen White is currently Cartographic Coordinator for the Center for Cartographic Research and Spatial Analysis at Michigan State University. She received her M.S. degree in Geography from Virginia Polytechnic Institute and State University and, prior to coming to MSU, was Staff Cartographer/Instructor at the University of Oklahoma for four years. Her research interests are in computer cartography, production techniques, and cartographic education. Ellen is a member of the North American Cartographic Information Society, the Association of American Geographers, and the American Congress on Surveying and Mapping (American Cartographic Association).

Stephen J. Lavin
Assistant Professor
Department of Geography
University of Nebraska
Lincoln, NE 68588

An ongoing process which Monmonier has labeled the "electronic transition" is radically affecting procedures for the capture, storage, retrieval, analysis, and cartographic display of geographical information. "Paper map" once was a redundancy; "In the decades ahead, though, the digital map will displace the paper map from its dominant position" (M.S. Monmonier, Technological Transition in Cartography, University of Wisconsin Press, 1985, p.4). Until recently, digital mapping capability was restricted to those having access to expensive graphical input and display peripherals attached to large mainframe computers. Microcomputers capable of low to medium resolution color graphics display, however, have made digital mapping techniques applicable in introductory classrooms and other settings where cost was previously a prohibiting factor. One ramification is that cartography students can now be exposed to digital mapping technology sooner and more intensively than before, thus better preparing them for the eventual displacement of the paper map.

The purpose of this workshop is to present a demonstration of computer mapping involving the Apple II microcomputer. Much of the attention is directed toward "hands-on" use of MicroProjections Mapper, a software package prepared by the authors. This package includes procedures for entering and editing cartographic base files, and for graphically displaying these files using a variety of different map projections. The Apple does the drudgery of mathematical computation, leaving students free to experiment and to concentrate on theoretical, conceptual and graphics display matters. For example, while it might take students hours to draw azimuthal equidistant projections centered on their home towns by hand, with the Apple and MicroProjections Mapper they can generate two such projections -- one centered on their home towns, the other centered on these locations' antipodes -- within a few minutes. Also presented are illustrative end products created with commercially available microcomputer digital thematic mapping software appropriate for classroom usage, such as MICROMAP which can produce proportional symbols, choropleth, isopleth, 3D-surface, and raised polyhedron maps.

Paper Session: Historical Map Information (Salon Monet)

10:30 - 12:15 p.m., Monday, November 11

Chair: James O. Minton, University of Arizona

Richard Alan Sambrook
 Department of Geography
 Michigan State University
 East Lansing, MI 48824-1115

Richard Alan Sambrook received his B.A. from the Department of Anthropology, Michigan State University, in 1974. In his senior year he became interested in cartography and applied to graduate school in the Department of Geography. While in graduate school research interests in survey systems, historical cartography, and production techniques were studied. In addition, Sambrook served as a research assistant on the Atlas of Michigan, and he produced the maps and graphics for a geographic text on internal migration systems in developing countries. His Master's research focused on private land claims and the effects of survey systems in Michigan. A Master's degree was earned in 1980. Currently, Sambrook is enrolled as a doctoral candidate pursuing interests in the systematic areas of development/population and migration.

MAPS OF FORT MICHILIMACKINAC: IMAGES OF THE COLONIAL FRONTIER 1749-1769

As an outpost on the colonial frontier, Fort Michilimackinac played a strategic role in the political struggle over the lucrative fur trade. This important fortification/settlement, located on the south mainland side of the Straits of Mackinac, was occupied for approximately sixty-five years. In 1715 the French established a military and fur trading post in the Straits of Mackinac. An earlier mission (1671) and fortified trading post (Fort de Baud) had been constructed on the north side of the Straits (1683), near present day St. Ignace, Michigan. The capitulation of the French forces at Montreal in 1760 ended the French and Indian War and the French control of the Upper Great Lakes.

Fort Michilimackinac was turned over to the British in 1761. From 1761 to 1781 the fortification was variously occupied by British and colonial American troops, priests, and the traders and trappers who maintained homes within and near the fort in the village to the east. During the winter of 1780/81 the durable buildings were torn down and relocated to a bluff on Mackinac Island.

To date, four historic maps of Fort Michilimackinac have been discovered: Lotbiniere's Plan and Description (1749), the Crown Collection Map (1765), the Magra Map (1766), and the Nordberg Map (1769). These maps are all different in a number of important features, including accuracy of the size and location of structures within the fort, detail of the information included on the map, and the type of information included on the map. For example, the earliest map (Lotbiniere) was the only map which indicated where the residents lived within the fort. In conjunction these maps have both aided and confounded historians and archaeologists in their interpretation of images of life on the colonial frontier.

William G. Dean
 Department of Geography
 University of Toronto
 Toronto, Canada M5S 1A1

William G. Dean, Professor, Department of Geography, University of Toronto. BA (1949) MA (1950) University of Toronto, Ph.D. McGill (1959). Arctic Research Consultant RAND corporation, Santa Monica Arctic Air Photo Interpretation (1954-56), Editor, The Canadian Geographer (1960-67), Research Director and Editor, Economic Atlas of Ontario (1962-69), U.S. N.S.F. Cartography Course, University of Washington Summer 1963; Gold Medals Leipzig Book Fair 1970-71 for Economic Atlas of Ontario; W.W. Atwood Gold Medal, Pan-American Institute of Geography and History, 1973; Chairman, Advisory Committee, Historical Atlas of Canada, 1977-79; Director, Historical Atlas of Canada, 1979-?; Organizing Committee, Seminar on National and Regional Atlases, Pan American Institute, Ottawa, 1978-79. Research in mapping military history. Sigma XI.

G. Matthews
 Department of Geography
 University of Toronto
 Toronto, Canada M5S 1A1

REMAPPING HISTORY: REMARKS ON THE THRUST OF THE HISTORICAL ATLAS OF CANADA

The focus of this paper is on the creation of historical thematic maps from a variety of sources. Since these sources themselves are various kinds of historical documents, mapping historical processes and events from them is in effect remapping history. The historical thematic maps so mapped in turn become an important source of historical map information. The example of remapping history used here is the Historical Atlas of Canada. From this a number of innovative approaches are drawn to illustrate the concept of remapping history.

The Historical Atlas of Canada is a coherent interpretation in three volumes of the serial events and patterns of the social, economic, and cultural development of Canada. Based on new research from all parts of the country and both sides of the Atlantic, intended for scholars and the general public, the atlas will be published in separate French and English editions. Through full-colour double-page plates, each of which is a unique composite of maps, charts, paintings, graphs, diagrams, and text, this atlas maps not the land but rather the nature and structure of the successive Canadian societies, their patterns of livelihood, and their transformation of the landscape. The emphasis is on clarity of presentation to provide a glimpse into the circumstances of ordinary people in early Canada and into an enormous body of new, accurate information about them.

A few plates from each volume are described in detail to illustrate our processes of remapping history for this atlas. Specifics of the trade, warfare and spread of epidemics in the Great Lakes area from 1600 to 1653, and the exact distribution of the social structure and means of livelihood in Montreal in 1901 are but two of many examples of the possible precision in remapping history. From such work whole new insights into a people's heritage become abundantly clear.

Franciska K. Safran
 Reed Library
 State University College
 Fredonia, NY 14063

I am presently an Associate Librarian at the Reference Department of Reed Library at the State University of New York, College at Fredonia, where I have worked since 1973. Previously, I was the Chief Bibliographer at Alderman Library at the University of Virginia. I started my university education in 1955 with a Hungarian Literature major at the Eotvos Lorand University in Budapest. I completed my BA in American Literature at Syracuse University. In 1983 I earned a MA degree in American History at the State University of New York, College at Fredonia.

Since 1980 I am also the Director of the Holland Land Company Manuscript Preservation Project. In this capacity I have edited the Archives of the Holland Land Company and coordinated its microfilming on 202 reels at the Municipal Archives of Amsterdam in The Netherlands. This collection contains a large group of maps, many in color, which will be reproduced on single image colored microfiche in early 1986. I am also conducting an assessment of Holland Land Company documents and related material in New York State and Pennsylvania. The located collections, which include some maps, will be microfilmed also. To date, about \$90,000 has been raised for the project. I hold membership in regional historical societies, ACRL Chapter of Western New York/Ontario, Association for the Bibliography of History and other organizations. I held offices (Second Vice President, etc.) in the New York Library Association. I am also a BETA PHI MU and PHI ALPHA THETA member (International Honor Society in Library Science and in History). I presented papers on topics in Library Science and on the preservation and use of the Holland Land Company documents; some papers have been published. In 1985 I received the Chancellor's Award for Excellence in Librarianship. I do not have any background, training or experience in cartography, but I did present a paper with slides on the Holland Land Company maps at the 1983 NACIS Conference.

FACSIMILE PRINTING OF HISTORICAL COLORED MAPS

The paper will address the printing of four colored maps selected from the Archives of the Holland Land Company. The Collection contains early survey and sales records of lands situated in New York State and Northwestern Pennsylvania. However, the original manuscripts are housed in the Municipal Archives of Amsterdam in The Netherlands. For the printing of the maps, good quality 4 x 5 inch color transparencies were prepared by the photographer of the Municipal Archives.

For a variety of reasons, Monroe Litho in Rochester, New York was contracted for the printing of the maps. Financial limitations dictated that the maps be reduced and printed simultaneously on one sheet. This caused unforeseen complications at printing, especially because it limited the adjustment of color level for the individual maps. Other problems occurred during pre-press preparation. For instance, despite repeated color separation by a different company, poor color fidelity cromalin proofs were produced. This color discrepancy was eventually corrected on the printer's film. The maps were printed on a five-color Heidelberg press.

Some examples of "printer's debris" of the preparation and printing process will be demonstrated. Intermediary and final press runs will be compared with the projected transparencies.

Anne Godlewska
Department of Geography
University of Wisconsin
Madison, Wisconsin 53706

THE HISTORY OF CARTOGRAPHY PROJECT: PROGRESS REPORT

Workshop: DIAS: Microcomputer Software for Remote Sensing (Salon Matisse)
10:30 - 12:15 p.m., Monday, November 11

John A. Harrington, Jr.
Department of Geography
University of Nebraska-Lincoln
Lincoln, NE 68588-0135

John Harrington is an Assistant Professor in the Department of Geography at the University of Nebraska-Lincoln. He received his Ph.D. in Geography in 1980 from Michigan State University and his M.A. in Geography from the University of Minnesota. His research interests are in the areas of remote sensing education, digital image processing, and remote sensing of surface water quality. He is a member of the AAG, NCGE, AGS, American Society for Photogrammetry and Remote Sensing, the American Association for the Advancement of Science, the American Meteorological Society, and the Ecological Society of America.

This workshop details the instructional applications of the digital Image Analysis System (DIAS), an Apple II microcomputer package for analysis of four channel Landsat MSS digital data. DIAS is a menu-driven, software package developed for interactive image processing of remotely sensed data; the greatest utility of DIAS is computer-assisted instruction.

Knowledge of the applicability of the numerical data obtained from satellite platforms has greatly expanded in the past decade due to the widespread distribution of products from NASA's experimental Landsat series of remote sensing spacecraft. Incorporation of remotely sensed data into decision making processes requires knowledge of computer systems, the use of the numerical form of the data through digital image processing, and education. Evolution of remote sensing data analysis to incorporate computer-based digital processing of satellite data places additional demands on professionals involved in this technology transfer; the need to incorporate computer-assisted instruction complicates the task.

Mainframe computer hardware and software costs and the lack of facilities for digital data analysis have combined to limit the number of people exposed to this technology. DIAS offers a low-cost alternative. Software design considerations incorporated into the DIAS package make this collection of algorithms similar to the analysis routines used at government-sponsored minicomputer-based digital image processing centers.

Digital image processing includes those data transformations that are designed to assist in object or pattern recognition; enhancement and classification algorithms are included in this group of data processing programs. Within the DIAS package, six enhancement programs (Smooth, Enhance, Ratio, Stretch, Shift, and Combine) and two classification routines (minimum distance and parallelepiped) are provided. The classifiers can be operated in either a supervised or unsupervised mode. In addition to enhancement and

classification algorithms, the DIAS package contains sections for data entry, data restoration, image display, and performing utility functions. These routines permit a broad view of the entire process involved in manipulating the digital data for information extraction.

Documentation that accompanies the DIAS package includes a DIAS User's Manual and a set of exercises that demonstrate the utility of the overall system. The DIAS User's Manual provides explanation concerning the operations of the DIAS package whereas the exercises help demonstrate some of the fundamental concepts of digital image processing. Individual exercises demonstrate: 1) the nature of the digital data, 2) the benefits of image enhancement transformations, 3) two different strategies for classifying a scene, and 4) several different formats for data display.

Field Trip A: Rand McNally

1:00 - 5:00 p.m., Monday, November 11

Field Trip B: Chicago Art Institute

1:00 - 5:00 p.m., Monday, November 11

Special Poster Session: Products and Resources of University Cartographic Laboratories (Salon Monet)

7:00 - 9:00 p.m., Monday, November 11

Organizer: Ellen R. White
Department of Geography
Michigan State University
East Lansing, MI

Ellen White is currently Cartographic Coordinator for the Center for Cartographic Research and Spatial Analysis at Michigan State University. She received her M.S. degree in Geography from Virginia Polytechnic Institute and State University and, prior to coming to MSU, was Staff Cartographer/Instructor at the University of Oklahoma for four years. Her research interests are in computer cartography, production techniques, and cartographic education. Ellen is a member of the North American Cartographic Information Society, the Association of American Geographers, and the American Congress on Surveying and Mapping (American Cartographic Association).

Participants:

James R. Anderson, Jr.
Florida Resources and Environmental Analysis Center
The Florida State University
Tallahassee, FL 32306

Mr. James R. Anderson is Director of the Cartography Lab of the Florida Resources and Environmental Analysis Center at the Florida State University. The lab is heavily involved in contract work with local, state, and federal agencies as well as assisting university faculty with graphics for publication. Mr. Anderson has directed the production of several publications, including the Atlas of Florida, Atlas of the Apalachicola

Estuary, and the Water Resources Atlas of Florida. Current interests include geographic names research, census block designation for Florida, and the development of a NCIC state affiliate office. He is a member of the Association of American Geographers, Southeastern Division of the AAG, the Florida Society of Geographers, and the Urban and Regional Information Systems Association (URISA). Mr. Anderson received his B.A. degree from the University of Florida and a M.S. degree from Eastern Michigan University.

Raymond M. Brod
Staff Cartographer
Department of Geography
University of Illinois at Chicago
Box 4348
Chicago, IL 60680

Ray Brod is the Staff Cartographer for the Geography Department at the University of Illinois at Chicago. He has held this position for thirteen years. Previously he was a cartographer for the federal government and World Book Encyclopedia. Mr. Brod has also been an instructor in cartography and design with the Geography Department of Roosevelt University for fourteen years. His interests include map design, general cartographic history, and the works of Matthew Seutter and Johann B. Homann.

Abby Alexander Curtis
Department of Geography
The Pennsylvania State University
University Park, PA 16802

Abby Curtis is the Staff Cartographer in the Deasy GeoGraphics Laboratory for the Department of Geography at Pennsylvania State University, a position she has held since March, 1984. She received a B.A. in Geography from Colgate University in 1977 and a M.S. in Geography from Penn State in 1985. She is a member of NACIS and AAG.

Frank Drago
Department of Geography
Georgia State University
University Plaza
Atlanta, GA 30303

Frank Drago is the Director of the Georgia State University Cartographic Laboratory. He received his M.A. degree from Georgia State in 1975 and B.A. from the University of Connecticut. He has done maps for several books and magazines, as well as numerous commercial and government projects.

Alison Hanham
Department of Geology and Geography
West Virginia University
Morgantown, WV 26506

Alison Hanham currently holds a joint position with the Department of Geology/Geography and the College of Arts and Sciences. She is responsible for the design and production of a wide range of graphics necessary for faculty research publications and presentations at professional meetings. Her educational background is a bachelor's degree in art from Monmouth College, Monmouth, Illinois in 1971. Practical experience has given her most of her training. She has worked as a graphic artist with several newspapers and printing companies prior to accepting the job at West Virginia University.

Deborah P. King
 Laboratory of Cartographic and Spatial Analysis
 321 Carroll Hall
 University of Akron
 Akron, OH 44325

Deborah Phillips King is currently the supervisor of the Laboratory for Cartographic and Spatial Analysis at The University of Akron, where she also teaches cartography. She received a B.S. degree in geography from Ohio University in 1975, and a M.A. degree in geography from The University of Georgia in 1977. She is pursuing a Ph.D. in education, and her interests are in the areas of cartographic perception, and geographic education. Mrs. King is a member of ACSM, AAG, NCGE, and Sigma Xi.

Ron Linton
 Director, Cartographic Services Laboratory
 Department of Geography
 University of Maryland
 College Park, MD 20742

Ron Linton currently holds the position of Director of both the University of Maryland's Cartographic Services Laboratory and Spatial Analysis Laboratories. He holds a Master of Design Degree from the Royal College of Art in London, England which was awarded for a thesis on marine chart design. His current interests are in the field of Marine Cartography and he is the present chairman of the ICA Marine Cartography Commission. Ron Linton is a Fellow of the Royal Geographic Society, and a member of the Hydrographic Society.

J. Michael Lipsey and Ellen R. White
 Center for Cartographic Research and Spatial Analysis
 Department of Geography
 Michigan State University
 East Lansing, MI 48824

Gyula Pauer
 Department of Geography
 University of Kentucky
 Lexington, KY 40506-0027

Craig Remington
 Cartographic Laboratory
 Department of Geography
 University of Alabama
 Birmingham, AL 35486

Donna Schenstrom
 Staff Cartographer
 Department of Geography
 University of Wisconsin, Milwaukee
 Milwaukee, WI 53201

Pat Tamarin
 Staff Cartographer
 New Mexico State University
 Box 3AB
 Las Cruces, New Mexico 88003

General Poster Session (Salon Monet)
 7:00 - 9:00 p.m., Monday, November 11

Gary M. Schaal
 Ohio Department of Natural Resources
 Remote Sensing Program
 Fountain Sq., Bldg. E
 Columbus, OH 43224

Gary M. Schaal is the manager of the Remote Sensing Program of the Ohio Department of Natural Resources. The Program is responsible for inventorying, mapping, and monitoring changes in Ohio's land and surface water resources and their uses. He has recently formed a statewide remote sensing and geographic information steering committee, and the Program has been designated the state affiliate of the Eastern-NCIC. Gary has a B.S. from Ohio State University's Department of Geodetic Science and a M.B.A. from Capital University. He is a member of ASPRS, the Ohio Remote Sensing Steering Committee, and the Ohio Planning Association. He is currently trying to establish capability for Ohio to conduct statewide resource mapping utilizing digital satellite data analysis.

LAND USE/LAND COVER MAPPING IN OHIO

The poster points out that the Ohio Department of Natural Resources is actively engaged in Land Use/Land Cover mapping in Ohio and presents Ohio's classification system which is based upon James Anderson's system for use with remote sensing.

Gregory Chu and Carol Gersmehl
 Cartography Laboratory
 Department of Geography
 University of Minnesota
 Minneapolis, MN 55455

Mr. Gregory H. Chu received his M.S. degree in Geography with specialization in cartography from the University of Wisconsin-Madison in 1974 and is currently nearing completion of a Ph.D. degree in Geography at the University of Hawaii. From 1974 to 1981, he was Head of the Cartographic Unit at the Population Institute of the East-West Center in Honolulu. There, he coordinated three census mapping working groups. In May 1979, he served as Cartographic Advisor for the United Nations Development Program (UNDP) to the Central Bureau of Statistics in Indonesia. Since 1981, he has been Senior Cartographer at the University of Minnesota Cartography Lab in the Geography Department. During spring semester of 1982-83, he was Visiting Professor at the Geography Department of the University of Wisconsin-Madison. He is now serving as the U.S. Corresponding member to ICA's Commission on Census Cartography.

Carol Gersmehl is a graduate research assistant in the Geography Department of the University of Minnesota. She is a Ph.D. candidate and has a dissertation fellowship to study children's memory for map relationships. She has worked in Minnesota's cartographic laboratory for 3 years and is a member of AAG, ACA, and CCA.

THE UNIVERSITY CARTOGRAPHY LAB'S ROLE IN GEOGRAPHIC MAPS

A major role of the university cartographic lab is to combine geographic understanding with production techniques to produce thematic maps with themes that stand out against meaningful geographic contexts. Geographers have advocated inclusion of as much meaningful context information as possible because their

major purpose is to illustrate interrelationships on the earth's surface. Geography considers the interplay of cultural and physical processes--"the composite works of man and nature." Contrarily, some cartographers believe in the simplicity of graphic symbols on maps as an effective communication technique. There seems to be little agreement between the two extremes. Our cartography lab stresses geographic background that appreciates the breadth of contextual information against which themes are mapped. It also stresses the skillful use of techniques which produce a visually prominent theme (or themes) in relation to rich but subdued background information. The poster shows maps made with production techniques that allow combination of dominant themes with several layers of geographic base or contextual information.

Exhibits Open (Salon Renior)

7:00 - 9:00 p.m., Monday, November 11

Organizers:

Howard Diamond
NOAA/NOS
8060 13th Street, Room 1113
Silver Spring, MD 20910

Susan Nelson
NOAA/NOS
6001 Executive Boulevard, Room 9918
Rockville, MD 20852

Exhibitors:

U.S. BUREAU OF LAND MANAGEMENT

ENVIRONMENTAL RESEARCH INSTITUTE OF MICHIGAN

MARSHALL PENN YORK

EIKONIX

GEOGRAPHICS

WISCONSIN STATE CARTOGRAPHER'S OFFICE

U.S. GEOLOGICAL SURVEY

DEFENSE MAPPING AGENCY

RAND MCNALLY INFOMAP

MICRO AERO CHARTS

MAPPING SPECIALISTS LTD.

NATIONAL OCEAN SURVEY

Reception and Cash Bar (Gallerie Cezanne)

8:00 p.m., Monday, November 11

TUESDAY, NOVEMBER 12, 1985

Exhibits Open (Salon Renoir)

8:30 a.m. - Noon

Field Trip: The Newberry Library

9:30 a.m. - Noon

Paper Session: Digital Cartographic Data (Salon Monet)

8:30 - 10:15 a.m., Tuesday, November 12

Chair: Leonard Dinder, Aeronautical Chart Automation Project, NOAA/NCS

Thomas E. Everly

GeoBased Systems, Inc.

P.O. Box 13545

Research Triangle Park, NC 27709

DATA CAPTURE AND DATA ANALYSIS - JUST BECAUSE THEY HAVE THE SAME FIRST NAME DOESN'T MEAN THEY'RE FIRST COUSINS

The author feels that too many purchasers of geographic information system technology assume that data base construction efforts and data analysis efforts are similar in nature. The author believes that these two areas, while related from a data base access point-of-view, are very different in terms of management, knowledge, and staffing. It is important that organizations realize these differences so that they can be planned for and appropriate decisions made about system implementation alternatives.

The paper will begin by discussing the relationship between data capture and data analysis in cartographic information systems. Assumptions that purchasers of this technology make about this relationship will be examined. Differences between data capture and data analysis in terms of system and human resource allocation will be highlighted. These differences are in a number of areas including:

1. Education and experience of system operators.
2. The amount and types of computer hardware required.
3. The software and data base structure required.
4. System management and optimization.

The paper will then categorize the different types of GIS users. These include:

1. Organizations whose primary mission is data capture.
2. Organizations whose primary mission is data analysis.
3. Organizations who are project oriented and are interested in both data capture and analysis.
4. Organizations who will start out oriented towards data capture and then move into data analysis.

Alternative system implementation scenarios will be discussed for the different types of users. Transition schemes will also be discussed for users who may start out in a data capture mode to build a data base and then be primarily concerned with update and analysis.

The paper will conclude by highlighting the differences between data capture and data analysis systems and users. The objective will be to get the user to define and prioritize the goals of the system over time and to determine what the primary focus of the system is to be.

Alan Saalfeld
 Statistical Research Division
 Bureau of the Census
 Washington, DC 20233

Alan Saalfeld is Mathematician/Principal Researcher with the Bureau of the Census, where he directs research on mathematical applications in geography and cartography. The research focuses primarily on map conflation, lattice theory, topology, curve-drawing, and computer graphics. Mr. Saalfeld holds an M.S. degree in mathematics from the University of California, and is a member of NCGA, SORSA, and MAA. Research presentations and publications this year include six papers co-authored for AUTOCARTO 7 and articles in The Journal of Algebra and The American Cartographer.

COMPARISON AND CONSOLIDATION OF DIGITAL DATABASES USING INTERACTIVE COMPUTER GRAPHICS

Over the past decade a considerable amount of interactive graphics software has been developed to maintain digital map files. Maintenance generally involves updating or changing feature representations, and the software usually focuses on manual adjustment and screen image verification of a change to a local region of a single map. Powerful interactive color graphics tools have made possible a more sophisticated type of editing.

Map compilation, or conflation, may be accomplished by simultaneously manipulating the graphic images of two different digital maps of the same region in order to recognize matched features and differences more easily. Fast computer programs for rubber-sheeting one or both of the maps permit a user of a computer graphics workstation to align the maps in stages through successive approximation methods. After the maps have been aligned, the user may readily identify similar features on the two maps by overlaying one feature on the other. Features of one map which have no counterpart on the other map stand out; they become highlighted in isolation when different colors are used for the two maps.

With some limitations, the computer may be programmed to recognize matches. Mathematical relations of geometric position may be used to test for matches; and, when the tests are satisfied, corresponding features may be flagged automatically as matches. Similarly, features which have no counterpart on the other map may be identified by mathematical tests which measure their isolation; and they may be flagged automatically as unmatchable features. Displaying the matched, unmatched, and unmatchable features in different colors as they are identified permits further operator interaction in the compilation process.

Bruce D. Baikie
 Facilities Systems Marketing Supervisor
 WPS Development, Inc.
 P.O. Box 19001
 Green Bay, WI 54307-9001

Graduated from Michigan Technological University (Houghton, Michigan) in May, 1982, with a Bachelor of Science in Mechanical Engineering. Joined Wisconsin Public Service Corporation after graduation as an Industrial Application Engineer in their Oshkosh, Wisconsin Division. There, was accountable for the engineering (gas and electric) and marketing for that Division's large industrial customers and local government. In 1984 was promoted to the position of Facilities System Marketing Supervisor. The responsibilities include the sales and marketing of the company's in-house developed computer facilities information management system. Is a member of the National Society of Professional Engineers (EIT), Wisconsin Society of Professional Engineers, and the Midwest Industrial Gas Council. Hometown is Bay City, Michigan.

COMPLETE FACILITIES INFORMATION MANAGEMENT AND AUTOMATED MAPPING THROUGH A SINGLE COMPUTER DATA BASE

The operation of facilities and the usage, storage, and maintenance of their records has been an excellent application of current computer technology. This technology, however, has not grown equally in all areas. The results are that many organizations installed stand-alone computer systems to handle specialized areas such as accounting, mapping, and engineering design. The multi-system approach creates many dilemmas because in most cases, the systems can not interface with each other. This leads to waste of expensive computer time and capabilities, manpower to maintain duplicate records in several systems, keeping personnel updated and trained on several systems and not being compatible with upcoming technology.

In 1981, Wisconsin Public Service Corporation (WPSC) identified this problem in the early stages. They saw the need for a single functional computer based facilities information system and committed 24 full-time people to develop it. Today, the completed system addresses all real property of the corporation including electric transmission and distribution facilities, gas transmission and distribution facilities, land, buildings, office furniture, and electric generation.

Throughout the development, one major objective was held; to support all requirements with one data base, while being at a level of detail to facilitate all engineering, operations, accounting functions, and mapping relating to facilities. Flexibility was also a very important parameter of that objective because of changing business needs, growth, regulation, and computer technology. This also allows other organizations such as water and sewer municipalities, campus facilities, government agencies, cable TV, and land based organizations to benefit from its application.

The WPSC facilities system operates on an IBM computer and is accessible by all authorized terminals, regardless of their prime designed use. Graphics access is through special workstation operating on the IBM "GPG" graphic software. Direct links have been formed between the facilities system and other corporate data systems such as the customer information system. This link allows such applications as applying customer usage in graphic circuit design analysis and graphic marketing surveys. Over 50 applications representing all areas of the corporation were analyzed in developing the data base. Close to 200 other applications have been identified and work is underway to complete them by year end 1986. The majority of applications have a generic structure so utilization is not just limited to the electric and gas utility industry. One such application is the gas network flow analysis which is easily adapted to water, sewer or any flowing medium. With this application, it would allow for example, a water municipality to graphically add an industrial customer and projected water needs anywhere in the water main system and view if it can handle the added load; and if not, what reinforcements are needed.

Seminar: National Cartographic Information Center (NCIC) Affiliate Network (Salon Monet)

8:30 - 10:15 a.m., Tuesday, November 12

Organizer: Walter S. Wagner
Chief of Eastern-National Cartographic Information Center
U.S. Geological Survey
536 National Center
Reston, VA 22092

Walter Wagner is presently employed by the U.S. Geological Survey as Chief of the Eastern-National Cartographic Information Center (E-NCIC) within the Eastern Mapping Center of the National Mapping Division. Immediately prior to that, he was employed as a Senior Research Specialist for the National

Cartographic Information Center Headquarters within the National Mapping Division. In addition to 12 years of employment with the Geological Survey, he has 10 years of experience as an Intelligence Research Specialist with the Central Intelligence Agency in Washington, D.C. He has a B.S. with a major in Geography from the University of Maryland and has done graduate work at the Nazarene Theological Seminary in Kansas City, MO. He is a member of NACIS and also holds membership with ASPRS, NGS, and AGS. He has written numerous newspaper articles about E-NCIC operations and has written articles on E-NCIC'S State affiliate and data acquisition programs as well as being the author of E-NCIC's semi-annual newsletters. His interests are in the fields of Cartography, Geography, and Remote Sensing, and he also has a high degree of interest in the Scientific Committee on Antarctic Research.

Paper Session: Concepts of Cartography (Salon Monet)

10:30 - 12:15 p.m., Tuesday, November 12

Chair: Jeffrey C. Patton, University of North Carolina at Greensboro

J.M. Blaut
Professor of Geography
University of Illinois at Chicago
Chicago, IL 60680

NOTES TOWARD A GENERAL THEORY OF MAPPING BEHAVIOR

Mapping behavior may be as primitive as linguistic behavior in ontogenetic development, and both may be rooted in a common process: the interpersonal communication of meaningful signs in a structured (grammatical) way, in time-space (spoken language, etc.) and space-time (written language, maps, etc.). To the extent that there is such commonality, we should be able to apply map-learning insights and techniques to linguistic learning and vice versa, and we should be able to advance the study of ethno-cartography. Research on the untaught mapping abilities of young children (aged three to six) in several cultures provides evidence to support the idea of commonality between mapping competence and linguistic competence, mapping behavior and language behavior.

Denis Wood
The School of Design
North Carolina State University
Box 7701
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Denis Wood, geographer (Clark University, MA 1971; PHD 1973), teaches environmental psychology to designers at The School of Design, North Carolina State University. His cartographic interests revolve around its history, current design practice and the whole issue of "mental maps". He's pretty widely published in all these areas, and is currently at work on a full-dress atlas of the neighborhood he lives in. He's a member of the AAG and ACSM.

A BUBBLE GUM WORLD The World View of Puerto Rican Children

Columbus's 1493 "discovery" of what would later come to be called Puerto Rico was one of an armada of actions sailing toward a radically restructured world

view for European savants. Although it was to even more radically restructure the history, economy and population composition of those who would come to call themselves Puerto Ricans, it seems to have had a less dramatic impact on their view of the earth. For though all Puerto Rican school children are taught that the island was "discovered" by Columbus who thereby proved the world was round, not only does their world view not embrace a spherical globe, it does not even seem to be usefully cast in the flat-round dichotomy.

Or, so it would seem from an analysis of the world view of a couple of hundred children living in the central highlands of Puerto Rico in 1970. This is especially interesting in light of their near bilingualism; literacy; access to and utilization of radio, TV, movies, books, magazines and newspapers; and their extensive travel, if only from Puerto Rico to such mainland cities as Boston and New York. Some of these kids have traveled further than Columbus ever dreamed of; together they are positively cosmopolitan. Yet this experience is not "mapped"--as conventional wisdom would have it--onto an equally "sophisticated" surface (a globe, for example); but rather onto an intuitively satisfying surface more closely approximately well chewed bubble gum, capable of being stretched at need, but ever ready to snap back into a dense and sticky mass. It is a view of the earth that has the distinct advantage of comporting with the sociogeographic structure of the Puerto Rican family.

The paper details the foundations for these assertions, while attempting to unfold the complex dynamics of a view of the earth undergoing rapid and simultaneous onto-, phyllo-, and ethnogenetic evolution.

Josefina Ostuni
Department de Geografía
Universidad Nacional de Cuyo
Mendoza, Argentina

Professional degree: Profesora de enseñanza, secundaria, normal y especial en Historia y Geografía, Universidad Nacional de Cuyo.

Current position: Profesora de Introducción a la Geografía. Profesora de Técnicas de estudio y trabajo en Geografía regional. Facultad de Filosofía y Letras, Universidad Nacional de Cuyo, MENDOZA.

Achievements in cartography: Invitada para exponer "La representación cartográfica de los datos demográficos" en el Primer Seminario Sudamericano de Cartografía temática, organizado por I.G.M. y por I.P.G.H., realizada en Buenos Aires, 1978. "Técnicas en Geografía", Mendoza, Edit. Inca, 1983, en colaboración. Esta obra obtuvo el premio Carlos María BIEDMA, otorgado por la Sociedad Argentina de Estudios Geográficos, GAEA. "La expresión gráfica en la enseñanza y en la investigación", en Boletín de Estudios Geográficos, n° 78, Mendoza, 1981, en colaboración.

Professional organization: Miembro de la Sociedad Argentina de Estudios Geográficos, GAEA.

MAXIMIZACIÓN DE LA RECEPTIVIDAD DEL MENSAJE CARTOGRAFICO

La necesidad de lograr el máximo de eficiencia en la lectura de una carta incentivó la reflexión sobre cómo debía enfocarse. La elaboración de esta técnica apunta a desarrollar en el destinatario una mejor receptividad del mensaje contenido en el soporte cartográfico.

Los distintos pasos que abarca la lectura: localización, descripción y comparación, conducen a la regionalización o clasificación espacial que expresa las modalidades adquiridas por el espacio en relación con el fenómeno estudiado. La esquematización

que se obtiene de la realidad, lograda por eliminación de lo accidental, permite alcanzar uno de los objetivos de la Geografía: descubrir el orden que subyace en la distribución del fenómeno analizado y con ello la delimitación de estructuras espaciales que ayudan a encontrar problemas que orientan la formulación de explicaciones.

A través de este procedimiento, el alumno logra una mayor comprensión y por lo tanto un mejor aprovechamiento de la carta, entendida como documento o como resultado de una elaboración. Esta forma de lectura, en cualquiera de los niveles de enseñanza, permite el desarrollo de una observación aguda y de una actitud crítica, y favorece además la organización creativa de la explicación. De este modo, los dos términos del proceso enseñanza-aprendizaje, alumno y profesor, se interrelacionan por medio de un método de lectura que constituye la fuerza dinamizante del desarrollo de la clase de geografía en la cual el mapa no es un recurso agregado sino un elemento que se integra a la actividad didáctica, acrecentando el interés del alumno y haciendo realidad su participación activa. En síntesis, se dota al alumno de un medio que le permite reemplazar esquemas estereotipados por otros más creativos.

MAXIMIZATION OF RECEPTIVITY FROM THE CARTOGRAPHIC MESSAGE

The need to obtain the maximum efficiency in map reading motivated the research on which this paper reports. The discussed technique develops in the reader a greater receptivity to a map's intended message.

The steps involved in map reading--localization, description, and comparison--lead to a spatial regionalization which expresses the modalities of the environment in relation to the studied phenomenon. The abstraction of reality, achieved by suppressing selected information, allows the reader to realize one of the objectives of geography: the discovery of spatial order that underlies the distribution being studied and the identification of spatial structures, which are of value in the formulation of problems and subsequent explanations.

This procedure enables the reader to achieve a more thorough understanding, and thus, to take greater advantage of the map, whether it is used as a document or as the result of an elaboration. This mode of map reading, whatever the instructional level, permits the development of understanding and critical awareness, and favors creative explanations. Consequently, both ends of the teaching-learning process, the student and the instructor, achieve a better working relationship through the reading method. This approach constitutes the dynamic strength of a geography class in which the map is not an aggregated resource, but an integrated element of the didactic process, thereby increasing the interest of the student and his or her active participation. In brief, the student is given the means by which to replace stereotypical schemes with other more creative ones.

Paper Session: Map Production (Salon Matisse)

10:30 - 12:15 p.m., Tuesday, November 12

Mark Wiljanen
Office of the Wisconsin State Cartographer
144 Science Hall, University of Wisconsin
Madison, WI 53706

IMPLEMENTING A MICROCOMPUTER MAPPING SYSTEM

The appearance of sophisticated, commercially available graphics packages for the IBM PC XT has just recently made microcomputer cartography a reality, bringing microcomputer-based map production within the budgetary constraints of small

businesses and governmental agencies. Moderately detailed, full color map production can now be undertaken on the general purpose microcomputers which are widely used to handle routine office tasks in small businesses and governmental agencies. As an experiment in limited cost, low overhead, computer cartography using a general purpose microcomputer, the Wisconsin State Cartographer's Office has assembled and implemented a mapping system composed of hardware and software from a variety of commercial sources. Our experience with this microcomputer mapping system will be reviewed with particular attention to design considerations, commercial alternatives, cost factors, implementation problems, evaluation of cartographic capabilities and map quality, and lessons learned in hindsight. Examples of maps produced on the system will be shown.

Ruth Anderson Rowles
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University of Kentucky
Lexington, KY 40506-0027

(Biographical notes are found with Sunday 7:00 p.m. Opening Session)

USING A DECISION MAKING MODEL FOR ATLAS CONSTRUCTION

In map making there are always a number of design and production decisions to be made by the cartographer. My current project, The Historical Atlas of Political Party Representation in the United States Congress: 1789-1987, is no exception. The decisions involve three areas that are interdependent, design, construction, and printing, and the result of those decisions in terms of cost may determine whether or not the atlas becomes a finished product. In this case, Guided Design, an educational model for teaching decision-making, was used to develop a plan for the map construction of the political party atlas. Guided Design was chosen as a decision-making model for its simplicity and flexibility in approaching the open-ended nature of real-world problems, where few problems have a single solution and where many different opinions and values must be considered and reconciled in the decision-making process. This paper will focus on the decision-making role of the cartographer in reaching the goal of a finished atlas and her interaction with the other actors; the atlas author, cartographic subcontractor or draftsmen, the publisher, and the map user. Guided Design was found to be a useful model for structuring decision-making in this particular mapping situation, and warrants further investigation for use in the classroom and work place.

Scott Carter
Vice President Business Operations
Micro Aero Charts, Inc.
5078 List Drive
Colorado Springs, CO 80919-3316

Scott Carter received a B.S. in Finance from the University of Illinois and M.B.A. and C.P.A. degrees from Purdue University. As Vice-President Business Operations for Micro Aero Charts, Inc., he is promoting color microfiche for map librarians and map users. He is a member of the Association for Information and Information Management and the Association of Records Managers and Administrators.

INNOVATION COMES TO MAP DISSEMINATION, STORAGE, AND PRESERVATION (COLOR MICROCARTOGRAPHY)

Productivity tools to aid cartographers with the job of creating maps are abundant. But what about the end users of this map data? The service personnel in the field, the governmental and commercial users in offices, the researchers in libraries and archives, classroom instructors, and others? For the most part, these end users are still limited to using and storing full-size paper maps like they have been for decades.

Microcartography is a method of photographically reducing maps onto film so they weigh 1/100th the amount of paper and take up 1/200th the amount of space. Maps on black and white microfiche have been unsatisfactory because most the maps are color.

Recent dramatic improvements in color film resolution, color optics and color film stability have made COLOR microcartography a high quality, accurate replacement for traditional full-size paper maps. On color microfiche, the maps are far more durable and compact for field use by utility technicians and navigators. Collation and distribution of maps is simplified and completed at a fraction of the cost using color microfiche. Newly developed handheld and portable readers make reading the fiche maps convenient.

The National Archives has determined that color microfiche are the best archival medium for color maps. They last 100 years around the office, over 500 years if stored properly, are always human readable and effectively solve the problem of sharing historical maps.

A recent analysis was compiled for map libraries comparing a library with full-size maps to one with color microfiche. The conclusion indicates the color microfiche based map library could operate at 1/4th the cost and give the map users much better service. The color microfiche maps could be filed and retrieved in 1/10th the time of the full-size documents, the fiche can be projected for class use and copied easier.

Exhibits Open (Salon Matisse)

1:00 - 5:00 p.m., Tuesday, November 12

Paper Session: Satellite Applications (Salon Monet)

1:45 - 2:45 p.m., Tuesday, November 12

Chair: Paul D. McDermott, Montgomery College

Larry E. Reed

Certified Photogrammetrist, ASP

Manager, Image Processing Facility Operations

Environmental Research Institute of Michigan

Ann Arbor, MI 48107

Larry Reed received his BBA from Eastern Michigan University and received his photogrammetrist certification from the American Society of Photogrammetry. He has been active in development of computer processing techniques in remote sensing for the U.S. Air Force, Bendix Aerospace, and ERIM for more than twenty years. He has authored more than twenty papers in the uses of remote sensing technology and participated in remote sensing research projects in many countries. His current position as Image Processing Facility Manager requires extensive experience in melding together both photographic and digital techniques for remote sensing data processing.

Robert H. Rogers, PhD
Applications Scientist
Environmental Research Institute of Michigan
Ann Arbor, MI 48107

Dr. Rogers is a native of Fort Worth, Texas. He received his BS degree in Radio Engineering from Tri-State College, his MS degree in Engineering from Southern Methodist University, and his PhD degree in Electrical Engineering from Michigan State University. He has been active in the development and applications of remote sensing systems at Bendix and ERIM for 20 years and authored more than 40 papers on the applications of remote sensing. Dr. Rogers has been an active member of the American Society of Photogrammetry (ASP) for more than 14 years, serving the Eastern Great Lakes Region (EGLR) as Vice-President (1979), President (1980), and member of the Board of Directors (1981 and 1986).

PLANIMETRIC MAPPING AIDED BY SATELLITE TECHNOLOGY

There are many areas of the world that are poorly mapped or have no maps at all at scales larger than 1:100,000 or so. These areas also tend to be in the so-called developing countries, where there is an urgent need for accurate, up-to-date maps at scales of 1:200,000 or larger for resources development planning, soils mapping, geological exploration and exploitation, agricultural planning, etc. Thus, areas which have the most need for accurate, up-to-date maps are also the areas least likely to have such maps.

Data from the Landsat series of earth observation satellites have been increasing in popularity as a source of information for the generation of small scale maps. The usual use to which the data is put is generation of thematic information through either manual or computer assisted interpretation of satellite imagery, with the derived information transferred by hand or machine to existing or conventionally derived base maps. The Landsat images themselves are seldom used as maps. There have been a number of reasons for this. First, the usual Landsat images have not been generated in conformance with a conventionally useful map projection. Secondly, although techniques exist for reprocessing Landsat data to generate maplike products from Landsat, such techniques usually require the existence of conventional maps of the area in question to provide the geometric control for generation of the maplike products. Third, it could not be demonstrated that maplike products derived from Landsat had acceptable accuracies for use as maps at the scales in question.

Over the last several years, ERIM has developed Landsat geometric correction and digital mosaicking techniques which provide medium to small scale planimetric maps in accepted formats and projections. Given the exact latitude, longitude and elevation of a small (5-10) number of ground control points, these maps can be generated to provide the digital and geometric accuracies acceptable for maps at 1:250,000 scale or smaller with MSS data and 1:100,000 scale or smaller using TM data. The maps can be generated in any of ten commonly used projections such as Universal Transverse Mercator (UTM), Lambert Conformal Conic, etc.

The paper reviews the mapping cycle and techniques and illustrates their application to producing a series of 112 1:250,000 scale $1^{\circ} \times 1.5^{\circ}$ quadrangle maps for the country of Saudi Arabia.

Nadine Binger
SPOT Image Corporation
1897 Preston White Drive
Reston, VA 22091

THE SPOT REMOTE SENSING SYSTEM: IMAGERY FOR CARTOGRAPHY

General Paper Session: (Salon Matisse)

1:45 - 2:45 p.m., Tuesday, November 12

Chair: Christine Reinhard, Wisconsin State Cartographer's Office

Walter S. Wagner

Chief of Eastern-National Cartographic Information Center

U.S. Geological Survey

36 National Center

Reston, VA 22092

(Biographical notes are found with Tuesday 8:30 a.m. Seminar)

LOOKING FOR AN OLD MAP

Many people want maps that show an area of the United States as it existed years ago. These are called historical maps, and there are two kinds. Most commonly, historical maps are special maps, recently published, prepared by commercial firms to show such features as battlefields, military routes, or the paths taken by famous travelers. Typically, these maps are for sale to tourists at the site of the historical event. The other kind of historical map is the truly old map, one compiled by a surveyor or cartographer many years ago. Lewis and Clarke, for example, made maps of their journeys into the Northwest Territories in 1803-1806 and originals of some of those maps still exist.

Because there are many different kinds of old maps, stored in many different collections, they are difficult to research. However, with a little imagination and a lot of perseverance, you can probably find just the map you want. There are many sources to investigate, ranging from historical societies to the cartographic offices of your State or local government to the National Archives, the Library of Congress, and the U.S. Geological Survey. The information and directories for these different types of map collections are described in more detail.

Once you have decided which source to investigate more fully, you are ready to begin inquiries. Your letter of inquiry should give as much information as possible--including the geographic coordinates of the area. You should give the State, county, and town or township; the publisher, year and place of publication; and edition of the map or volume of maps, if possible. You also should specify the kind of information that you want on the map, and the approximate size. The map researcher then will be able to tell you if that particular map--or one like it--exists in that particular collection, whether copies are available, or if photographic reproductions can be obtained.

Robert Burtch

Assistant Professor

Surveying and Mapping Program

Ferris State College

Big Rapids, MI 49307

Robert Burtch is an Assistant Professor in the Surveying and Mapping Program at Ferris State College, Big Rapids, Michigan. For six years he has been teaching basic surveying, photogrammetry and cartography. He holds a BS degree in Surveying from Ferris and a MS degree in Geodetic Science from The Ohio State University. His present research interests are in the cadastre/land information systems area and he is presently serving on the IAAO Mapping Task Force. Mr. Burtch is a member of a number of professional organizations including ACSM, ASPRS, Land Information Institute, Urban and Regional Information Systems Association, just to mention a few.

URBAN MAPPING SYSTEMS AND THE CADASTRE

In the development of a multipurpose land information system it is imperative that an accurate base map exist. Several approaches to mapping are available: photographic, line and digital. Ideally, the base map should be tied to a geodetic control framework and should contain enough planimetric information to aid in the location of the land parcel for the cadastral overlay. Mapping systems used in the U.S. will be reviewed. These will include, in part, information on recent initiatives in Wyandotte County, Lane County and Houston's METROCOM.

Annual Business Meeting (Salon Monet)

3:00 - 4:45 p.m., Tuesday, November 12

Cash Bar (Gallerie Cezanne)

6:00 7:00 p.m., Tuesday, November 12

Annual Banquet (Salon Monet)

7:00 - 9:00 p.m., Tuesday, November 12

BANQUET ADDRESS: HISTORICAL DEVELOPMENT OF COMMERCIAL CARTOGRAPHY IN CHICAGO

Michael P. Conzen
Department of Geography
University of Chicago
5828 South University Avenue
Chicago, IL 60637-1583

Reception and Cash Bar (Holidome)

9:00 p.m., Tuesday, November 12

WEDNESDAY, NOVEMBER 13, 1985

Exhibits Open (Salon Renoir)

8:30 a.m. - Noon, Wednesday, November 13

Paper Session: Map Literacy: (Salon Monet)

8:30 - 10:15 a.m., Wednesday, November 13

Chair: Alan M. MacEachren, Pennsylvania State University

Paul S. Anderson
Department of Geography-Geology
Illinois State University
Normal, IL 61761

DISTANCE EDUCATION FOR TEACHING MAP USE SKILLS: AN INTRODUCTION

Distance education refers to learning situations in which the teacher and student(s) do not have regular face-to-face meetings. Academically rigorous distance education for map use and related studies have been conducted at most grade levels. Examples from Australian grade schools, British high schools and diverse universities are given. Specifically described is the author's "Fundamentals for Photointerpretation" course taught in Brazil on an extremely low budget. Also discussed is a proposed in-service teacher up-dating course on map use in American schools. It is directed mainly toward social science teachers who could better use maps in their existing courses. Distance education is the single most powerful, cost effective method to reach large numbers of learners with high quality instruction in a minimum of time. An energetic, coordinated program of distance education for map use can have far-reaching impact to improve the teaching and usage of geographic and cartographic information.

Makram A. Murad-Al-Shaikh
Assistant Professor of Civil Engineering and Cartography
at the Institute of Technology
Baghdad, Iraq

MAP LITERACY IN DEVELOPING COUNTRIES

Map literacy has suffered a lot in developing countries. While they are trying their best to cope with modern cartographic trends, yet, such countries are undergoing slow progress in cartography and cartographic education. This is due to several local factors hindering development in this vital field and causing a set back in map literacy. This paper identifies and discusses such factors and their related problems, generalizing them as possible to fit most of the developing countries; and trying to propose a few solutions for improvement.

Dr. Dilip Kumar Mitra
 Assistant Librarian
 National Library of India
 Belvedere, Calcutta 700027

Dr. Mitra is Head of the Map Division, National Library of India, Calcutta, and has a Doctorate in Geography and a degree in Library Science from the University of Calcutta. He has published and presented papers in the International Geographical Congress, Moscow (1976), 10th International Conference of I.C.A., Tokyo (1980), 12th International Conference of I.C.A., Perth (1984) and has several articles on map librarianship in Indian Journals.

MAP LITERACY: A PROBLEM FOR INDIA

Geography teaching in Indian schools was introduced in the last century of which the study of maps, had been an integral part. However, at the stage of University education, geography was introduced much later in this country. In the sister science of geology, the use of maps had become common. In spite of the passage of time, still map literacy is confined to the educational institutions and specific surveys under the auspices of the Indian Government, when general literacy is very low (36.17%), the map literacy is obviously much lower.

The map literacy rate can be raised by bringing the subject of map reading into the curriculum even at the primary level in its simplest form. The consciousness of the relevance of maps, thus inculcated can be fostered at greater depths at higher academic stages. The role of mass media for exploiting maps in order to have greater appreciation of geographical and historical facts has to be recognized and used. The public library system at the district and village levels can hold 'map week', once a year to draw the attention of public for the potential uses of maps and their relevance to their life in their areas.

The map literacy needs to be extended to the grass roots level, i.e. in the rural areas where the village development offices, community centres, adult education centres and rural libraries exist. The maps of the area covered by the village need to be introduced in colours for easy comprehension of the semi-literate, rural people. These maps may contain details such as the agriculture produce of the area, roads, water sources, improved agricultural seed centres, etc.

The publication of maps should be done in a diversified manner, catering to all levels of users by the agencies, both governmental and private. This will help in great deal of the growth of map literacy in India.

Barbara Adele Fine
 The Map Store, Inc.
 1636 Eye Street, N.W.
 Washington, D.C. 20006

Barbara Adele Fine is President of the Map Store, Inc., Washington, DC, President of the International Map Dealers Association, and a Director of the Capital Area Map Alliance. Fine is a member of the National Association of Women Business Owners, and the American Booksellers Association.

HOW TO CREATE A TWENTIETH CENTURY COLUMBUS

Workshop: Laboratory Management for University Staff Cartographers (Salon Matisse)

8:30 - 10:15 a.m., Wednesday, November 13

Organizer: Frank Drago
 Department of Geography
 Georgia State University
 University Plaza
 Atlanta, GA 30303

Frank Drago is the Director of the Georgia State University Cartographic Laboratory. He received his M.A. degree from Georgia State in 1975 and B.A. from the University of Connecticut. He has done maps for several books and magazines, as well as numerous commercial and government projects.

A panel of discussants will share their cartography laboratory managerial experience in this informal session. Some of the topics to be covered include how various cartographic laboratories are organized administratively, their physical layout including types of equipment, billing procedures, types of work done within the university and outside the university and what limits are imposed on their operations, division of labor, and salaries. Open discussion among the panelists and attendees is preferred.

Panel:

James R. Anderson, Jr.
 Florida Resources and Environmental Analysis Center
 The Florida State University
 Tallahassee, FL 32306

Onno Brouwer
 Head of Design and Construction
 Cartographic Laboratory
 Department of Geography
 University of Wisconsin
 Madison, WI 53706

Donna Schenstrom
 Staff Cartographer
 Department of Geography
 University of Wisconsin-Milwaukee
 Milwaukee, WI 53201

Jefferson L. Simpson
 Lecturer and Staff Cartographer
 Department of Geography and Earth Sciences
 University of North Carolina at Charlotte
 UNCC Station
 Charlotte, NC 28223

Workshop: Employment Opportunities with the U.S. Defense Mapping Agency (Salon Boudin)
8:30 - 10:15 a.m., Wednesday, November 13

DMA continually seeks out college graduates with majors in the fields of Cartography, Physical Geography, Geology, Mathematics, Computer Sciences, and related Physical Sciences. The Agency employs about 9,000 civilians, primarily in the Washington, D.C. Area (DMA Hydrographic/Topographic Center, and DMA Office of Distribution Services, Brookmont, Maryland, and Defense Mapping School, Fort Belvoir, Virginia), and in St. Louis, Missouri (DMA Aerospace Center). DMA organizations employing smaller numbers of civilians are located in San Antonio, Texas; Kansas City, Missouri; Louisville, Kentucky; Providence, Rhode Island; Philadelphia, Pennsylvania; Clearfield, Utah; Hawaii; South and Central America; and other continental United States and overseas locations. The qualification requirements, including the types of work performed, are discussed in brochures, which may be obtained from Civilian Personnel Division, Defense Mapping Agency, Building 56, U.S. Naval Observatory, Washington, D.C. 20305-3000. In order to receive broad geographic consideration for positions in DMA, students should be advised to submit application materials to:

Defense Mapping Agency Aerospace Center, Personnel Office, Staffing Division (POR), 3200 South Second Street, St. Louis, Missouri 63118, (telephone: 314-265-4460), for Cartographer, Physical Scientist, and Geodesist positions west of the Mississippi River, and Aeronautical Information Specialist, nationwide.

Defense Mapping Agency Hydrographic/Topographic Center, Personnel Office, Recruitment and Staffing Division (POR), 6500 Brookes Lane, Washington, D.C. 20315, (telephone: 202-227-2050), for Cartographer, Physical Scientist, and Geodesist positions east of the Mississippi River, and Marine Information Specialist, nationwide.

These Centers have established geographic lists of eligibles for our primary occupations and for possible referral to other DMA offices as vacancies occur. Students may also contact these Centers to discuss employment. However, they should submit the application material prior to any visit. These Centers also conduct tours for interested students and faculty members. To arrange for a tour of these facilities, you should contact the Component Public Affairs Office.

Seminar: Curriculum Development in Cartography: The Chicago Neighborhood History Project (Salon Van Gogh)

8:30 - 10:15 a.m., Wednesday, November 13

Gerald A. Danzer
Professor of History
The University of Illinois at Chicago
Chicago, ILL 60680

Gerald A. Danzer is a Professor of History at the University of Illinois at Chicago. He is interested in the use of maps as historical documents and in the teaching of map-reading skills in the schools and colleges. Recently he served as the director of the Chicago Neighborhood History Project, a five-year program funded by the National Endowment for the Humanities. Among his publications are the Scott, Foresman World Atlas, Land and People, and essays on early Chicago maps and George F. Cram, the map publisher.

CURRICULUM DEVELOPMENT IN CARTOGRAPHY: THE CHICAGO NEIGHBORHOOD HISTORY PROJECT

The Chicago Neighborhood History Project is organized around the basic themes of people, space, and time. Much of the spatial analysis centers on the interpretation of old maps. Surprisingly few materials are available to help high school students develop advanced map reading skills. This paper will focus on the materials developed by the project to help students read the celebrated Hull House Maps of 1893. These maps provide an early example of the mapping of ethnicity in an American city. They use a fire insurance map as their base, further increasing their value as historical sources. A sequence of four activities and student handouts has been produced by the project to help students understand and interpret these thematic maps:

1. How to Read Old Maps
2. A Map Comes to Life
3. Reading the Ethnicity Data
4. Reading the Base Map: A Neighborhood in Transition

Participants in this session will receive full-color reproductions of the Hull House maps and copies of the student activities. Comment by the audience will be welcome.

Paper Session: Geographic Information Systems (Salon Monet)

10:30 - 12:15 p.m., Wednesday, November 13

Chair: Mark Steuer, Greenbay Planning Commission

Patrick H. McHaffie
Kentucky Geological Survey
National Cartographic Information Center
311 Breckinridge Hall
University of Kentucky
Lexington, KY 40506-0056

A HORIZONTAL GEODETIC CONTROL INFORMATION SYSTEM FOR KENTUCKY

The Kentucky Geological Survey (KGS) has been a state affiliate of the National Cartographic Information Center (NCIC) since 1980. As part of affiliate office operations, KGS-NCIC provides geodetic-control information and assists Kentucky map users in locating and applying vertical and horizontal control markers to mapping projects. The National Geodetic Survey maintains over 2300 high-order, horizontal-control positions across Kentucky. KGS-NCIC has implemented an automated information system to assist users of horizontal control in locating appropriate markers in their areas. The automated system runs on a VAX 11-750 mini-computer and includes a novel routine for display of marker locations on a standard VT-100 compatible terminal. The system allows interactive input, retrieval, and display of data as well as the production of custom reports. Already the system has shown itself to be very useful in the quick search and display of graphic information. Work is now progressing on the addition of U.S. Geological Survey transit-traverse control markers to the system.

J. Gary Reed
Executive Vice President
and

Robert F. Austin, Ph.D.
Senior Staff Scientist

Chicago Aerial Survey, Inc.
2140 Wolf Road
Des Plaines, ILL 60018

GEOGRAPHIC DATA BASES AND UTILITY MAPPING

Geographic Information Systems are gaining wide acceptance among utility companies which have the task of managing facilities and items of plant distributed over large geographic areas. The development of geographic information systems has paralleled the development of data base technology generally. The construction of digital maps and data bases for public utilities proceeds in two phases. The first phase -- land base construction -- is susceptible to automated data capture in some cases, while in other situations traditional photogrammetric methods play an important role. The second phase -- data base construction -- is a customized process, highly dependent on the applications of the utility companies. This paper reviews the current status of several methods of geographic data base construction for public utilities. Specific examples of CAS projects are used to demonstrate the various approaches.

Robert L. Vertrees
School of Natural Resources
The Ohio State University
2021 Coffey Road
Columbus, OH 43210

Dr. Robert L. Vertrees is an Assistant Professor in the School of Natural Resources of The Ohio State University, where he teaches and conducts research in the field of Land and Water Resources Policy and Planning. He graduated from Purdue University in 1961, where his undergraduate major was Conservation Education. He received his M.S. and Ph.D. degrees from Michigan State University in 1967 and 1974, respectively, where he majored in Resource Development with an emphasis on Resource Economics and Policy. At Ohio State, Dr. Vertrees has applied the Ohio Capability Analysis Program, a computerized natural resources information system operated by the Ohio Department of Natural Resources, to the analysis of the impacts upon land use of public policies that reduce taxes on farmland and forest land. He also teaches a course in natural resources information systems. Dr. Vertrees is a member of the American Water Resources Association, the Soil Conservation Society of America, and the Water Management Association of Ohio. In 1984, he was honored as the Member of the Year of the Water Management Association of Ohio.

THE IMPORTANCE OF CLASSIFYING USERS AND APPLICATIONS OF STATE GEOGRAPHIC INFORMATION SYSTEMS, WITH OHIO AS A CASE STUDY

In 1983, 22 states operated a computer-based natural resources information system (CNRIS) or had one under development, 3 were considering plans for a CNRIS, and 7 once operated systems that no longer existed. This paper is addressed to the political and financial viability of these important state geographic information systems, with the Ohio Capability Analysis Program (OCAP) being focussed upon as a case study. Near the outset the literature is reviewed to document the political

and financial environment that has faced many state governments during the past decade. It has involved, among other things, inflation, taxpayer "revolts", agency spending and personnel ceilings, reductions in state appropriations in many program areas, the termination of categorical federal planning grants, and the need to rely more upon user charges. Seen in the light of these challenges, well structured, scientific classifications of state CNRIS users and applications are presented as being important when providing adequate information about system benefits to lawmakers and others who decide the fate of the systems and when structuring studies about the response of users to changes in revenue mechanisms, such as higher user charges. In addition, such classifications are important to the design of user surveys and to the establishment of information networks among system users. With these purposes in mind, the author has worked with administrators of OCAP to prepare classifications of OCAP users and applications. These classifications are presented herein along with basic descriptions of OCAP and of the principles of scientific classification. This paper is concluded with recommendations pertaining to: (1) the classification of users and applications of other state CNRIS, (2) the establishment of an information exchange network among state CNRIS administrators, (3) the inclusion of improved questions about users, applications, and means of finance in the periodic surveys of state CNRIS administrators, and (4) the inclusion of courses in public finance and policy analysis in college and university curricula taken by future administrators and operators of state CNRIS.

Walter J. Belokon, Resource Analyst
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Geographic Information Systems Division
3825 Ridgewood Road
Jackson, MS 39205

THE DEVELOPMENT OF A COMPREHENSIVE OUTDOOR RECREATION PLAN FOR MISSISSIPPI FROM AN AUTOMATED STATEWIDE GEOGRAPHIC INFORMATION SYSTEM

The Mississippi Automated Resource Information System (MARIS) maintains an automated statewide geographic information system (GIS) for Mississippi. MARIS was recently asked to use its GIS data and modeling resources to assist in the development of a statewide comprehensive outdoor recreation plan (SCORP). Data concerning recreation supply and demand were collected, mapped, and entered into the MARIS GIS. With these data available, geographic models were developed that permitted staff members responsible for the SCORP to assess various aspects of recreation in Mississippi, including:

1. the spatial distribution of recreational sites by type and available facilities;
2. the geographic distribution of the demand for various types of facilities and activities;
3. determination of areas where the demand for recreation is being met and those in which it is not; and
4. determine areas most in need of grant funds to fulfill unmet recreation demand.

Centers for Cartographic Education (Salon Boudin and Salon Van Gogh)

10:30 - 12:15 p.m., Wednesday, November 13

Chair: John Sutherland, University of Georgia

Terry Slocum
Department of Geography
University of Kansas
Lawrence, KS 66045

CARTOGRAPHY WITHIN THE GEOGRAPHY CURRICULUM (B.A., M.A., PH.D.) AT THE UNIVERSITY OF KANSAS

Ronald H.W. Linton
Department of Geography
University of Maryland
College Park, MD 20472

THE CURRICULUM FOR THE DUAL MASTERS DEGREE IN GEOGRAPHY AND LIBRARY SCIENCE AT THE UNIVERSITY OF MARYLAND

Robert Burtch
Assistant Professor
Surveying and Mapping Program
Ferris State College
Big Rapids, MI 49307

MAPPING EDUCATION AT FERRIS STATE COLLEGE

For over twenty-five years, Ferris State College has been involved in surveying and mapping education. At the present time, three different avenues of study are available within the Surveying and Mapping Program area. The two technician level courses of study lead to an Associate Degree in Aerial Mapping Technology and Surveying Technology. At the professional level, we have a BS degree in Surveying. Although all three programs have similarities, they are each different. The BS Surveying curriculum begins with a foundation of Mathematics and Physics to introduce higher level surveying courses including data adjustment, map projections, analytical photogrammetry, geodesy, etc. Both the Associate degree programs provide technical training in their particular topic of interest. Emphasis is placed on providing technical competency through extensive laboratory training. The BS Surveying Program is ABET/RAC accredited and fulfills part of the requirements of the Michigan Surveying licensing board for licensure as a land surveyor within the state.

LUNCHEON ADDRESS: CARTOGRAPHY AND MAPS IN THE DEPARTMENT OF STATE: THEIR STATUS,
USE, AND DISUSE (Salon Matisse)

12:30 - 2:00 p.m., Wednesday, November 13

Sandra Shaw
Chief of Cartography Division
U. S. Department of State
2201 C State NW
Washington, DC 20520

NACIS V CONFERENCE COMMITTEE

Ruth Anderson Rowles Conference and Program Director	University of Kentucky
Raymond M. Brod Local Arrangements Director	University of Illinois, Chicago Circle
Daniel M. Garnett Registration Director	NOAA/NOS
Howard J. Diamond Exhibits Director	NOAA/NOS
Christopher Baruth Program	University of Wisconsin-Milwaukee
Ronald M. Bolton Program	NOAA/NOS
Frank Drago Program	Georgia State University
Mary Fortney Local Arrangements	Northwestern University
Susan Nelson Exhibits	NOAA/NOS
Christine Reinhard Program	Wisconsin State Cartographer's Office
Marsha Selmer Local Arrangements	University of Illinois, Chicago Circle
John D. Stephens Program	University of Miami
Ellen White Program	Michigan State University