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A. INTRODUCTION

- GIS is a coalescence of many interests and fields:
    - automation in the surveying and mapping industry
    - automation of facilities management (AM/FM)
    - demand for analysis and modeling to support resource management and planning
    - interest in use of digital databases in marketing, transportation
    - interest in applying the products of remote sensing
    - need for automation of land records, and interest in multipurpose cadaster (MPC)

- each of these fields have their own societies and institutions, regulatory agencies in government, academic disciplines etc.

- coalescence leads to pressure for new institutional structures
    - new series of conferences, e.g. GIS/LIS (San Antonio, 1988; Orlando, 1989) - jointly sponsored by surveyors and mappers (ACSM), urban managers and planners (URISA), geographers (AAG), private and public facility companies (AM/FM International)
    - new structures in government - e.g. interdepartmental committees in some states, federal government
    - new magazines, journals, textbooks, courses

- a clear national strategy could:
    - speed the process of coalescence, e.g. by reorganization of government departments
    - avoid duplication, mistakes, false starts
    - provide much needed support for research and development
    - promote training and education programs

- compare US attempts to develop national policy for MPC (see Unit 54 references)

- this unit looks at one country's efforts to develop national policy
    - the United Kingdom
    - particularly, the role of the "Chorley Report" (DOE, 1987)

B. BACKGROUND

Predecessors

- Ordnance Survey Review Committee
    - reported in 1979
    - covered role of digital technology within premier mapping agency

- House of Lords Select Committee on Science and Technology
    - reported in 1984
    - first recognition of potential role of GIS technology in integrating all forms of geographically referenced data
    - raised awareness of obvious potential for duplication, inconsistency and incompatibility between different forms of geographical data
    - led to formation of Committee of Enquiry (Chorley Committee)

Charge to the committee

- "to advise the Secretary of State for the Environment within two years on the future handling of geographic information in the UK, taking account of modern developments in information technology and market needs"
    - similar to Congress's 1989 charge to Department of the Interior in Public Law 100-409 (see references at end of Unit 53) with reference to land information (more narrowly defined than geographic information)

Scope

- problems with interpretation of term "geographic information" in the charge

- thus, the committee included all information which can be related to specific locations on the Earth
    - this is very broad - includes indirect as well as direct spatial referencing

- in fact, committee included:
    - land and property data
    - resource data - land use, ecological, environmental, etc.
    - infrastructure data - utilities, facilities
    - socioeconomic data - census statistics, health, etc.

Membership of committee

- 11 members

- 65% from the private sector - vendors, utilities, market research companies, etc.

- chair (Lord Chorley) is a member of the House of Lords, accountant with major international management consultancy, familiar with subject, in part from work on previous House of Lords committee

Role of committee

- many systems were in process of rapid development in UK in all these areas
    - many were dependent on government agencies as sources of data, standards, policy

- committee's charge required it to define the role of government in fostering, coordinating, supporting system development

- identified the factors which are important in determining the way the technology is adopted and developed:
    - the costs of adoption, particularly in staffing, training, equipment
    - variations in the availability of data
    - need for development of faster, more flexible, easier to use tools
    - variation in awareness among managers of the benefits of GIS technology
    - shortage of skilled personnel

- needed to define what role government, national policy can play in controlling these factors

Comparison with North America

- evidence presented to the Committee indicated that the UK lagged behind North America in many of these areas
    - lack of training and awareness was more critical
    - much of the technology had been developed in North America

- these problems are likely even more severe in other countries, e.g. Eastern Europe

Relationship to other technologies

- GIS is a comparatively small market segment
    - many key technical developments originated in other areas
    - e.g. peripherals developed for larger CAD markets

- other technologies may be less affected by non-technical factors

    - lack of training less of a problem in more mature markets like CAD
    - other technologies may be less innovative, require less reorganization, e.g. word processing

C. RECOMMENDATIONS

Digital mapping

- in UK, Ordnance Survey has copyright over its products, virtual monopoly over large-scale mapping

- government policy requires OS to stress cost recovery

- increasing demand from utilities for digital versions of basemaps
    - accuracy levels required by utilities were substantially below those of OS
    - private sector can produce digital data to utilities' specifications at substantially lower cost than OS

- OS's monopoly and copyright are under pressure from private sector

- committee encouraged OS to seek joint agreements with the private sector to relieve pressure

Availability of data

- first comprehensive list of geographically related data holdings in government was prepared for committee

- evident that data were not sufficiently accessible to users outside government

- because of real or imagined concerns for privacy and confidentiality
- because government rules prevented departments from repackaging data and receiving financial benefit from sale

Linking data sets

- difficult because of e.g. incompatible reporting units for social statistics

- committee recommended maximizing use of common geographical referencing systems
  - extend postal codes from limited application in mail to general role as reporting units for statistics of all kinds

- need for further development of data transfer standards

Awareness, education and training

- recommended setting up demonstration projects

- need for expanded training courses, new teaching packages, greater role in Business education

Research and development

- generally, the report stressed the non-technical impediments to GIS adoption

- need for R&D in both fundamental and applied areas
  - particular stress on the development of intelligent Knowledge Based Systems which incorporate rules derived from human experience
  - development of better tools for estimating reliability of information from GIS

Role of government

- government is one of the biggest users of GIS, also the biggest supplier of geographical data
  - its level of commitment is critical to the development of the field

- potential roles of government in:
  - development and implementation of standards
  - legislation on relevant issues, e.g. copyright
  - funding education programs
  - carrying out or funding R&D
  - increasing accessibility of data

- many submissions to committee urged establishment of a government organization to coordinate GIS

- committee recommended a Centre for Geographic Information (CGI) as:
  - promoter of technology
  - advisor on national GIS policy

focus for users

D. GENERAL FINDINGS

- emergence of a discipline through coalescence of common interests

- usefulness of maps is increased enormously by digitizing, but digital systems allow access to vast stores of non- map data as well

- geographical data for small areas is very useful in social planning, but government must play an important role in handling such data to prevent invasions of privacy

- it is impractical to assemble all geographical data in one national archive - the role of government should be to increase access to geographical data through directories, compatibility etc.

- the commercial opportunities of GIS technology will continue to expand rapidly and internationally

- change in UK government policy since 1979 has had a profound effect on data collecting agencies because of pressure for cost recovery

E. OUTCOMES

- the key technical recommendations - role of postcodes, production of digital basemaps - were rejected in the official government response

- government also rejected the recommendation for a Centre for Geographic Information (in effect, rejected the recommendation that it take the lead in organizing and funding the Centre)
    - with no new organizational structure, there is doubt about whether the more far-reaching recommendations can be implemented
    - efforts are under way to form an organization outside government to play at least part of the role intended for the Centre

- many non-technical recommendations were accepted and many are being implemented by relevant departments
    - e.g. restructuring of legislation to make it easier to share and access data

- the impact of the committee's meetings, background work for submissions, publicity given to the report may have had more impact than the recommendations

- possibility of similar exercises in other countries, e.g. BLM report under PL 100-409

F. RELATED ACTIVITIES IN OTHER COUNTRIES

- different countries have focused interest in the development of GIS in different ways (the following based on information in Shepherd et al, 1989)

several aspects vary from country to country:
- perception of priorities in GIS
- scale of funding
- governmental/institutional context
- extent of involvement of the private sector
- emphasis upon applied as opposed to fundamental research

- other national initiatives include:

UK Regional Research Laboratories

- established before the completion of the Chorley Report by the UK Economic and Social Research Council

- objectives include carrying out basic and applied GIS research, training, providing data services and promotion of the use of GIS in general

U.S. National Center for Geographic Information and Analysis

- funded by the National Science Foundation

- created to promote basic research in GIS and to improve the education of GIS professionals

The Netherlands

- research consortium funded by the Netherlands Science Research Council for four years

- at the University of Utrecht, the Technical University of Delft, the Agricultural University of Wageningen and the International Training Center at Enschede

France

- creation of the Maison de la Geographie in Montpelier providing a network linking 49 research teams in France

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Shepherd, et al, 1989, "The ESRC's Regional Research Laboratories: An Alternative Approach to the NCGIA?," AutoCarto 9, Sydney, Australia.

Tomlinson, R.F., 1987. "Current and potential uses of geographical information systems: the North American experience," International Journal of Geographical Information Systems 1:203-18. Based on a background paper for the Chorley Committee which appears in the report's appendices.

Ventura, S.J., 1990. "Federal land and geographic information system activities," Photogrammetric Engineering and Remote Sensing 56(5):631-4. A useful review of the need for coordination and standardization in the federal government.

EXAM AND DISCUSSION QUESTIONS

Several aspects of the actual report are suitable topics for discussion, particularly if the report is available locally, including:

- committee membership - what groups were represented, who was left out

- evidence - much of it summarized in the appendices

- arguments - how many of these are unique to the UK?

- conclusions - for a summary of the outcome following the report see Rhind and Mounsey (1988)

   Other topics:

   1. Blakemore's review of the report (Blakemore, M., 1988. "Review of "Handling Geographic Information," Transactions, Institute of British Geographers NS 13:118-9) includes the comment: "a supremely useful teaching source for any course concerning geographic information". Why do you think Blakemore made this comment, and do you agree?

   2. What would you expect to see in a Chorley Report of 1997?

   3. Compare the proposed CGI with the NCGIA established in the US (the story of the NCGIA's establishment can be found in Abler, R.F., 1987. "The National Science Foundation National Center for Geographic Information and Analysis," International Journal of Geographical Information Systems 1:303).

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