

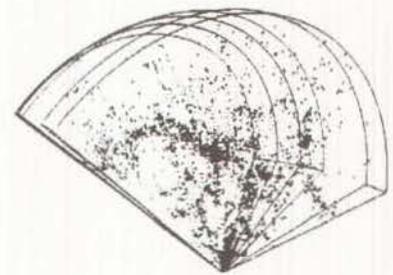
# cartographic perspectives

Number 4, Winter 1989-90

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## cartographic perspectives on the news



### MAPPING THE UNIVERSE

A recent article in the journal *Science* (November 17, 1989) reports on a very small scale mapping project that is generating questions which may fundamentally challenge astronomers' conception of the structure of the universe. After logging some 1000 hours of telescope time surveying the positions of 4000 galaxies, astronomers Margaret Geller and John Huchra of the Harvard-Smithsonian Center for Astrophysics (CfA) announced "We have now mapped about  $10^5$  of the volume of the visible universe — about the fraction of the earth covered by the state of Rhode Island."

The CfA survey represents an unprecedented opportunity for astronomers to visualize structures in the distribution of galaxies.

A report in the weekly newsmagazine *Time* (November 27, 1989) appraises Geller's and Huchra's preliminary findings as "startling." As correspondent Michael Lemonick writes, "Far from being a uniformly distributed collection of galaxies . . . the cosmos seems to be organized into immense bubbles, each of them about 150 million light-years across. The walls of the bubbles are galaxies, and the interiors appear to be virtually empty."

One problem confounding interpretation of the new map is that the size of the largest detectable structures is limited by the extent of the survey. One remarkable feature — a sheet of galaxies at least 200 million light years wide, 500 million long and perhaps 15 million thick — has been dubbed the "Great Wall." Geller and Huchra tentatively hypothesize that the bubbles or voids are fundamental structures, and that the Great Wall "could well be made up by the connection of several surfaces that surround (or nearly surround) adjacent voids." They go on to stress, however, that "Until all of the surveys can be carefully compared, it will be difficult to judge whether the apparent inhomogeneity is caused by variations in the sampling of the galaxy distribution or by a genuine range in structure." Even so, Jeremiah Ostriker, chairperson of Princeton's astrophysics department, observes in *Time* that "There is no theory using conventional physics that can explain these structures without causing other inconsistencies."

The new map is a three-dimensional representation of the universe in "redshift space." Two angular coordinates of the positions in the sky of more than 30,000 galaxies were catalogued by Fritz Zwicky and associates in the 1960s by visual analysis of some 1000 photographic plates recorded at the Palomar Observatory. The

third dimension represents the distance of galaxies from Earth, which is most accurately approximated by the velocities at which galaxies in our expanding universe are receding from the earth. The "apparent recession velocity" or redshift of a galaxy is associated with a shift toward longer (red) wavelengths in certain elements of the galaxy's light. Geller and Huchra credit recent advances in detector technology for making redshift-space mapping feasible.

The CfA survey will be of great importance to astrophysicists working to model the genesis of the universe. Geller and Huchra offer no estimate of how much of the universe the CfA survey will ultimately map, but even the very limited results reported in *Science* provide an invaluable observed distribution against which model outputs can be evaluated. As Ostriker points out, "These surveys test in the most acute way our conceptions of how structure developed in the universe, and for that reason they are possibly the most important studies in extragalactic physics now. This is an exciting time to be in the field."

#### GRAPHICS AT USA TODAY

With some 6.3 million daily readers, *USA Today* has the largest circulation of any newspaper in the U.S. Its success is in part attributable to its emphasis on information graphics, including maps, graphs and diagrams. The newspaper's colorful weather page has become an icon of contemporary print journalism and is imitated widely.

*USA Today's* graphics are remarkable not only for their frequency of occurrence and trendy designs, but especially for their timeliness. In September, *USA Today* tracked the approach of Hurricane Hugo toward the southeast coast of the U.S. with a daily series of informative maps and diagrams (Figure 1). In the

three days following the magnitude 7 earthquake that struck the San Francisco Bay area on Tuesday, October 17, 13 different descriptive maps and diagrams

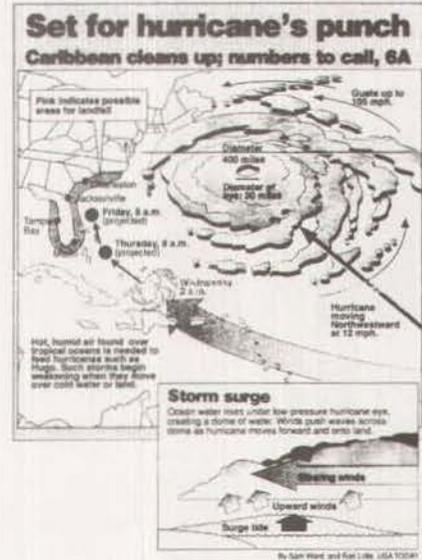


Figure 1. © 1989 USA Today, all rights reserved. 40 percent of original size.

appeared with stories on the disaster (Figure 2). In the latest edition of the paper's 'Graphics Handbook,' reporter Chris Fruitrich recounts the frantic efforts of the graphics department in the disaster's wake, concluding that "(i)n the end, deadlines were met, readers served and new weekday sales records shattered."

CP recently contacted *USA Today's* graphics department in order to learn about its production procedures. At *USA Today's* Washington DC editorial offices, information graphics are designed and produced by a team of 14 graphic artists equipped with Macintosh II workstations. Designer Jeff Dionise told CP that artists begin their day with a 'budget' assigned by graphics editor Richard Curtis. Typically, graphics must be researched, designed and rendered in one day, in time for that evening's satellite transmission 'window.' Textual continued on page 38

MINUTES OF THE BOARD MEETING,  
SUNDAY, OCTOBER 15, 1989  
Ann Arbor, Michigan

Greg Chu, David DiBiase, Fred Fryman, Patricia Gilmartin, Diana Rivera, Johnnie Sutherland, Juan Valdés, and Ellen White present.

Greg reported that the tentative cost of the conference is \$6854. Of that total, hotel cost account for approximately \$4291. As of October 15, approximately \$4500 in conference fees (excluding exhibit fees) have been received.

The board discussed problems with the conference accommodations — particularly reservation problems and the fact that beverages and food had disappeared from NACIS' hospitality room — but it was acknowledged that reviews of the hotel's service were generally favorable among attendees.

Reviews of the conference paper sessions were also largely favorable, board members agreed. Responses to the program evaluation questionnaire should be published in *CP*.

It was agreed that NACIS could do a lot better with regard to exhibits. Johnnie urged that coordinators not oversell the size of NACIS to potential exhibitors. Diana pointed out that it is important to recruit exhibitors as a source of conference revenue, but agreed that we should be upfront about the size of the conference. David pointed out the need to make more sophisticated audio/visual equipment available at future conferences.

The board agreed by a voice vote to reapply for non-profit status.

Diana reported on the Membership Committee's membership database project. Pat stressed the need for NACIS to invest in simpler, more easily transferable database software. Ellen made a motion that Sona Andrews and Greg Chu be authorized to purchase database software that is supported on both the MS-DOS and Macintosh platforms, such as Microsoft Excel. The motion carried by voice vote.

Juan wondered if the question of offering the membership list for sale ought to be submitted to the membership as a referendum. Greg raised the related question of what should be charged for the list, and whether some organizations should receive lists at no charge. Johnnie proposed that lists be sold at \$.50 per name. Diana suggested that the matter be discussed again at the February board meeting, informed with figures on what comparable organizations charge. Nancy Ryckman agreed in absentia to cull those figures from ACSM, AAG, CCA, and SLA. The tentative rate of \$.50 per head was approved for the interim.

Ron Bolton's impending resignation as Executive Director was discussed. It was pointed out that the Executive Director carries out NACIS' day-to-day business and correspondence, providing the organization with a permanent address and directing mail to officers. David suggested that Ron be asked to draw up a job description, and asked the board to consider authorizing a paid part-time Directorship. Greg argued that NACIS' funds are insufficient to support such a position, and that institutional support of the kind enjoyed from NOAA during Ron's tenure is critical. Diana agreed that Ron should assist in establishing criteria for selection of a new Executive Director. The issue will be raised again in February.

Diana next reported on the status of NACIS' various committees. Alan MacEachren will continue to chair the Publications committee. One additional member of the committee will be needed to replace Donna Schenstrom. The Inter-American Committee will be chaired by Jerry Thornton. The Tellers committee is currently vacant. As past president, Juan Valdés will chair the Nominations committee. Sona Karentz Andrews will chair the Membership committee.

The plan to establish a NACIS archive was discussed next. Greg asked whether paid archival services were really necessary. The matter was not resolved.

There ensued a discussion on NACIS' general financial status. Greg pointed out that the organization is currently operating with approximately a \$14,000 balance, which he described as "a marginal operation."

Juan presented Rhodes Travel's bid for air travel arrangements for the 1990 conference in Orlando, one feature of which is a 5% percent rebate of Rhodes' fees paid to NACIS for each ticket sold. The board agreed that although the offer seems very generous, given the small number of members who are likely to use Rhodes' services, NACIS' actual rebate is likely to be insignificant.

David mentioned Karl Proehl's idea of publishing a complete membership list in *Cartographic Perspectives* as soon as an accurate list becomes available, perhaps in the Spring, 1990 issue. He also proposed that NACIS acknowledge the forthcoming name change of *The American Cartographer* to *Cartography and Geographic Information Systems* by sponsoring a 'Special non-GIS Issue' of *CP*. The motion was defeated on voice vote.

Finally, the board discussed potential meeting sites for 1992. Kansas City seems viable. Diana presented the prospect of an international meeting in San Jose, Costa Rica or Niagara Falls or Windsor, Ontario. It was pointed out that employees of

government agencies would very likely not be funded for travel to an international conference. The point was also made that it seems hypocritical to call the organization "North American" while meeting only in one North American country. Ellen stressed the importance of local members to help plan conference logistics.

Diana proposed that the February board meeting include a meeting of past presidents to discuss future directions of NACIS.

By this time noon had come and gone, and board members were leaving one by one to catch planes or begin long drives. The meeting was adjourned at about 12:30 pm.

—David DiBiase, scribe

GRAPHICS AT USA TODAY  
continued from page 2

and numerical sources are compiled by the News, Money, Sports, Life and Special Projects departments. Base maps are manually compiled from printed sources. Oblique perspective bases are manually compiled from planimetric projections via standard perspective grids. Pencil compilations are then scanned and used as

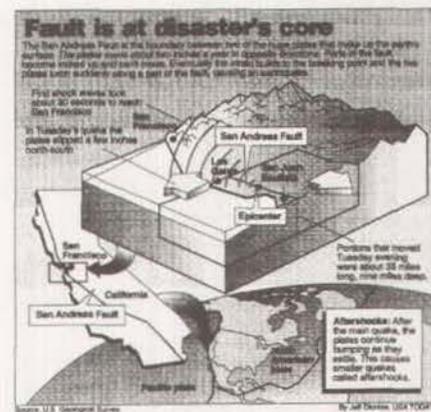


Figure 2. ©1989 USA Today, all rights reserved. Forty percent of original size.

drawing templates in Aldus FreeHand, a PostScript-based drawing program for the Macintosh. Printing negatives are generated from the FreeHand PostScript files using a Scitex prepress system.

Many of the graphics produced at *USA Today* are archived for possible future use. Post Script graphics files are collected from the artist's workstations via a Tops local network and those likely to be modified for future use are saved on a special file server.

Of course, its emphasis on graphics is not all that distinguishes *USA Today* from other major newspapers. In a recent critique of broadcast journalism (*Illusions of News*, PBS, November 22, 1989), Bill Moyers presented it as an archetype of "the newspaper of the future, created in the image of television: news that pleases, many short reports, lots of visuals, news on the run." *USA Today* is to be commended for its efforts to improve the quality and timeliness of journalistic graphics. But if good graphics are associated in the public mind with bad journalism, the cause of graphicacy is not likely to be advanced.

#### EXCHANGE PUBLICATIONS

*Cartographic Perspectives* gratefully acknowledges the publications listed below, with which we enjoy exchange agreements.

*Canadian Cartographic Association Newsletter*. A quarterly publication offering news and announcements to members of the CCA. Contact: Canadian Cartographic Association, c/o Department of Geography, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X9; (709) 737-8988; Bitnet: CHWood@MUN

*Cartographica*. A quarterly journal endorsed by the Canadian Cartographic Association/Association Canadienne de Cartographie that features articles, reviews and monographs. B V Gutsell, founder and editor. Contact: University of Toronto Press Journals Department, 5201 Dufferin Street, Downsview, Ontario, Canada M3H5T8; (416) 667-7781.

*Cartography*. Biannual Journal of the Australian Institute of Cartographers. Each issue contains two parts, the Journal proper and the Bulletin. The Journal contains original research papers, papers describing applied cartographic projects,

reviews of current cartographic literature and abstracts from related publications. Contact: John Payne, Circulation Manager, GPO Box 1292, Canberra, A.C.T. 2601, Australia.

*Cartomania*. This quarterly newsletter of the Association of Map Memorabilia Collectors offers a unique mix of feature articles, news, puzzles, and announcements of interest to cartophiles. Contact: Siegfried Feller, publisher/editor, 8 Amherst Road, Pelham, MA 01002; (413) 253-3115.

*GIS World*. Published six times annually, this news magazine of Geographic Information Systems technology offers news, features, and coverage of events pertinent to GIS. Contact: Debbie Parker, Subscription Manager, GIS World, Inc., P.O. Box 8090, Fort Collins, CO 80526; (303) 484-1973.

*Information design journal*. Triannual publication of the Information Design Unit. Features research articles reporting on a wide range of problems concerning the design and use of visual information. Contact: Information design journal, P.O. Box 185, Milton Keynes MK7 6BL, England.

### instructions to contributors

#### FEATURED PAPERS

All featured papers will be solicited by the NACIS Publications Committee. The goals of the solicitation procedure will be to select high quality papers that provide a balanced representation of the diverse interests of the membership. The primary mechanism for soliciting featured papers will be a paper competition held in conjunction with the Annual Meeting. All papers prepared for the meeting and submitted in written and/or digital form will be considered. Three of these will be selected to appear in *Cartographic Perspectives* during the next year.

In addition to the competition winners, the Publications Committee (in consultation with the editors) will solicit one or more papers each year from other sources. The goal here is to ensure that all aspects of the membership are served and to attract some thought-provoking ideas from authors who may not be able to attend the Annual Meeting.

Authors of selected papers will be given an opportunity to respond to suggestions of the Publications Committee before submitting a final version. The writing quality must adhere to high professional standards. Due to the interdisciplinary nature of the organization, it is particularly

important that papers are carefully structured with ideas presented succinctly. The editors reserve the right to make editorial changes to ensure clarity and consistency of style.

Papers ranging from the theoretical/philosophical to methodological/applied topics will be considered providing that ideas are presented in a manner that will interest more than a narrow spectrum of members.

To be considered for the paper competition, papers should be prepared exclusively for NACIS, with no major portion previously published elsewhere.

#### TECHNICAL GUIDELINES

*Cartographic Perspectives* is designed and produced in a microcomputer environment. Therefore, contributors to CP should be submitted in digital form on 3.5" or 5.25" diskettes. Please send paper copy along with the disk, in case it is damaged in transit.

Text documents processed with Macintosh software such as WriteNow, WordPerfect, MindWrite, Word, and MacWrite are preferred, as well as documents generated on IBM PCs and compatibles using WordPerfect or Word. ASCII text files are also acceptable.

PostScript graphics generated with Adobe Illustrator or Aldus FreeHand for the Macintosh are most preferred, but generic PICT or TIFF format graphics files are usually compatible as well. Certain graphics formats for the PC may also be submitted (for example, HPGL (.PLT), CGM, EPS, and TIF).

For those lacking access to microcomputers, typed submissions will be tolerated. Manually produced graphics should be no larger than 11 by 17 inches, designed for scanning at 300 dpi resolution (avoid fine-grained tint screens). Continuous-tone photographs will also be scanned.

Submissions may be sent to: David DiBiase, Department of Geography, 302 Walker Building, Pennsylvania State University, University Park, PA 16802; (814) 863-4562; Bitnet: DWD1@PSUVM

#### COLOPHON

This document was desktop-published at the Deasy GeoGraphics Laboratory Department of Geography, Penn State University, using an Apple Macintosh IIcx. Word processing was accomplished primarily with WriteNow 2.0; page layout with PageMaker 3.01. Graphics not rendered with Aldus FreeHand 2.02 were scanned from paper originals using an HP 9190 ScanJet desktop scanner. The PageMaker document was output by a Linotronic 300 at PSU Printing Services. The bulletin was printed by offset lithography on Warren Patina 70# text stock. Text type is set in Palatino, a face designed by Herman Zapf. The featured color is PMS 3282.