

NATIONAL REPORT
OF THE
AMERICAN SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING
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By

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ABSTRACT:

The National Report for the United States summarizes the structure and membership for ASPRS since the XVI Congress in Kyoto, describes the three main service sectors provided by the Society, highlights of the status of its three membership sectors, and comments briefly on future prospects for our professions. The full national report is published as a special issue of *PE&RS* (August, 1992), which also contains a series of short articles describing achievements in various technical pursuits. The primary service sectors of ASPRS are represented by meetings, publications, and membership; and the three membership sectors are private practice, government civil service, and academia. Membership in the Society is approximately 8000, balanced in their interests between the three membership sectors and five technical divisions.

KEY WORDS: U.S. National Report, ASPRS.

1.0 Introduction

Earth observing technology and the mapping sciences are healthy and vibrant enterprises in the United States that encompass remote sensing, GIS, GPS, machine vision, virtual reality, medical diagnostics and industrial imaging, and environmental monitoring. Since 1988, we have seen the maturation of civil and private systems that will promote better resource management, enhance environmental protection, and solve many municipal planning concerns; and we have created the enabling technology for the next generation of applications in global monitoring. Our science, technology, and practicing professional community are among the world's leaders in plying these trades to the betterment of humankind; and while we are aware of growing international competition, we feel confident that our educational, industrial, and governmental programs will add to the pace of technology development throughout the rest of this century and beyond.

The complete National Report of ASPRS is published in *Photogrammetric Engineering and Remote Sensing* (August, 1992). It contains a statement of our societal and sectoral achievements. The following is a summary of this report, condensed on four fronts: those attributes describing ASPRS as our Professional Society; the status and achievements of its programs since 1988; the sectoral achievements in our nation's professional practice, government service, and academic membership sectors; and our overall future prospects. As detailed as the full report is, it is far from comprehensive. Rather, it is a vignette of a larger picture that lacks several critical contributions. Nevertheless, it is one we hope sparks the imagination.

2.0 Society Structure and Membership

ASPRS serves some 8000 active and student members, worldwide, whose primary employment is categorized into three professional sectors: *Private Practice* (2000 members); *Government Civil Service* (1650 members); and *Academia* (1500 members--including students)*. Table 1 lists the ten most numerous professions from which the Society draws its members; and Figure 1 shows our current headquarters building located in the Renewable Natural Resources Foundation (RNRFF) complex in Bethesda, Maryland.

Geographically, members are organized into 18 regions, each with its own complement of locally elected officers, committee appointments, technical and social agendas, and an elected Regional Director who serves on the national Board of Directors. Some of the regions are further partitioned into State Chapters or Student Chapters to allow smaller clusters of members to participate in technical and social activities on a more local level. This three tier structure is beneficial in adding cohesiveness to the general mission and goals of the Society, and in providing a basis for transferring ideas and technical innovations upwards from local, to regional and national levels.

As revealed in the six Region Reports contained in the August *PE&RS* issue, the region and chapter structure is a constantly evolving backdrop colored by technical and economic trends that, in turn, influence the interest profiles of members. Since 1988, for example, the Georgia-South Carolina and Latin American Regions have been dissolved by

* Numbers throughout this section of the paper are rounded upwards or downwards to the nearest 50. They do not sum to 8000 because many members prefer demographic anonymity. All data in this section are extracted from the ASPRS Category Report to the Board of Directors, February, 1992, or other appropriate Board documents of the same date.

member request. The former has been subsumed into the Mid-South Region. Two new student chapters (Colorado State University and University of Maine?) have been added; and one state chapter (New Mexico) has been reactivated.

The membership's professional interests are served by five technical divisions: *Primary Data Acquisitions* (600 members); *Photogrammetric Applications Division* (1800 members); *Remote Sensing Applications Division* (2450 members); *Geographic Information Systems Division* (1500 members); and, *Professional Practice Division* (350 members). Historically, the Society has grown to embrace emerging technologies, as appropriate and when warranted. Remote Sensing Applications, for example, were excised from Photogrammetric Applications in the early 1980s to better define each of these. As a result, there has been a steady increase in overall membership. Since the last ISPRS Congress in 1988, we have added the GIS Division, which has also produced many new members. If we are to continue serving all these interests, however, there are indications that, by the 1996 Congress, we should in some manner incorporate Global Positioning Systems (GPS) into this suite of mapping sciences.

The work of the Divisions is accomplished through committees created by the members, and all members are encouraged to participate. Governance of each Division is the responsibility of its elected Division Director who accedes to the position after serving as the assistant director. Like their Regional counterparts, the Division Directors are full voting members on the national board. Briefings from all five Divisions are contained in the National Report. In sum, they convey a sense of excitement about their collective professional activities, and reveal a dedication to service that is the heart of our Society.

In addition to Division committees, there are 21 national committees and six committees that address joint society matters with our sister Society, the American Congress on Surveying and Mapping (ACSM). Chairs for the national committees are appointed by the ASPRS President for various terms in office. These chairs are asked to form their committees based on recommendations from the board, their colleagues, and active members who volunteer. Membership on joint ASPRS/ACSM committees is by invitation of the Officers of both societies. Five of these 27 committees are featured in the National Report. They describe some of the major action areas and convey an overall mood of progress. The Publications Report, in particular, will be of interest to ISPRS members and to their individual constituents. A complete list of committees is given in Table 2, but interested readers are requested to write directly to ASPRS headquarters for details of current committee charters and membership.

Underwriting the programs of the entire Society are annual member dues; the financial, technical, and logistical support of our nearly 180 sustaining members; and revenue generated through our publications, co-sponsored meetings with kindred societies, and our two annual national meetings. To warrant on-going support from these constituents, and the considerable financial support we gain from Federal sponsors for special projects, the Society must be responsive to the needs of each sector. As with any family, biological or professional, there are sometimes differing perspectives on issues between these sectors. On some occasions, the officers and Board

of Directors are asked to help resolve differences, and these occasions, too, influence the course of Society development. They are not conflicts so much as they are signs of life in an ever changing milieu of professional evolution. Our Society is blessed in having a balanced membership representing these various sectors and their professional interests; and it is from this multiple "personality" that we draw our strength.

3.0 Service Sectors

Given the overarching requirement to represent all members, sectors, and technical interests, the Society must constantly assess the effectiveness of its programs. The mission and goals of ASPRS are currently under review by presidentially appointed committees charged with defining our *vision*, *mission* and *niche* in the mapping sciences. Concurrently, the Long Range Planning Committee is charged with identifying the current trends in technology; and a project is in progress to better understand the demographics of our membership. The results of these deliberations could have profound effects on the overall "look and feel" of our Society by 1996, but we can be fairly certain that, with some modifications, our three main activities will proceed as they have in past. These are *meetings*, *publications*, and *membership services*.

3.1 Meetings

For many years, ASPRS and the ACSM have held joint *Annual* and *Fall Technical* meetings with exhibitions of the latest vendor equipment and services. The Annual Meeting has most often been held in the Baltimore/Washington D.C. area, but occasionally has been held in cities like Denver or St. Louis. Traditionally, the Fall Technical Meeting travels around the United States to other major cities. In 1986, however, a major new development in meeting calendars emerged. It was the first GIS/LIS meeting, organized and sponsored by the U.S. Forest Service. By 1987, ASPRS became a joint sponsor of the second meeting, and by 1988 it became apparent that this popular forum (now jointly sponsored by five kindred societies--ASPRS, ACSM, AM/FM, URISA, and AAG) would become an annual event. As a consequence, by 1990, the joint ASPRS/ACSM Fall Technical Meeting was enveloped by the GIS/LIS meeting and it has been so scheduled for the rest of this decade.

Co-sponsorship of Society meetings appears to be the trend. The cost of attending professional meetings--to members and especially to vendors; the increasing number of such meetings--considering that most professionals belong to several societies; and the explosive increase of whole new user communities adopting mapping science technologies, dictate that societies and user groups pool their resources and meeting calendars. GIS/LIS is but a forerunner of future meeting formats, as witnessed by the XVII ISPRS Congress itself, and such other recent meetings as "*On Common Ground*", the first conference and exhibition of its kind to integrate GPS, GIS and CAD technologies. Since 1988, ASPRS has endeavored to co-sponsor as many meetings as financially prudent, and these are listed in Table 3.

3.2 Publications

Publications represent the Society's best means for reaching the broad audience of individuals and organizations interested in the mapping sciences. Members automatically receive *PE&RS* each month, but in addition are able to share in technical advances reported in a steady stream of *Proceedings* published by ASPRS from other conferences and symposia, and from reference manuals documenting the state-of-the-art in selected fields within the profession. Two such references are currently being revised for publication between 1993 and 1995: the *Manual of Aerial Photographic Interpretation* (Dr. Warren Philipson, editor-in-chief); and the *Manual of Remote Sensing* (Dr. Robert Ryerson, editor-in-chief). Unlike its predecessor, the new *Manual of Remote Sensing* will be issued in a series of smaller, topic specific volumes. In the advanced planning stage are volumes titled *Remote Sensing and GIS for Development*, *Radar Remote Sensing*, and *Remote Sensing for the Geosciences*; and in the discussion stage are *Remote Sensing Platforms and Sensors* and *Principles of Remote Sensing*. A new reference manual, *The Glossary of Mapping Sciences* (Soren Henriksen, editor), should be published in 1993; and a proposed *GIS Manual* with Dr. Russel Congalton as the proposed editor-in-chief is under consideration by the Publications Committee.

Since 1988, ASPRS has published more than 35 *Proceedings*, *Directories*, *Compendia*, *Surveys*, and *Bibliographies* that it has either commissioned directly or co-sponsored with other societies or government agencies. These are in addition to the *Proceedings* derived from the Annual and Fall Technical (now GIS/LIS) meetings. A complete list of these can be obtained by writing to the Communications Director at ASPRS Headquarters.

3.3 Membership Services

Meetings and publications are the primary means for advancing the technologies employed by our members, and among the chief mechanisms for promoting the retention and attraction of new members. Education of young people entering our professions is a central concern for all our members, but continuing education of practicing professionals is equally important. The pace of technology development is so rapid and becoming so specialized that programs to inform and serve our members must be constantly reviewed. The Student Affairs and Evaluation for Certification committees are vital functions in this education process at the national level; but there are many related committees within the Regions, and the whole Professional Practice Division that are also active participants. With ACSM, we also educate through the activities of the Joint Government Affairs, the Joint Satellite Mapping and Remote Sensing, and the Joint Education Committees. Our sustaining members, *PE&RS Journal* advertisers, and news columns written for the *Journal* represent other significant means for spreading information.

4.0 Sectoral Achievements

The National Report contains contributions describing the achievements of government agencies, academic institutions, and the private sector. Among the government agencies submitting program descriptions are the U.S. Geological Survey, Defense Mapping Agency, U.S. Forest Service, and NASA.

Also submitted are reports from some 16 academic programs, some of which are multi-institutional or cross-disciplinary. Private sector activities are reported by the publisher/editors of *GIS-World*, *GPS-World*, the executive director of the Management Association for Private Photogrammetric Surveyors (MAPPS), and the President and CEO of ERDAS. Supplementing these programmatic reports is a series of 13 papers describing *Technical Achievements* in remote sensing and geographic information systems, and the integration of these.

4.1 Private Sector

The most profound development in the mapping sciences since 1988 has been the rapid evolution of commercial enterprises for remote sensing and GIS. These now complement, in range of services and volume of revenue, more traditional private sector activities in aerial data acquisition and photogrammetric applications. Moreover, it is now certain that GIS has significant consumer groups outside of ASPRS's traditional focus on natural and cultural resources, environmental issues and global change. These marketplaces may represent new membership opportunities at the state and local government levels, and in facilities management and the business community.

A related opportunity for commercial development lies in the integration of GIS with GPS and remote sensing data. Hardware and software improvements have permitted the genesis of highly robust systems for integrating and managing large amounts of raster and vector-based spatial data. These, together with improvements in data supply, dissemination and processing, allow faster access and analysis times, and thus quicker turnaround times for customers with short term needs. In short, what has before been referred to as *location theory* can now be modeled and analyzed with real data for real solutions to real problems. Demographic data, digital elevation models (DEMs), digital line graphs (DLGs), moderate resolution satellite data from SPOT and Eosat Corporations, fine resolution data from rectified aerial photographs, and spatial data from any number of registered map and tabular sources are the basis for this capability.

4.2 Government Sector

Federal government programs have added greatly to our national and global capability for environmental monitoring and modeling. Digital map-making; digital map production systems; the creation of the digital chart of the world; standardization in mapping, charting, and geodesy; and the creation of image-based digital orthophotoquads are all aspects of this basic modernization effort. DEMs and DLGs are available for the entire conterminous United States at 1:250,000 scale, and significant progress has been made for these products at larger (1:100,000 and 1:24,000) scales. Though not represented in the National Report, another significant achievement in spatial data applications since the 1988 Congress has been the completion of the 1990 national population census using digital data storage and retrieval techniques. The results of this census are available on CD-ROM and are called Topologically Integrated Geographic Encoding and Referencing (TIGER) files. In sum, these products and data sets represent the enabling capability for GIS developments taking place in other federal agencies like the U.S. Forest Service, Bureau of Land Management,

National Park Service, Bureau of Indian Affairs, and Soil Conservation Service; and, for image-based GIS applications in the commercial arena. The flavors for some of these applications are described as *Technical Achievements* in the National Report.

An imaginative and exciting program called Mission to Planet Earth (MTPE) will launch NASA's Earth Observing System (EOS) during the second half of this decade. It is designed as a multinational, interdisciplinary, 15-year data collection and analysis effort for global change research. The system will consist of polar and equatorial orbiting satellites in both low and high-Earth orbits with imaging and nonimaging systems sensitive to atmospheric, oceanic, geological, hydrological and biological phenomena. Products and data from the various systems will be available on a nondiscriminatory basis, worldwide, through a network of processing and archival facilities, collectively known as the EOS Data and Information System (EOSDIS).

4.3 Academia

The institutional contributions in the National Report are a cross-section of large and small programs. Some of the contributions focus on degree-granting curricula while others feature their research; but the message is clear that Earth observing technology and the mapping sciences are expanding areas of study in the United States. There still seems to be a predominance of activity in Geography Departments, although there are growing indications that spatial analysis, environmental monitoring, and natural resource applications will necessitate a gradual redefinition of academic programs to accommodate these trends. We can imagine that continued growth in GIS applications within state and local government units, and within the private sector; the adoption and use of digital terrain data sets; the massive influx of EOS data; and the continued rise of global change monitoring will stimulate new academic formulae for training the next generation of mapping scientists.

In this regard, National Science Foundation (NSF) sponsorship of the National Center for Geographic Information and Analysis (NCGIA) is perhaps the most profound addition to our national university-based assets. This multi-institutional and interdisciplinary Center has acquired a leadership role for technology development, curriculum development, basic research, and transfer of GIS technology on a global scale. Though headquartered in the Geography Department at the University of California at Santa Barbara, the results of this research and development function are being incorporated into schools of engineering, business and management, multidisciplinary Arts & Sciences programs, and other appropriate academic units.

5.0 Future

The Society has several items on its current agenda that will modernize the look and feel of its programs and services when implemented by the Board of Directors. Among these items are:

1. The initiation of a strategic planning process in 1992 to take full advantage of the mission, vision, and niche focus groups, and the trends unveiled by our Long Range Planning Committee;

2. Adoption of a periodic recertification process for our Certified Photogrammetrists, and the expansion of our certification program to specifically recognize remote sensing and GIS specialists to better enable the Society to monitor the achievements of its Certified members, as well perhaps, as to stimulate new members to the expanded program;

3. Redefinition of the Region boundaries based on membership concentrations and interest profiles to enhance the operation of the regions and provide a means for reviewing the structure of the Board to best represent its members;

4. Creation of a national "committee on the Environment" to signify to our members, prospective members, and all whose careers are dedicated to environmental improvement and sustained resource use, that ASPRS is a partner in these endeavors, and that it brings immense technological expertise and capability to the table;

5. Completion of our Headquarters' office automation to better enable Society staff and committees to provide member services, economize by avoiding duplication of effort, and respond to questions posed from outside the Society and its members; and,

6. Continuation of our "building fund" drive to reduce Headquarters office costs, thereby diverting needed funds to increased member services (especially, publications).

It would be presumptuous here to describe the future of the mapping sciences, or of Earth observing technology in general. We can be certain that commercial applications in remote sensing and GIS will expand, and at probably very fast rates. We can be certain also that continued advances in computing science, software utility, and dissemination mechanisms will intersect with expanding user communities in the mapping sciences; and that, as a result of this intersection, whole new applications will emerge. Finally, we can be certain that cartography, and what began with the Columbian era 500 years ago as a human imperative to discover the Earth, will flourish well into the coming century.

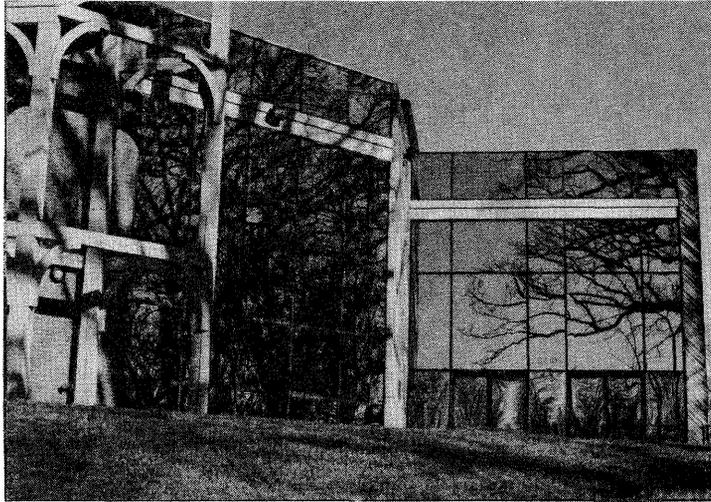


Figure 1. ASPRS Headquarters, Bethesda, Maryland

Table 1 Top Ten Professions for ASPRS Members

(Source: ASPRS Membership Category Report, February, 1992)*

Cartographer, Cartographic Technician and Draftsman	500
Engineer (Civil, Electrical, Mechanical, etc.), Surveyor	650
Geographer, Geologist, Hydrologist	600
Photogrammetrist, Photographer, Photo Interpreter, Pilot	900
Remote Sensing Specialist, GIS/LIS Specialist	800
Earth Scientist (Ecologist, Forester, Soil Scientist, etc.)	300
Computer Scientist, Digital Data Analyst, Systems Analyst	100
Scientist, Researcher, Consultant	450
Graduate Student	400
Other (Retired, Undesignated, Not Known)	4000

* Numbers are rounded upwards or downwards to nearest 50.

**Table 2 ASPRS National Committees &
ASPRS/ACSM Joint Committees**

National Committees

Awards Committee	Bylaws	Division Directors
Education*	Evaluation for Certification*	
Finance and Administration		Intersociety Liaison
Journal Policy	Long Range Planning	
Membership	Memorial Lecture	Nominating
Preservation of Aerial Photography		Professional Conduct
Public Relations	Publications*	Scholarship
Student Activities*	Sustaining Members	
Technical Program	Workshop Coordination	

Joint Committees

Joint Convention Advisory Committee	Joint Education
Joint GIS/LIS	Joint Government Affairs
Joint Satellite Mapping and Remote Sensing	
Joint Technical Program	

* report contained in National Report (PE&RS, August 1992)

Table 3 ASPRS Sponsored and Co-sponsored Meetings, 1988-1992

<u>Title</u>	<u>Location</u>	<u>Co-sponsor</u>
1988		
Annual Meeting & Exhibition	St. Louis, MO	ACSM
Fall Technical Meeting	Virginia Beach, VA	ACSM
GIS/LIS	San Antonio, TX	ACSM, URISA, AAG, AM/FM
1989		
Annual Meeting & Exhibition	Baltimore, MD	ACSM
Fall Technical Meeting	Cleveland, OH	ACSM
GIS/LIS	Orlando, FL	ACSM, URISA, AAG, AM/FM
1990		
Annual Meeting & Exhibition	Denver, CO	ACSM
GIS/LIS	Anaheim, CA	ACSM, URISA, AAG, AM/FM
Resource Technology '90	Wash. D.C.	Various*
1991		
Annual Meeting & Exhibition	Baltimore, MD	ACSM
GIS/LIS	Atlanta, GA	ACSM, URISA AAG, AM/FM
Spatial Data 2000	Oxford, England	PS, RSS
1992		
Annual Meeting & Convention	Albuquerque, NM	ACSM
Global Change & XVII ISPRS	Wash. D.C.	ISPRS, RT**
GIS/LIS	San Jose, CA	ACSM, URISA AAG, AM/FM

* ASPRS served as a "cooperator" ** Resource Technology