

## WEDNESDAY PLENARY SESSIONS

On Wednesday the first plenary session emphasized computer based maps and mapping from a federal perspective. Robert Aangeenbrug chaired the session. Edward K. Zimmerman presented the first paper "The Future of Domestic Information Display Systems: Toward a Government Public Information Network". He discussed the Domestic Information Display System (DIDS) from a telecommunications point of view. DIDS he noted serves three functions: 1) an interactive geostatistical display; 2) a means of exchanging data between government agencies; and 3) a forcing agent for needed improvements in the federal statistical system. DIDS could not currently serve all of these needs, because of the great cost of the system. Therefore, particular concern was given regarding the future design of the system. He recommended that three components -- concept, institution and technology -- can be matched to achieve an appropriate level of institutionalized operation in federal government.

David Slaby discussed "Obstacles to Accurate and Valid Geographic Assessment of Vital Event Data". He stated that choropleth mapping of the less common causes of mortality produces interpretation difficulty when data are viewed at the county level. Counties large in area and low in population or having an uneven population distribution are given inordinate "visual" weights in a map. A methodology employing smoothing and contouring was used in an attempt to overcome this visual weighting problem. Approximate population centers in a three-state area were forced to the intersections of an arbitrary grid overlaying these states. For each sub-county area bounded by four coordinate pairs, weighted, age adjusted rates for 1975 male cirrhosis of liver mortality were calculated. Adjacent areas for population were added to the weighted rate until a minimum population criterion was met. Contours were plotted over the gridded areas and state boundaries superimposed over the resultant map.

Theodore Sudia presented "Automated Cartography in National Park Planning". He outlined some cases where automated cartography was adopted in the master planning process and reflected on their successes and failures. He used the analogy of life in the gun fact-

ory versus life in the trenches to discuss the relationship of automated cartography and computer graphics in the management process in the context of management of information versus information for management. He noted the difficulty and the opportunity of incorporation of automated cartography in individual and national park systems management.

Rupert Southard reviewed the rationale for automating the National Mapping Program. In 1979 it was clear that the future of the National Mapping Program was digital and a new strong initiative had emerged to move aggressively towards digitizing the base data categories constituting the quadrangle maps covering the United States. These base data categories are terrain, hydrography, transportation, boundaries, etc. These data will be structured into separate data files merged in such a way as to optimize utility of the data base to the many users of those data who now exist and who will develop. In addition to the data base, development of the mapping process itself will be more and more automated. Only in these ways can the National Mapping Program respond to the most important needs of the country for data about the land.

The second plenary session was chaired by Joel Morrison. Its focus theme was "A Critical Review of Problems and Possible Solutions". Duane Marble reviewed geographic information systems and problems. He wryly noted that he saw many familiar faces in the audience and on the program, hinting a lack of new faces or a lack of progress relative to earlier hopes. But he was optimistic that the diffusion process was finally accelerating. The following problems, he added, are still with us: large data volumes, large scale data base updates, algorithms to manipulate large spatial data sets, partial knowledge of use of color in mapping and processing software for the above. He argued that we need a coherent research development effort in order to define where we are and what our priorities will be to focus our research and development efforts.

George Jenks presented his paper "Thoughts on Line Generalization". The focus of this paper is upon the adoption of the concepts of the manual cartographer in linear generalization by computer. Two overall aspects of linear generalization are discussed. Topics in the first part, linear simplification in the imperceptible

realm, include software editing, gentle smoothing, and point elimination. Discussion of the nature of characteristic points, Marino's experimental research in characteristic point selection, the selection of characteristic points by the Douglas-Peucker algorithm, and use of characteristic points in linear generalization are included in the second part. All of the concepts presented are illustrated by linear plots produced on a modest micro-computer system.

Dave Simonett reviewed the relation of remote sensing and geographic information systems. He stressed that NASA has recognized that remote sensing and geographic information systems need to be integrated. He concurred with Professor Marble that there is a need for modelling of spatial systems. The likelihood that the incorporation of automated map generation will be incorporated in geographic information is exemplified by the design of the STEREOSAT system. It will have a digital mapping capability similar to LANDSAT and is expected to operate in 1984. Professor Simonett stressed that raster based systems under development at NASA should support computer assisted cartographic products at an increasing rate during the 1980's. He noted that the development of the Multispectral Resource Sampler (MRS) would provide continuing challenge to our professions in interpretation, forecasting and analysis.