

INTRODUCTORY REMARKS

Panel Discussion on Experiences in Federal Automated Cartography

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I want to add my welcome to you on behalf of the Cartography Division of the American Congress on Surveying and Mapping. This symposium is another effort by our organization, this time together with the Census Bureau, to further the knowledge of those who are interested in cartography and its broad applications. It is made possible through the membership and we invite all to join us as we continue to make your participation more meaningful and rewarding.

Eleven years ago this same week, in September 1964, at the Fall meeting of the ACSM in Kansas City, I was privileged to present a paper entitled "A Look at Mapping in the 1970's." I attempted then to forecast certain aspects of mapping in the period 1974-76. Several thoughts expressed at that time may help give perspective to what we hear and see in this gathering and to our efforts in the near future. Let me quote for a few moments:

"In our own country, I sense that the continuing growth of urban areas will require increased efforts in different types of mapping. The obvious pressures on real property values, on water and other public utility and service needs, such as transportation and recreation, which we are beginning to feel already, will create demands for very accurate large-scale maps of these urban regions. The scope of the urban area problem is magnifying rapidly, but very little new is being done today" -- (that was 1964) -- "in the mapping field to help bring the areas under examination in a logical way for efficient planning. The essence of the requirement revolves around a mass of detail and intensive land use. The newly mushrooming urban area data banks, on a trial basis as yet for several areas around the country, may well be departures from conventional mapping that could profitably employ some of the newer forms of information acquisition and data reduction being used in modern mapping systems. The fields of cadastral mapping and property assessment loom ever more important as tax revenues are increasingly required for increased services. New photogrammetric systems could readily serve to help modernize and simplify what currently are often archaic, complex, and costly existing land and real property records. One of the newer concepts does away with the finished map, per se, and uses instead digital data, taken from maps or photos, and stored on magnetic tapes for use in computer programs which provide desired information on terrain characteristics and positions. The degree of sophistication of future equipment and systems would seem to be limited only by investment of funds for research and development."

And in talking about the possibilities for integration of Federal Government mapping I said:

"If this does materialize one could envision a base cartographic data center and management entity directing and servicing field production centers located around the country and tied to it be electronic data links. Government departments requiring information or products would levy their needs on the national center and be serviced from the center or appropriate field component."

Well, that was September 1964 and a good bit of research and development and initial production has taken place since then. We have seen major advances in hardware and impressive progress in systems and software. Our speakers in this panel will give testimony to that as do the exhibits and the work of other agencies and people around the United States and in other countries. We are, literally speaking, seeing the beginning of a major explosion in the application of computer-assisted cartography and the widespread use of the data bases which are developed in the process. As we enter this epoch, I suggest consideration of a few pertinent thoughts.

Digital-record cartography has certain inherent characteristics which distinguish it from the antecedent classical mapping and give concern for pause and consideration. In hard-copy mapping we have the benefit of direct hands-on contact with the product through a sort of universal language expressed by lines and symbols which are readily understood and used, essentially on an international basis. And we have evolved standards of accuracy by which we evaluate the quality of the map information shown and these too assist the user in his application of the contents.

In what I now sense is the rush to go digital we are beginning to see the creation of what will become hundreds of thousands of records, developed by many different agencies -- and very likely not in a universalistic manner. The condition is roughly analagous to the chaos resulting from the early uncoordinated hardware, languages and formats when computers in general first were being applied. There is a certain element of good in this competitive-type situation and we plunge ahead in faith that the better systems survive and become the standards.

I, for one, hope however we can learn from the past and try to preclude some of the difficulties. Warren Schmidt, one of our speakers today will allude to the international scene and to what his agency is undertaking which relates to this concern. The problems of data structures, of access to and dissemination of the computerized information, of establishing qualitative standards are complex and we can perhaps only aim at reducing anticipated technical turmoil. Unlike the minor concerns with relatively homogeneous classical national map series, we face the proliferation of digital cartographic data bases encompassing, in the beginning at least, accurate maps from the regular series along with a mixture from heterogeneous maps and graphics lacking standardized formats or qualifying identifications as to quality of map position or content or time-date reference of the information. A major concern relates to the obvious area of data base maintenance where computer-assisted cartography appears to have singular advantages commending early application. As in almost every computerized data base situation, but especially applicable to the digital cartography area, we must early on establish the mechanics for integrity of data along with ready access and update.

I hope that Bob Aangeenbrug, the Director of this symposium may include in his summary remarks suggestions on cooperation which may help us avoid a digital-type

Tower of Babel situation as we progress rapidly in our endeavors which John Wolter has so aptly described as: Cartography - An Emerging Discipline.

And now on to our panelists who have all had major experience and involvement in computer-assisted cartography. The work they describe by no means illustrates the broad spectrum of Federal activity in this field. The presentations during Auto-Carto I last December touched on several of the major systems involved. These papers add to the compendium.