ISSUES IN DIGITAL CARTOGRAPHIC DATA STANDARDS

Report #9

A Final Bibliography for
Digital Cartographic Data Standards

by

Harold Moellering

May, 1987

National Committee for Digital Cartographic Data Standards
Numerical Cartography Laboratory
The Ohio State University
158 Derby Hall
154 North Oval Mall
Columbus, Ohio
U.S.A.   43210-1318

PREFACE

For the last five and a half years the National Committee for Digital Cartographic Data Standards has been working to develop cartographic data standards for the United States. During this entire time period references to germane articles and reports have been collected and circulated to the Working Groups of the Committee from the Columbus headquarters. A preliminary working version of this bibliography was published as Committee Report #5, A Working Bibliography for Digital Cartographic Data Standards. This updated version is the result of three more years of work and contains more than a thousand references, mostly in English. The report is organized into five fundamental sections: General References, Cartographic Objects, Data Organization, Data Quality, Cartographic Entities. It should be noted that the inclusion of a particular reference in the bibliography does not necessarily mean that the Committee endorses the concepts or ideas set forth in that reference.

At this point it is important to understand the difference between cartographic objects and entities, which are two sides of the same coin, cartographic features. The definitions are clearly illustrated by the following Figure 1.

FEATURE
A defined entity that can
be represented by an object.

Entity	Object
A real world phenomenon that is not subdivided into phenomena of the same kind.	A digital representation of a feature.

Figure 1. Relationship Between Cartographic
Feature, Entity, and Object

Many individuals have participated in the process of compiling this report, the foremost of whom are the Project Assistants who have worked for Prof. Moellering at the Columbus headquarters. They are: Mr. John Hutchings, 1982-3, Mr. Charley Hickman, 1983-4, Mr. David Deal, 1984-5, Mr. Shih-Lung Shaw, 1985-6, Mr. Peter Dotzauer, 1986-7. Many members of the Steering Committee and Working Groups have contributed materials for this bibliography. The international observers of this Committee were

also asked to contribute important materials and have cheerfully done so. A draft version of this work has been circulated to the Steering and Executive Committees for evaluation and comment. Other production assistance was provided by Elisabeth Ross and by Kyoko Tanaka. However, the ultimate responsibility for the accuracy, integrity, authority, and completeness of this work rests with the author.

The following NCDCDS Reports are now only available as U.S. Geological Survey Open File Reports, Federal Center, Building 41, P.O. Box 25425, Denver, Colorado 80225:

Report #1
87-301
Papers from the Joint ACSM/ASP Session on Digital Cartographic Data Standards at the 1982 Meetings of the ACSM, Denver (1982)

Report #2
87-302
Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982 (1982)

Report #3
87-303
Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work (1983)

Report #4
87-304
Digital Cartographic Data Standards: Examining the Alternatives (1984)

Report #5
87-305
A Working Bibliography for Digital Cartographic Data Standards (1984)

Report #6
87-306
Digital Cartographic Data Standards: An Interim Proposed Standard (1985)

Report #7
87-307
Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing (1986)

Report #8
87-308
A Draft Proposed Standard for Digital Cartographic Data (1987)

Report #9
forth-
coming
A Final Bibliography for Digital Cartographic Data Standards (1987)

Please order any of the earlier reports from the address listed above.

Harold Moellering
Series Editor

TABLE OF CONTENTS

GENERAL REFERENCES

Aalders, H., 1980, "Data Base Elements for Geographic Information Systems", ITC Journal, 1, pp. 76-85.

Aangeenbrug, R., 1973, "Theoretical and Practical Constraints of a Geographic Base File", in D. Moyer and K. Fisher (eds.), Land Parcel Identifiers for Land Information Systems, Chicago, IL: American Bar Association, pp. I-157 - I-176.

Alldredge, E., 1973, "Benefits Accruing From An Improved Land Records System", in D. Moyer and K. Fisher (eds.), Land Parcel Identifiers for Land Information Systems, Chicago, IL: American Bar Association, pp. I-99 - I-109.

American Congress on Surveying and Mapping, 1987, "NCDCDS Report 8 Available; Public Hearings Scheduled". ACSM Bulletin, 107, pp. 46-48.

American National Standards Committee X3 - Information Processing Systems, Technical Committee X3H3 - Computer Graphics, 1984, "Draft Proposed American National Standard Graphical Kernel System", X3H3/83-25r3, Computer Graphics, Special GKS issue, February 1984.

American National Standards Institute, 1970, Vocabulary for Information Processing, ANSI X3.12-1970, New York, NY: ANSI.

_____, 1982, Procedures for the Development and Coordination of American National Standards, New York, NY: ANSI.

American National Standards Institute/International Standards Organization, 1985, Specification for a Data Descriptive File for Information Interchange (DDF), ANSI/ISO Standard 8211-1985 - Draft, TC97 SC15 N198 (adopted as FIPS PUB 123).

American Society for Photogrammetry and Remote Sensing, Committee for Specifications and Standards, 1986, Spatial Accuracy Standard for Large-Scale Topographic Maps, (current draft), Falls Church, VA: ASPRS.

American Society for Photogrammetry and Remote Sensing and the American Congress on Surveying and Mapping, 1986, Large-Scale Mapping Guidelines, reprinted, with minor revisions, from U.S. Department of the Interior, U.S. Geological Survey, National Mapping Division, Open File Report 86-005; Reston, VA, 1986, Falls Church, VA: ASPRS & ACSM.

American Society of Civil Engineers, 1983, Map Uses, Scales and Accuracies for Engineering and Associated Purposes, A report of the ASCA Surveying and Mapping Division Committee on Cartographic Surveying, New York, NY: American Society of Civil Engineers.

Anderson, K., and L. Starr, 1984, "Geographic Information Systems", South African Journal of Photogrammetry, Remote Sensing and Cartography, 14(1), pp. 3-12.

Andregg, C., 1984, "Interagency Activities", in National Report to I.C.A., J. Olson, ed., American Cartographer, Vol. 11 Supplement, pp. 8-9.

Association for Computing Machinery, Special Interest Group on Design Automation, 1982, "Glossary of Design Automation Terms", SIGDA Newsletter, 12(3), pp. 9-16.

Association for Computing Machinery, Special Interest Group on Graphics, Standards Planning Committee, 1977, "Status Report of the Graphics Standards Planning Committee of ACM/SIGGRAPH", Computer Graphics, 11(3).

Bailey, C., 1983, "Graphic standards are emerging- slowly but surely", Electronic Design, 31(2), pp. 103-110.

Baines, J., 1982, "A New Kind of Map", Geos, 11(3), pp. 9-11.

Bardelson, S., 1987, "Multipurpose Cadastre Activities at the U.S. Geological Survey", Technical Papers, 1987 ACSM-ASPRS Annual Convention, Baltimore, MD, March 29-April 3, 1986, Vol. 3, Surveying, Falls Church, VA: ACSM & ASPRS, pp. 167-173.

Barney, C., 1982, "Europe's Graphics Standard Leads", Electronics, 55(15), pp. 82-84.

Barr, M., 1982, "Standards for Digital Cartographic Data that Support the Development of Multipurpose Cadastres", in H. Moellering, ed., Papers from the Joint ACSM/ASP Session on Digital Cartographic Data Standards at the 1982 Meeting of the ACSM, Denver, Issues in Digital Cartographic Data Standards, Report #1, Columbus, OH: National Committee for Digital Cartogrsphic Data Standards, pp. 17-25.

General References

_____, and J. McLaughlin, 1983, "The Development of Standards for Multipurpose Cadastral Systems: The Second N.R.C. Report", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 656.

Bartschi, M., 1985, "An Overview of Information Retrieval Subjects", Computer, 18(5), pp. 67-84.

Bass, G., 1981, "A Geographic Coordinate Data Base Approach to Nautical Chart Compilation", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 296-305.

Beck, F., and J. Plasker, 1979, "USGS Digital Cartographic Pilot Projects", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 300-305.

Blakemore, M., 1986, "Cartography and Geographic Information Systems", Progress in Human Geography, 10(4), pp. 553-563.

Blanning, R., and J. Palacios, 1975, "The Management of Intergovernmental Data Sharing", URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 88-102.

Bono, P., 1986, "Guest Editor's Introduction, Graphics Standards", IEEE Computer Graphics and Applications, 6(8), pp. 12-16.

Boyle, A., 1970, "Automation in Hydrographic Charting", Canadian Surveyor, 24(5), pp. 519-537.

_____, 1982, "The Status of Graphic Data Input to Spatial Data Handling Systems", Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 13-20.

Boyle, A., J. Dangermond, D. Marble, D. Simonett, and R. Tomlinson, 1983, Review and Synthesis of Problems and Directions for Large Scale Geographic Information System Development, NASA contractor report 166563, NASA, Ames Research Center, Moffett Field, California.

Brandenberger, A., and S. Ghosh, 1985, "The World's Topographic and Cadastral Mapping Operation", Photogrammetric Engineering and Remote Sensing, 51(4), pp. 437-444.

British Cartographic Society, 1974, "Glossary of Terms" in Automated Cartography, Papers Presented at the Annual Symposium of The British Cartographic Society, Southhampton, 1973, Special Publication Number 1, London, United Kingdom: British Cartographic Society, pp. 145-149.

Brodlie, K., 1985, "GKS - The Standard for Computer Graphics", Computers and Geosciences, 11(3), pp. 339-344.

_____, M. Maguire, and G. Pfaff, 1984, "A Practical Strategy for Certifying GKS Implementations", Computer and Graphics, 8(2), pp. 125-133.

Calkins, H., 1976, "Information System Developments in North America", Proc. Commission on Geographical Data Sensing and Processing, Moscow 1976, Ottawa, Canada: IGU, Commission on Geographical Data Sensing and Processing, pp. 93-113.

Calkins, H., coordinator, and D. Marble, ed., 1980, Computer Software for Spatial Data Handling, Ottawa, Canada: International Geographical Union, Commission on Geographical Data Sensing and Processing.

Callahan, G., and F. Broome, 1984, "The Joint Development of a National 1:100,000-Scale Digital Cartographic Data Base", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 246-253.

Callahan, G., and R. Olsen, 1986, "Development of an Advanced Digital Cartographic System at the U.S. Geological Survey: 1096-2000", Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, 1986, Vol. 1, Cartography and Education, Falls Church, VA: ACSM & ASPRS, pp. 208-217.

Canadian Council on Surveying and Mapping, 1984, Data Classification, Quality Evaluation and EDP File Format, National Standards for the Exchange of Digital Topographic Data, Second Draft Report, Vol. I, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch, Energy, Mines and Resources Canada.

_____, 1984, Topographic Codes and Dictionary of Topographic Features, National Standards for the Exchange of Digital Topographic Data, Second Draft Report, Vol. II, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch, Energy, Mines and Resources Canada.

Canadian Council on Surveying and Mapping, Technical Subcommittee, Working Group #1, 1986, Proposed Standards for a Digital Topographic Information Model, Version #0.0, Revision to Draft #2, October 1986, Ottawa, Canada: Surveys and Mapping Branch, Energy, Mines and Resources Canada.

Caron, L., 1983, "An Inventory of State Natural Resources Data Bases", Proc. ACSM-ASP Fall Meetings, Salt Lake City, Falls Church, VA: ACSM & ASP, pp. 72-80.

Caron, P., J. Gray, H. Schofield, 1983, "Graphics Software Standards Promote Device Independence", Computer Design, 22(14), pp. 89-100.

Carson, G., and E. McGinnis, 1986, "The Reference Model for Computer Graphics", IEEE Computer Graphics and Applications, 6(8), pp. 17-23.

Caruso, V., 1987, "Standards for Digital Elevation Models", Technical Papers, 1987 ACSM-ASPRS Annual Convention, Baltimore, MD, March 29-April 3, 1986, Vol. 4, Cartography, Falls Church, VA: ACSM & ASPRS, pp. 159-166.

Chrisman, N., 1978, "Concepts of Space as a Guide to Cartographic Data Structures", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Chrisman, N., and H. Moellering, 1983, "Issues Involved in the Development of National Digital Cartographic Data Standards", paper presented at the Harvard Computer Graphics Week 1983, Cambridge, MA.

Clarke, D., A. Cooper, E. Liebenberg, and M. van Rooyen, 1987, A proposed national standard for the exchange of digital geo-referenced information, Draft, CSIR Technical Report TWISK 517, Pretoria, South Africa: National Research Institute for Mathematical Sciences, Council for Scientific and Industrial Research.

Clarkson, T., 1985, "Standardized Graphics on the IBM Personal Computer", IBM Systems Journal, 24(1), pp. 3-13.

Cooke, D., 1981, "Prospects for a Digitized National Map", URISA, 58, pp. 6-7.

Cooper, A., 1987, "Thoughts on Exchanging Geographical Information", Technical Papers, 1987 ACSM-ASPRS Annual Convention, Baltimore, MD, March 29-April 3, 1986, Vol. 5, GIS/LIS, Falls Church, VA: ACSM & ASPRS, pp. 1-9.

Dangermond, J., 1972, "A Classification and Review of Coordinate Identification and Computer Mapping Systems", URISA 1972, Information Research for an Urban Society, Papers from the Tenth Annual Conference of the Urban and Regional Information Systems Association, San Francisco, CA, Vol. I, ed. J. Rickert, C. Davis, V. di Matteo, and A. Bose, Claremont, CA: Urban and Regional Information Systems, pp. 184-198.

_____, 1986, "GIS vs CAD Technology: Which is Better for Automated Mapping?", Computer Graphics World, 9(10), pp.73-74.

Dangermond, J., L. Hardison, and L. Smith, 1981, "Some Trends in the Evolution of Geographic Information System Technology", Cartographic Mapping of Natural Resources and the Environment, Harvard Library of Computer Graphics, 1981 Mapping Collection, Vol. 15, pp. 27-34.

Davies, J., 1982, "Copyright and the Electronic Map", Cartographic Journal, 19(2), pp. 135-136.

Dearbaugh, B., and K. Gean, 1986, "A Symbology Standard for Electronic Chart Display", Proc. Second Biennial National Ocean Service International Hydrographic Conference, Hydro U.S.A. 1986, Norfolk, VA, March 1986, pp. 93-97.

Defense Mapping School, 1982, Digital Topographic Data, Student Handout, Fort Belvoir, VA: Defense Mapping School.

Douglas, D., and A. Boyle, eds., 1982, Computer Assisted Cartography and Geographic Information Processing: Hope and Realism, Ottawa, Canada: Canadian Cartographic Association.

Doyle, F., 1978, "Digital Terrain Models: An Overview", Photogrammetric Engineering and Remote Sensing, 44(12), pp. 1481-1485.

Drinkwater, C., and A. Fielding, 1986, "The Hydrographic Department and the Requirement for Digital Hydrographic Data", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 2, Digital Mapping and Spatial Information Systems, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 361-368.

Dutton, G., and W. Nisen, 1978, "The Expanding Realm of Computer Cartography", Datamation, 24(6), pp. 134-142.

General References

Edson, D., 1983, "Digital Cartographic Data Standards: Issues in Terms and Definitions, A Progress Report", in H. Moellering, ed., <u>Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work</u>, Issues in Digital Cartographic Data Standards, Report #3, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 37-40.

_____, 1984, "Data Bases", in National Report to I.C.A., J. Olson, ed., <u>American Cartographer</u>, Vol. 11 Supplement, pp. 51-54.

_____, 1984, "Digital Cartographic Data Standards: Alternatives in Terms and Definitions", (abstract), <u>Proc. ACSM Spring Meetings, Washington</u>, Falls Church, VA: ACSM, p. 60.

Edson, D., and J. Denegre, 1980, <u>A Glossary of Technical Terms in Computer Assisted Cartography</u>, International Cartographic Association, Commission III, Falls Church, VA: ACSM.

Edson, D., and H. Moellering, 1984, "Digital Cartographic Data Standards: Alternatives in Terms and Definitions, A Progress Report", in H. Moellering, ed., <u>Digital Cartographic Data Standards: Examining the Alternatives</u>, Issues in Digital Cartographic Data Standards, Report #4, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 13-32.

_____, 1985a, "An Interim Proposed Standard for Digital Cartographic Terms and Definitions", in H. Moellering, ed., <u>Digital Cartographic Data Standards: An Interim Proposed Standard</u>, Issues in Digital Cartographic Data Standards, Report #6, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 37-42.

_____, 1985b, "An Interim Proposed Standard for Digital Cartographic Terms and Definitions", (abstract), <u>Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7)</u>, Falls Church, VA: ASP & ACSM, p. 178.

_____, 1985c, "An Interim Proposed Standard for Digital Cartographic Data: Background and Review", (abstract), <u>Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7)</u>, Falls Church, VA: ASP & ACSM, p. 387.

Elassal, A., 1980, "Status of Software in Digital Mapping", <u>International Archives of Photogrammetry</u>, XXIII(B4), Commission IV, Hamburg: International Society for Photogrammetry, pp. 225-237.

Emery, H., 1982, "Community Geographic Data Base", <u>Journal of the Surveying and Mapping Division, ASCE</u>, 108(SU2), pp. 69-79.

Environmental Systems Research Institute, 1984, "Review and Synthesis of Problems and Directions for Large Scale Geographic Information System Development", Summary of a workshop sponsored by NASA and ESRI, in: <u>Proc. International Symposium on Spatial Data Handling</u>, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 19-25.

Federal Interagency Coordinating Committee on Digital Cartography, 1984, <u>Coordination of Digital Cartographic Activities in the Federal Government</u>, Second Annual Report to the Director, Washington, DC: Office of Management and Budget.

_____, 1986, <u>Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies</u>, Version 01.08, Final Draft, Washington, DC: Office of Management and Budget.

Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, 1986, <u>Federal Geographic Exchange Format</u>, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Feldscher, C., 1980, "A New Manual on Map Uses, Scales, and Accuracies", <u>Journal of the Surveying and Mapping Division</u>, 106(SU1), pp. 143-148.

Finland, National Board of Survey, 1986, <u>Geometristen Olioiden Standardiehdotus</u>, Helsinki, Finland: National Board of Survey.

Finland, National Board of Survey, 1986, <u>Paikkatietojen Sijainnin Kuvaaminen</u>, Helsinki, Finland: National Board of Survey.

Franklin, D., and G. Holmes, 1983, "Overview of Automated Cartography Efforts at DMAAC", <u>Proc. ACSM-ASP Fall Meetings, Salt Lake City</u>, Falls Church, VA: ACSM & ASP, pp. 647-658.

Gates, W., and R. Hell, 1980, "Geographic Information Systems", _Journal of the Surveying and Mapping Division, ASCE_, 106(SU1), pp. 105-117.

Gnatz, R., 1984, "Approaching A Formal Framework for Graphics Software Standards", _Computer and Graphics_, 8(1), pp. 39-50.

Gordon, K., 1979, "Computer-Assisted Environmental Data Handling: Issues and Implications", _Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV)_, Vol. 2, Falls Church, VA: ASP & ACSM, pp. 259-266.

Green, F., 1983, "Status of Auto Carto at the Defense Mapping Agency", _Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six)_, Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 85-89.

Greulich, G., 1982, "Metric Standards in Subdivision and Zoning", _Surveying and Mapping_, 42(3), pp. 257-264.

Guptill, S., 1986, "The National Digital Cartographic Data Base - Next Generation", _Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, 1986_, Vol. 1, Cartography and Education, Falls Church, VA: ACSM & ASPRS, pp. 218-221.

Guptill, S., and L. Starr, 1984, "Computer-Assisted Cartography: An Overview", _South African Journal of Photogrammetry, Remote Sensing and Cartography_, 14(1), pp. 13-18.

Guterl, F., 1984, "Personal Computers - Common-Sense Replaces Computerese, Steps are Taken Toward Standardization, and Interactive Graphics Gains Ground", _IEEE Spectrum_, 21(1), pp. 41-46.

Haerder, T., and A. Reuter, 1983, "Principles of Transaction-Oriented Database Recovery", _Computing Surveys_, 15(4), pp. 287-317.

Hoshino, Y., and K. Inaba, 1986, "On the Standardisation of Digital Mapping in Japan", _Mapping from Modern Imagery, Acquisition and Revision of Spatial Information, Proceedings of a Symposium held by Commission IV of the International Society for Photogrammetry and Remote Sensing and the Remote Sensing Society in Pollock Halls, Edinburgh, Scotland, 8-12 September 1986_, International Archives of Photogrammetry and Remote Sensing, Vol. 26, Part 4, Nottingham, United Kingdom: International Society for Photogrammetry and Remote Sensing and the Remote Sensing Society, pp. 311-319.

House of Lords, Select Committee on Science and Technology, 1983, _Remote Sensing and Digital Mapping, Session 1983-84, 1st Report_, Volume I - Report, London, United Kingdom: Her Majesty's Stationery Office.

Hubbard, S., 1983, _The Computer Graphics Glossary_, Phoenix, AZ: The Oryx Press.

Hwang, K., and K. Fu, 1983, "Integrated Computer Architectures for Image Processing and Database Management", _Computer_, January 1983, pp. 51-60.

International Association of Assessing Officers, 1976, _Standard on Assessment Maps and Parcel Identifiers_, Chicago, I.A.A.O.

_____, 1979, _Land Record Information Systems in the United States_, I.A.A.O. Research & Information Series, Chicago, IL: I.A.A.O.

International Federation of Library Associations and Institutions, 1987, _ISBD(CM), International Standard Bibliographic Description for Cartographic Materials_, 2nd edition, draft, London, United Kingdom: IFLA Universal Bibliographic Control and International Marc Programme.

International Hydrographic Association, 1986, _Format for the Exchange of Digital Hydrographic Data_, Developed by the IHO Committee on the Exchange of Digital Data, Rockville, MD: International Hydrographic Association.

Isaacson, P., R. Burton and D. Campbell, 1984, "Presentation of Hypothesized 4-D Phenomena", _Computer Graphics World_, August, 1984, pp. 48-63.

Johnson, T., 1981, "A Design Model for Large Digital Cartographic Systems", _Proc. ACSM Fall Meetings, San Francisco & Honolulu_, Falls Church, VA: ACSM, p. 283.

Japan, Ministry of Construction, Geographical Survey Institute, 1986a, _Daisyukusyaku Chikeizu no Dizitalu Mappingu no Hyozyunka ni Kansuru Kenkyu (I) (Yoyaku) (Research on Standardization of Digital Mapping in Large Scale Topographic Maps (I) (Summary))_, Tsukuba, Japan: Geographical Survey Institute.

General References

_____, 1986b, _Dizitalu Mappingu no Hyozyunka ni Kansuru Chousa Kenkyu Sagyo Houkokusho (Research Report on Standardization of Digital Mapping)_, Tsukuba, Japan: Geographical Survey Institute.

_____, 1986c, _Dizitalu Mappingu no Hyozyunka ni Kansuru Chousa Kenkyu Sagyo Houkokusho, Bessastu 1-8 (Research Report on Standardization of Digital Mapping, Appendixes 1-8)_, Tsukuba, Japan: Geographical Survey Institute.

_____, 1986d, _Dizitalu Mappingu no Hyozyunka ni Kansuru Chousa Kenkyu Sagyo Houkokusho, Bessuzoe Shiryo 1-5 (Research Report on Standardization of Digital Mapping, Data Appendixes 1-5)_, Tsukuba, Japan: Geographical Survey Institute.

_____, 1986e, _Denshikeisanki o Mochiita Zukashuho ni Kansuru Kenkyu Sagyo Houkokusho (Research Report on Methods of Computer Mapping)_, Tsukuba, Japan: Geographical Survey Institute.

_____, 1986f, _Denshikeisanki o Mochiita Zukashuho ni Kansuru Kenkyu Sagyo Houkokusho, Bessastu 1, Kouzouka MT Sakusei Shirou (Research Report on Methods of Computer Mapping, Appendix 1, Data of Structured MT Processing)_, Tsukuba, Japan: Geographical Survey Institute.

_____, 1986g, _Dizitalu Mappingu Yogo-shu (Terminology of Digital Mapping)_, Tsukuba, Japan: Geographical Survey Institute.

Keffer, G., R. Marx, and E. Anderson, 1985, "A Prospective Case for A National Land Data System: Recent Developments at the Census Bureau and U.S. Geological Survey", _URISA 1985, Computers in Public Agencies, Sharing Solutions, Papers from the annual conference of the Urban and Regional Information Systems Association, July 28 - August 1, 1985, Ottawa, Ontario_, Vol. I, Land Records Systems, ed. B. Niemann, McLean, VA: URISA, pp. 29-40, also published as "A Prospective Case for A National Land Data System: Ten Years Later", _Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7)_, Falls Church, VA: ASP & ACSM, pp. 1-10.

Lambird, B., D. Lavine, and L. Kanal, 1984, "Distributed Architecture and Parallel Non-directional Search for Knowledge-based Cartographic Feature Extraction Systems", _International Journal on Man-Machine Studies_, 20(1), pp. 107-120.

Landsat Technical Working Group, 1985, _Glossary of Terms_.

Liebermann, D., 1983, "Graphics Standards Bridge Hardware Differences", _Electronic Products_, 26(4), pp. 48-53.

Light, Donald, 1986, "Mass Storage Estimates for the Digital Mapping Era", _Photogrammetric Engineering and Remote Sensing_, 52(3), pp. 419-425.

Lincoln Institute of Land Policy, 1982, _Glossary of Terms in Land Data Systems_, Cambridge, MA: Lincoln Institute of Land Policy.

Lisle, J., 1986, "The National Ocean Service Design for Automated Nautical Charting System II", _Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986_, Vol. 2, Digital Mapping and Spatial Information Systems, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 369-378.

MacEachren, A., "A Spatial and Topical Assessment of Digital Geographic Database Activities in the U.S.", _Professional Geographer_, 38(4), pp. 397-405.

MacIver, M., 1984, "Data Sharing Methods for Land Records Systems", _URISA 1984, The Changing Role of Computers in Public Agencies, Papers from the annual conference of the Urban and Regional Information Systems Association, August 12-15, 1984, Seattle, WA_, ed. R. Schmitt and H. Smolin, McLean, VA: Society and Association Services, Inc., pp. 245-257.

Maher, R., 1986, "Data Transfer Between GIS in Canada: A Review of the Problem and Examples of Current Solutions from Atlantic Canada", _Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986_, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 333-339.

Marble, D., 1984, "Development of a Conceptual Model of the Manual Digitizing Process", _Proc. International Symposium on Spatial Data Handling_, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 146-171.

Matthias, H., 1979, "Strukturen und Organization bei der Einführung von Interaktiven Numerisch-Graphischen Systemen", Mensuration Photogrammetrie Genie Rual: Bulletin, Vol. 4, pp. 76-79.

Maynard, B., 1984, "A Summary of the ASCE Special Publication on Map Uses, Scales, and Accuracies for Engineering and Associated Purposes", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 206-213.

McEwen, R., 1980, "USGS Digital Cartographic Applications Program", Journal of the Surveying and Mapping Division, Proc. ACSE, 106(SU1), pp. 13-22.

_____, 1983, "Digital Cartography in The U.S. Federal Government, 1983", paper presented at the Harvard Computer Graphics Week 1983, Cambridge, MA.

_____, and H. Calkins, 1981, "Digital Cartography in the UGSG National Mapping Division", paper presented at EURO-CARTO I, at New College, Oxford, 1981.

_____, and H. Calkins, 1982, "Digital Cartography in the USGS National Mapping Division: A Comparison of Current and Future Mapping Processes", Cartographica, 19(2), pp. 11-26.

_____, R. Witmer, and B. Ramey, 1983, "USGS Digital Cartographic Data Standards", Proc. ACSM-ASP Fall Meetings, Salt Lake City, Falls Church, VA: ACSM & ASP, pp. 127-137.

McKay, E., 1983, "Statistical Considerations Underlying the Design and Use of Standards and Specifications", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 653.

McKeown, D., 1985, "Database Issues in Digital Mapping", (extended abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 366-367.

_____, and L. Starr, 1984, "Research for the USGS Digital Cartography Program", Proc. ACSM-ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM, pp. 325-333.

Meads, J., 1987, "The Standards Pipeline", Computer Graphics, 21(1), pp. 44-46.

Mikhail, E., moderator, 1978, "Panel Discussion: The Future of DTM", Photogrammetric Engineering and Remote Sensing, 44(12), pp. 1487-1497.

Moellering, H., 1980, "Strategies of Real-Time Cartography", Cartographic Journal, 17(1), pp. 12-15.

_____, 1981, A Proposed Approach to Establish a Set of National Digital Cartographic Data Standards, Report to the National Mapping Division, U.S. Geological Survey.

_____, ed., 1982a, Papers from the Joint ACSM/ASP Session on Digital Cartographic Data Standards at the 1982 Meetings of the ACSM, Denver, Issues in Digital Cartographic Data Standards, Report #1, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-301, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1982b, "The Challenge of Developing a Set of National Digital Cartographic Data Standards for the United States", in H. Moellering, ed., Papers from the Joint ACSM/ASP Session on Digital Cartographic Data Standards at the 1982 Meeting of the ACSM, Denver, Issues in Digital Cartographic Data Standards, Report #1, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 1-15.

_____, ed., 1982c, Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982, Issues in Digital Cartographic Data Standards, Report #2, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-302, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1982d, "The Goals of the National Committee for Digital Cartographic Data Standards", in H. Moellering, ed., Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982, Issues in Digital Cartographic Data Standards, Report #2, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 1-8.

_____, 1982e, "Report on the Activities of Working Group IV, Terms and Definitions", in H. Moellering, ed., Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982, Issues in Digital Cartographic Data Standards, Report #2, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 15-16.

General References

_____, 1982f, "The Organization and Scope of the National Committee for Digital Cartographic Data Standards", paper presented at the Harvard Computer Graphics Week 1982, Cambridge, MA.

_____, ed., 1983a, Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work, Issues in Digital Cartographic Data Standards, Report #3, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-303, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1983b, "Issues Facing the Development of Digital Cartographic Data Standards: Background and Introduction", in H. Moellering, ed., Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work, Issues in Digital Cartographic Data Standards, Report #3, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 1-10.

_____, 1983c, "Designing Interactive Cartographic Systems Using The Concepts of Real and Virutal Maps", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 53-64.

_____, ed., 1984a, Digital Cartographic Data Standards: Examining the Alternatives, Issues in Digital Cartographic Data Standards, Report #4, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-304, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1984b, "Alternatives Available for the Development of Digital Cartographic Data Standards: Background and Introduction", in H. Moellering, ed., Digital Cartographic Data Standards: Examining the Alternatives, Issues in Digital Cartographic Data Standards, Report #4, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 1-12.

_____, ed., 1984c, A Working Bibliography for Digital Cartographic Data Standards, Issues in Digital Cartographic Data Standards, Report #5, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-305, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1984d, "Real Maps, Virtual Maps and Interactive Cartography", in G. Gaile and C. Willmott, eds., Spatial Statistics and Models, Dordrecht, Netherlands: D. Reidel, pp. 109-132.

_____, 1984e, "Digital Data Standards", in National Report to I.C.A., J. Olson, ed., American Cartographer, Vol. 11 Supplement, pp. 54-55.

_____, 1984f, "Background and Review of the Work of the National Committee for Digital Cartographic Data Standards", (abstract), Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 59.

_____, ed., 1985a, Digital Cartographic Data Standards: An Interim Proposed Standard, Issues in Digital Cartographic Data Standards, Report #6, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-306, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1985b, "An Interim Proposed Standard for Digital Cartographic Data: Background and Review", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 387.

_____, ed., 1986a, Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-307, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1986b, "Introducing the Evaluation and Testing of the Interim Proposed Standard", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 1-8.

_____, 1986c, "Developing Digital Cartographic Data Standards for the United States", Proc. Auto Carto London (International Conference on the acquisition, management and presentation of spatial data), 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques (ed. M. Blakemore), pp. 312-322.

_____, ed., 1987a, _A Draft Proposed Standard for Digital Cartographic Data_, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards. Only available as USGS Open File Report 87-308, Federal Center, Building 41, P.O. Box 25425, Denver, CO 80225.

_____, 1987b, _A Final Bibliography for Digital Cartographic Data Standards_, Issues in Digital Cartographic Data Standards, Report #9, Columbus, OH: National Committee for Digital Cartographic Data Standards.

Moffitt, F., 1979, "Photogrammetric Mapping Standards", _Photogrammetric Engineering and Remote Sensing_, 45(12), pp. 1637-1640.

Monmonier, M., 1983, "Cartography, Mapping and Geographic Information", _Progress in Human Geography_, 7(3), pp. 420-428.

Moore, H., 1983, "The Impact of Computer Technology in the Mapping Environment", _Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six)_, Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 60-68.

Moore, P., ed., 1980, _Cartographic and Statistical Data Bases and Mapping Software_, Harvard Library of Computer Graphics/1980 Mapping Collection, Vol. 8, Cambridge, MA: Laboratory for Computer Graphics and Spatial Analysis.

Moyer, D., J. Portner, and D. Mezera, 1981, "Overview of a Survey-Based System for Improving Data Compatibility in Land Record Systems", _URISA 1981, Urban, Regional, and Environmental Information: Needs, Sources, Systems, and Uses. Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 16-19, 1981, New Orleans, LA_, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 264-279.

National Committe for Digital Cartographic Data Standards, 1987, "Introduction and Executive Summary", H. Moellering, ed., _A Draft Proposed Standard for Digital Cartographic Data_, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

_____, 1987, "Part I - Definitions and References", H. Moellering, ed., _A Draft Proposed Standard for Digital Cartographic Data_, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

National Research Council, Assembly of Mathematical and Physical Sciences, Committee on Geodesy, Panel on a Multipurpose Cadastre, 1980, _Need for a Multipurpose Cadastre_, Washington, DC: National Academy Press.

_____, 1981, _Federal Surveying and Mapping: An Organizational Review_, Washington, DC: National Academy Press.

_____, 1983, _Procedures and Standards for a Multipurpose Cadastre_, Washington, DC: National Academy Press.

Nesmith, A., 1985, "A Long, Arduous March Toward Standardization", _Smithsonian_, March 1985, pp. 176-194.

Neumann, D., 1984, "A Digital Cartographic Information Utility", Proc. _ACSM Spring Meeting, Washington_, Falls Church, VA: ACSM, pp. 301-307.

New South Wales Interdepartmental Committee on Land Information, 1984, _New South Wales Standard for Interchange of Digital Land Information, Second Draft_, Sydney, Australia.

Newman, W., and A. van Dam, 1978, "Recent Efforts Towards Graphics Standardization", _Computing Surveys_, 10(4), pp. 365-380.

Newson, D., 1983, "Nautical Chart Standardization", _Journal of Navigation_, 36(3), pp. 468-479.

Nicholson, R., 1984, "Building a Digital Distribution Facilities Data Base", _URISA 1984, The Changing Role of Computers in Public Agencies. Papers from the annual conference of the Urban and Regional Information Systems Association, August 12-15, 1984, Seattle, WA_, ed. R. Schmitt and H. Smolin, McLean, VA: Society and Association Services, Inc., pp. 376-385.

Nickerson, B., and H. Freeman, 1986, "Development of a Rule-Based System for Automatic Map Generalization", _Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A._, Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 537-556.

General References

Niemann, B., 1976, "Integrated Land Information Systems: Some Perceptions and Suggestions", Proc. Land Records Symposium, Orono, MN: University of Maine, pp. 179-193.

North American Institute for Modernization of Land Data Systems, 1979, Land Data Systems Now, Proc. Second MOLDS Conference, Washington, DC: ACSM.

Osland, C., and A. Francis, 1984, "Metafile Standards", Computer Graphics Forum, 3(4), pp. 301-303.

Penney, R., 1979, "The Ascendancy of Digital Cartography in DMA's Future", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Falls Church, VA: ASP & ACSM, pp. 236-243.

Pfaff, G., 1983, "Certification/Validation of Graphics Software", Computer and Graphics, 7(2), pp. 203-204.

Portner, J., 1982, "Beliefs Regarding Issues Relating to Land Information", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 325-331.

Reneman, F., 1975, "A System for Digital Mapping", Commission III, Automation in Cartography, Enschede, Netherlands: International Cartographic Association, pp. 254-269.

Rhind, D., 1984, "Remote Sensing, Digital Mapping and Geographical Information Systems: The Creation of a National Policy", Proc. International Symposium on Spatial Data Handling, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 6-18.

_____, 1985, "Geographical Data Handling: Recent Developments", Computers and Geosciences, 11(3), pp. 297-298.

Riordan, W., 1979, "Lessons Learned in Establishing Automated Cartographic Digital Data Bases", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 5-12.

Roberts, R., 1980, "Cartographic Data: The First Item in a Resource Information System", Cartography, 11(4), pp. 227-233.

Rodrigue, M., and L. Thompson, 1983, "The Availability and Use of Digital Topographic Data", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 580-587.

SCCAMA Education Committee, 1984, SCCAMA Glossary, Los Angeles, CA, SCCAMA.

Sharp, J., 1979, "Demonstrating the Value of Landsat Data: A Case for Lowered Expectations", Photogrammetric Engineering and Remote Sensing, 45(11), pp. 1487-1493.

Shuey, D., D. Bailey, and T. Morrissey, 1986, "PHIGS: A Standard, Dynamic, Interactive Graphics Interface", IEEE Computer Graphics and Applications, 6(8), pp. 50-57.

Simpson, L., and R. Moore, 1986, "Exchanging Digital Base Mapping Data", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 292-297.

Sirbu, M., and L. Zwimpfer, 1985, "Standards Setting for Computer Communication: The Case of X.25", IEEE Communications Magazine, 23(3), pp. 35-45.

Skall, M., 1986a, "NBS's Role in Computer Graphic Standards", IEEE Computer Graphics and Applications, 6(8), pp. 66-70.

_____, 1986b, "Computer Graphics Standards", Computer Graphics Bulletin, Newsletter of the IEEE Computer Society Technical Committee on Computer Graphics, 2, pp. 6-9.

Smith, B., 1985, "US and International Efforts in Product Data Exchange", Gaithersburg, MD: National Bureau of Standards.

Smith, B., and J. Wellington, 1986, Initial Graphics Exchange Specifications (IGES), Version 3.0, NBSIR 86-3359, Gaithersburg, MD: U.S. Department of Commerce, National Bureau of Standards, National Engineering Laboratory, Center for Manufacturing Engineering, Automated Production Technology Division.

Southard, R., 1980, "The Changing Scene in Surveying and Mapping", Surveying and Mapping, XL(4), pp. 397-403.

_____, 1983, "The Development of U.S. National Mapping Policy", American Cartographer, 10(1), pp. 5-15.

_____, 1984, "Current Digital Cartographic Activity at the U.S. Geological Survey", paper presented at the 12th Conference of the International Cartographic Association, Perth, Australia, August 6-13, 1984.

_____, 1986, "An International Perspective on the Development of National Digital Cartographic Standards", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 282-291.

_____, and K. Anderson, 1982, "A National Program for Digital Cartography", International Symposium on Computer Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 41-49.

_____, L. Amos, and K. Anderson, 1984, "Coordination of Federal Digital Cartographic Activities", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 236-245.

Sowton, M., and P. Haywood, 1986, "National Standards for the Transfer of Digital Map Data", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 298-311.

Sparks, M., 1985, "Graphics Standards Bindings- What Are they and When Can We Use Them?", Computer Graphics, 19(4), pp. 187-189.

Starr, L., 1986, "Mark II: The Next Step in Digital Systems Development at the U.S. Geological Survey", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 2, Digital Mapping and Spatial Information Systems, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 200-205; reprinted in American Cartographer, 13(4), pp. 368-371.

Starr, L., and K. Anderson, 1982, "Some Thoughts on Cartographic and Geographic Information Systems for the 1980's", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 41-55.

Starr, L., and R. McEwen, 1983, "The National Digital Cartographic Program of the U.S. Geological Survey", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for the 6th International Symposium on Automated Cartography, pp. 89-99.

Symmes, R., 1972, "HUD's Involvement in Intergovernmental Statistical Standards", URISA 1972, Information Research for an Urban Society, Papers from the Tenth Annual Conference of the Urban and Regional Information Systems Association, San Francisco, CA, Vol. I, ed. J. Rickert, C. Davis, V. di Matteo, and A. Bose, Claremont, CA: Urban and Regional Information Systems, pp. 239-245.

Teicholz, E., 1980, "Geographic Information Systems: The ODYSSEY Project", Journal of the Surveying and Mapping Division, 106(SU1), pp. 119-135.

Thompson, M., 1979, "Surveying and Mapping Research 1978-1988: An Overview", Journal of the Surveying and Mapping Division, 105(SU1), pp. 43-49.

Tomlinson, R., ed., 1972, Geographical Data Handling, 2 Vols., Ottawa, Canada: International Geographical Union Commission on Geographical Data Sensing and Processing.

_____, H. Calkins, and D. Marble, 1976, Computer Handling of Geographical Data, Paris, France: Unesco Press.

U.S. Department of Commerce, National Bureau of Standards, 1968, General Description of the Federal Information Processing Standards Register, Federal Information Processing Standards Publication No. 0, Washington, DC: U.S. Department of Commerce, National Bureau of Standards .

_____, 1973a, Objectives and Requirements of the Federal Information Processing Standards Program, Federal Information Processing Standards Publication No. 23, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1973b, Standardization of Data Elements and Representations, Federal Information Processing Standards Publication No. 28, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

General References

_____, 1980, Symposium on International Standards Information and ISONET, NBS Special Publication 579, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1983a, Initial Graphics Exchange Specification (IGES), Version 2.0, NBSIR 82-2631 (AF), Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1983b, "Appendix D, IGES Glossary", in Initial Graphics Exchange Specification (IGES), Version 2.0, NBSIR 82-2631 (AF), Washington, DC: U.S. Department of Commerce, National Bureau of Standards, pp. 306-318.

_____, 1984, Standards Activities of Organizations in the United States, NBS Special Publication 681, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1986, Specification for a Data Descriptive File for Information Interchange (DDF), Federal Information Processing Standards Publication (FIPS PUB) 123, Washington, DC: U.S. Department of Commerce, National Bureau of Standards (adoption of ANSI/ISO 8211-1985).

U.S. Department of the Interior, Bureau of Land Management, 1980, Glossaries of BLM Surveying and Mapping Terms, Denver, CO: Bureau of Land Management.

U.S. Department of the Interior, Geological Survey, 1983a, Overview and USGS Activities, by R. McEwen, H. Calkins, and B. Ramey, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-A, Reston, VA: USGS.

_____, 1983b, Land Use and Land Cover Digital Data, by R. Fegeas, R. Claire, S. Guptill, K. Anderson, and C. Hallam, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-E, Reston, VA: USGS.

_____, 1983c, Research, Investigations and Technical Developments, National Mapping Program 1982, Open File Report 83-568, Reston, VA: USGS.

_____, 1983d, Scientific and Technical, Spatial, and Bibliographic Data Bases and Systems of the U.S. Geological Survey, 1983, Circular 817, Reston, VA: USGS.

_____, 1986, Research, Investigations, and Technical Developments, National Mapping Program 1983-84, ed. by R. McEwen, Open File Report 85-304, Reston, VA: USGS.

U.S. Executive Office of the President, Office of Management and Budget, 1973, Report of the Federal Mapping Task Force on Mapping, Charting, Geodesy and Surveying, July 1973, Washington, DC: U.S. Executive Office of the President, Office of Management and Budget.

_____, 1983, Coordination of Federal Digital Cartographic Data Programs, Memorandum for the Heads of Executive Departments, Establishments, and Independent Agencies, M-83-12, April 4, 1983, Washington, DC: U.S. Executive Office of the President, Office of Management and Budget.

U.S. General Accounting Office, Comptroller General, 1982, Duplicative Federal Computer-Mapping Programs: A Growing Problem, Report GAO/RCED-83-19, November 22, 1983, Gaithersburg, MD: U.S. General Accounting Office, Comptroller General.

Waugh, T., and R. Healey, 1986, "The GEOLINK System, Interfacing Large Systems", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 10-18.

Weber, W., 1979, "Geographic Information Systems (GIS) - A Review and Reflections on the Future Development", International Yearbook of Cartography, XIX, pp. 119-138.

Wellar, B., and T. Graff, 1971, Geographic Aspects of Information Systems, Introduction and Selected Bibliography, Monticello, IL: Council of Planning Librarians.

Wellar, B., and T. Parker, 1971, "Standardization: Issues and...?", presented at the Tenth Annual Conference of the Urban and Regional Information Systems Association - Information Systems and Political Systems, New Orleans.

Wichita Falls Consortium, 1970, _The Wichita Falls Consortium Phase II Report, Vol. XII, Conceptualization Themes: Transferability, Data Standardization, Confidentiality, Geographic Information Systems_, Wichita Falls, TX: City of Wichita Falls.

Williams, O., 1980, "Outlook on Future Mapping, Charting, and Geodesy Systems", _Photogrammetric Engineering and Remote Sensing_, 46(4), pp. 487-490.

Winn, W., Jr., Workshop Coordinator, 1985, _Report of the NOS - CEDD Digital Charting Data Users Workshop, Rockville, Maryland, April 2-3, 1985_, Rockville, MD: National Charting Research and Development Laboratory.

Witiuk, S., 1976, "Issues in Exchanging Spatial Systems Technology", in D. Taylor, ed., _Proceedings of a Workshop on Current Issues in Geographic Data Processing_, Ottawa, Canada: Dept. of Geography, Carleton Univ., pp. 79-91.

_____, 1982, "Software Portability - Recent Case Studies with the TRAMS and GIMMS Packages", paper presented at SORSA Forum, Helsinki, June 15-19, 1982.

Working Party to Produce National Standards for the Transfer of Digital Map Data, 1986a, _Final Draft Papers of the Working Party to Produce National Standards for the Transfer of Digital Map Data, National Transfer Standards, NTF User Manual_, London, United Kingdom: Ordnance Survey.

_____, 1986b, "Glossary of Terms Used in Digital Map Data Transfer, Final Draft (Issue 1.2)", in Working Party to Produce National Standards for the Transfer of Digital Map Data, _Final Draft Papers of the Working Party to Produce National Standards for the Transfer of Digital Map Data, National Transfer Standards, NTF User Manual_, London, United Kingdom: Ordnance Survey.

_____, 1987, _Glossary of Terms_, Release 1.0, January 1987, London, United Kingdom: Ordnance Survey.

Yan, J., S. Witiuk, and T. Fisher, 1977, "Exchange Spatial Systems Technology: Related Issues and a Case Study", in D. Douglas, ed., _Applications of Geographic Information Processing_, Ottawa, Canada: National Capital Geographic Information Processing Group, pp. 41-49.

Zarzycki, J., 1982, "Opportunities and Perspectives in Digital Mapping and Automated Cartography", in F. Whitmore Jr., and M. Williams, eds., _Resources for the Twenty-First Century - Proc. International Centennial Symposium of the U.S. Geological Survey_, USGS Professional Paper 1193, pp. 92-102.

_____, 1984, "Standards for Digital Topographic Data-The Canadian Experience", _Surveying and Mapping_, 44(1), pp. 29-37.

page 15 follows

CARTOGRAPHIC OBJECTS

Alexandroff, P., 1965, Elementary Concepts of Topology, translated by A. Obolensky, New York, NY: Federick Ungar Publishing Co.

Ahuja, N., and B. An, 1985, "Image Representation Using Voronoi Tessellation", Computer Vision, Graphics, and Image Processing, 29(3), pp. 286-295.

Anderson, K., and H. Calkins, 1982, "Cartographic Data Standards: Implications for GISs", paper presented at 42nd annual meeting of the American Congress on Surveying and Mapping, Denver, CO.

Atkinson, H., I. Gargantini, and T. Walsh, 1985, "Counting Regions, Holes, and Their Nesting Level in Time Proportional to the Border", Computer Vision, Graphics, and Image Processing, 29(2), pp. 196-215.

Bajcsy, R., 1982, "Three-Dimensional Object Representation", in J. Kittler, K. Fu, and L. Pau, eds., Pattern Recognition Theory and Applications, Dordrecht, Netherlands: D. Reidel, pp. 283-295.

Ballard, D., 1978, Strip Trees: A Hierarchical Representation for Map Features, TR 32, Rochester, NY: University of Rochester, Department of Computer Science.

Battelle-Pacific Northwest Laboratories, Interlaboratory Working Group for Data Exchange, 1978, Geographic Exchange Standard and Primer, PNL-2748 UC-32, Prepared for the U.S. Department of Energy under Contract EY-76-C-06-1830, Richland, WA: Battelle-Pacific Northwest Laboratories.

Battelle-Pacific Northwest Laboratories, Interlaboratory Working Group for Data Exchange, 1978, "Appendix A-Structures for Representing Geographical Features", in Geographic Exchange Standard and Primer, PNL-2748 UC-32, Prepared for the U.S. Department of Energy under Contract EY-76-C-06-1830, Richland, WA: Battelle-Pacific Northwest Laboratories.

Berkman, R., 1985, "Hypergraphics", Industrial Design Magazine, 32(1), pp. 68-71.

Besl, P., and R. Jain, 1986, "Invariant Surface Characteristics for 3D Object Recognition in Range Images", Computer Vision, Graphics, and Image Processing, 33(1), pp. 33-80.

Biggs, R., 1978, "Cartographic Data Structures for Thematic Applications of Automated Cartography", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Billingsley, F., P. Anuta, J. Carr, C. McGillem, D. Smith, and T. Strand, 1983, "Data Processing and Reprocessing", Chap 17 in R. Colwell, D. Simonett, and F. Ulaby, eds., Manual of Remote Sensing, Second Edition, Vol. I, Falls Church, VA: ASP, pp. 719-724.

Bieri, H., and W. Nef, 1984, "Algorithms for the Euler Characteristic and Related Additive Functionals of Digital Objects", Computer Vision, Graphics, and Image Processing, 28(2), pp. 166-175.

Brady, M., J. Ponce, A. Yuille, and H. Asada, 1985, "Describing Surfaces", Computer Vision, Graphics, and Image Processing, 32(1), pp. 1-28.

Brassel, K., 1978, "A Topological Data Structure for Multi-Element Map Processing", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Carlbom, I., I. Chakravarty, and D. Vanderschel, 1985, "A Hierarchical Data Structure for Representing the Spatial Decomposition of 3-D Objects", IEEE Computer Graphics and Applications, 5(4), pp. 24-31.

Chaudhuri, B., and M. Kundu, 1984, "Digital Line Segment Coding: A New Efficient Contour Coding Scheme", IEE Proceedings, Vol. 131, Pt. E, No. 4, pp. 143-147.

Chinn, W., and N. Steenrod, 1966, First Concepts of Topology, New York, NY: Random House.

Claire, R., and S. Guptill, 1982, "Spatial Operators for Selected Data Structures", International Symposium on Computer Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 189-200.

Clarke, K., 1985, "Strategies for Spatial Data Compression", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 97-107.

Cohen, E., T. Lyche, and L. Schumaker, 1985, "Algorithms for Degree-Raising of Splines", ACM Transactions on Graphics, 4(3), pp. 171-181.

Cook, B., 1967, "A Computer Representation of Plane Region Boundaries", Australian Computer Journal, Vol. 1, pp. 44-50.

_____, 1978, "The Structural and Algorithmic Basis of a Geographic Data Base", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Corbett, J., 1979, Topological Principles in Cartography, U.S. Department of Commerce, Bureau of the Census, Technical Paper No. 48, Washington, DC: U.S. Department of Commerce, Bureau of the Census.

_____, 1985, "A General Topological Model for Spatial Reference", in G. Deecker, ed., SORSA Working Paper Series, No. 1985-5.

_____, 1978, "Memoranda on the Subject of the Symposium on Topological Data Structures", in G. Dutton, ed., Summary of Proceedings, Vol. 1, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley, pp. 123-127.

Coxeter, H., 1961, Introduction to Geometry, New York, NY: John Wiley & Sons.

Dangermond, J., 1982, "A Classification of Software Components Commonly used in Geographic Information Systems", Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 70-91.

Dueker, K., 1972, "A Framework for Encoding Spatial Data", Geographical Analysis, 4(1), pp. 98-105.

_____, and J. Noynaert, 1978, "Interactive Digitizing, Editing, and Mapping: Data Structure Considerations", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Edwards, R., R. Durfee, and P. Coleman, 1978, "Definition of a Hierarchical Polygonal Data Structure and the Associated Conversion of a Geographic Base File from Boundary Segment Format", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison- Wesley.

Faugeras, O., M. Hebert, P. Mussi, and J. Boissonnat, 1984, "Polyhedral Approximation of 3-D Objects without Holes", Computer Vision, Graphics, and Image Processing, 25(2), pp. 169-183.

Federhen, H., 1984, "A Spatial Analysis System for Digital Feature Data", Technical Papers, 50th Annual Meeting of the American Society of Photogrammetry, Falls Church, VA: ASP, pp. 323-331.

Fegeas, R., 1978, "The Graphic Input Procedure - An Operational Line Segment/Polygon Graphic to Digital Conversion", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1982, "Modularization of Digital Cartographic Data Capture", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 297-306.

Franklin, R., 1983, "Rays-- New Representation for Polygons and Polyhedra", Computer Vision, Graphics, and Image Processing, 22(3), pp. 327-338.

Freeman, H., 1961, "On the Encoding of Arbitrary Geometric Configurations", IRE Transactions on Electronic Computers, Vol. 10, pp. 260-268.

_____, 1978, "Some New Map Data Encoding Schemes", in J. Moneta, ed., Information Technology, Amsterdam, Netherlands: North Holland, pp. 689-696.

Gardiner, V., 1982, "Stream Networks and Digital Cartography", Cartographica, 19(2), pp. 38-44.

Goldman, R., 1986, "Urn Models and Beta-Splines", IEEE Computer Graphics and Applications, 6(2), pp. 57-64.

Goodman, T., and K. Unsworth, 1986, "Manipulating Shape and Producing Geometric Continuity in β-spline Curves", IEEE Computer Graphics and Applications, 8(2), pp. 50-56.

Guibas, L., and J. Stolfi, 1985, "Primitives for the Manipulation of General Subdivisions and the Computation of Voronoi Diagrams", ACM Transactions on Graphics, 4(2), pp. 74-123.

Guptill, S., 1983, "The Role of Digital Cartographic Data in the Geosciences", Computers and Geosciences, 9(1), pp. 23-26.

_____, 1986, "A New Design for the U.S. Geological Survey's National Digital Cartographic Data Base", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 2, Digital Mapping and Spatial Information Systems, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 10-18.

Harary, F., 1969, Graph Theory, Reading, MA: Addison-Wesley.

Harvard University, Graduate School of Design, Laboratory for Computer Graphics and Spatial Analysis, 1978, "Proposed Terminology for Symposium Discussion", First International Advanced Study Symposium on Topological Data Structures for Geographic Information Systems, Harvard Papers on Geographic Information Systems, Vol. 1 - Summary of Proceedings, ed. G. Dutton, Cambridge, MA: Harvard University, Graduate School of Design, Laboratory for Computer Graphics and Spatial Analysis.

Henderson, T., 1983, "Efficient 3-D Object Representations for Industrial Vision Systems", IEEE Transactions on Pattern Analysis and Machine Intelligence, 5(6), pp. 609-618.

Hilbert, R., 1981, "Construction and Display of Three-Dimensional Polygonal-Histograms", Computer Graphics, 15(2), pp. 230-241.

Hoshino, Y., and K. Inaba, 1986, "The System of Classification of Map Data for Digital Map", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 106-116.

Huang, X., and S. Hsu, 1983, "A Chained Data Structure for Efficient Extraction and Display of Information from Polygon Maps", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 171-176.

Kjerne, D., and K. Dueker, 1986, "Modeling Cadastral Spatial Relationships using an Object-Oriented Language", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 142-157.

Lauzon, J., R. McLaren, and C. Harwood, 1985, "Database Support for Geographic Information Systems: The Wild System 9 Approach", Proc. ACSM-ASPRS Fall Convention, Indianapolis, Falls Church, VA: ACSM & ASPRS, pp. 583-594.

Moellering, H., 1986a, "Testing the Interim Proposed Standards and Evaluation of Digital Cartographic Objects", (abstract), Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, 1986, Vol. 1, Cartography and Education, Falls Church, VA: ACSM & ASPRS, p. 4.

_____, 1986b, "Evaluating and Testing the Interim Proposed Standard for Digital Cartographic Objects", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 9-20.

_____, 1986c, "A Review and Definition of 0-, 1-, and 2-Dimensional Objects for Digital Cartography", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 616-627.

Morehouse, S., 1979, "An Application of ODYSSEY to DIME File Mapping", Mapping Software and Cartographic Data Bases, Harvard Library of Computer Graphics, 1979 Mapping Collection, Vol. 2, pp. 157-162.

National Committe for Digital Cartographic Data Standards, 1987, "Part I - Definitions and References", H. Moellering, ed., A Draft Proposed Standard for Digital Cartographic Data, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

NATO Advanced Study Institute, 1981, Pattern Recognition, Theory and Applications, Proc. NATO Advanced Study Institute held at St. Anne's College, Oxford, March 29-April 10, 1981, ed. by J. Kittler, K. Fu, and L. Pau, NATO advanced study institutes series, Series C, Mathematical and physical sciences, Vol. 81, Dordrecht, Netherlands: D. Reidel.

NATO Advanced Study Institute on Approximation Theory and Spline Functions, 1983, Approximation Theory and Spline Functions, ed. by S. Singh, J. Burry, and B. Watson, NATO ASI series, Series C, Mathematical and physical sciences, Vol. 136, Dordrecht, Netherlands: D. Reidel.

Nielson, G., 1986, "Rectangular ν-Splines", *IEEE Computer Graphics and Applications*, 6(2), pp. 35-40.

Nyerges, T., 1980, *Modeling the Structure of Cartographic Information for Query Processing*, unpublished Ph. D. dissertation, Dept. of Geography, Ohio State University.

Peuquet, D., 1982, "Vector/Raster Options for Digital Cartographic Data", *Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs*, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 29-35.

_____, 1983, "A Hybrid Structure for the Storage and Manipulation of Very Large Spatial Data Sets", *Computer Vision, Graphics, and Image Processing*, 24(1), pp. 14-27.

Pfaltz, J., 1976, "Surface Networks", *Geographical Analysis*, 8(1), pp. 77-93.

Phillips, T., R. Cannon, and A. Rosenfeld, 1986, "Decomposition and Approximation of Three-Dimensional Solids", *Computer Vision, Graphics, and Image Processing*, 33(3), pp. 307-317.

Preparata, F., and M. Shamos, 1985, *Computational Geometry, An Introduction*, New York: Springer.

Puk, R., and J. McConnell, 1986, "GKS-3D" A Three-Dimensional Extension to the Graphic Kernel System", *IEEE Computer Graphics and Applications*, 6(8), pp. 42-48.

Putnam, L., and P. Subrahmanyam, 1986, "Boolean Operations on n-Dimensional Objects", *IEEE Computer Graphics and Applications*, 6(6), pp. 43-51.

Reed, G., and A. Rosenfeld, 1982, "Recognition of Surfaces in Three-Dimensional Digital Images", *Information and Control*, 53(1-2), pp. 108-120.

Reeves, W., 1983, "Particle Systems-A Technique for Modeling a Class of Fuzzy Objects", *ACM Transactions on Graphics*, 2(2), pp. 91-108.

Requicha, A., and H. Voelcker, 1982, "Solid Modeling: A Historical Summary and Contemporary Assessment", *IEEE Computer Graphics and Applications*, 2(2), pp. 9-24.

Rosenberg, J., 1985, "Geographical Data-Structures Compared: A Study of Data Structures Supporting Region Queries", *IEEE Transactions on Computer-Aided Design*, 4(1), pp. 53-67.

Rosenfeld, A., 1983a, "Digital Geometry: Geometric Properties of Subsets of Digital Images", in O. Faugeras, ed., *Fundamentals in Computer Vision*, Cambridge, United Kingdom: Cambridge University Press, pp. 197-207.

_____, 1983b, "Hierarchical Representation: Computer Representations of Digital Images and Objects", in O. Faugeras, ed., *Fundamentals in Computer Vision*, Cambridge, United Kingdom: Cambridge University Press, pp. 315-324.

Sederberg, T., and R. Goldman, 1986, "Algebraic Geometry for Computer-Aided Geometric Design", *IEEE Computer Graphics and Applications*, 6(6), pp. 52-59

Shoukry, A., and A. Amin, 1983, "Topological and statistical analysis of line drawings", *Pattern Recognition Letters*, 1(5,6), pp. 365-374.

Stockman, G., 1978, *Toward Automatic Extraction of Cartographic Features*, DAAK70-77-C-0110, prepared for U.S. Army Engineer Topographic Laboratories, Silver Spring, MD: L.N.K. Corporation.

Sweeney, M., and R. Bartels, 1986, "Ray Tracing Free-Form B-Spline Surfaces", *IEEE Computer Graphics and Applications*, 6(2), pp. 41-49.

Taketa, R., 1979, *Structure and Meaning in Map Generalization*, unpublished Ph. D. dissertation, Dept. of Geography, University of Washington.

Tobler, W., 1984, "Application of Image Processing Techniques to Map Processing", *Proc. International Symposium on Spatial Data Handling*, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 140-145.

U.S. Department of the Interior, Geological Survey, 1983a, *Digital Line Graphs from 1:2,000,000-Scale Maps*, by M. Domaratz, C. Hallam, W. Schmidt, and H. Calkins, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-D, Reston, VA: USGS.

_____, 1983b, Land Use and Land Cover Digital Data, by R. Fegeas, R. Claire, S. Guptill, K. Anderson, and C. Hallam, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-E, Reston, VA: USGS.

Visvalingam, M., P. Wade, and G. Kirby, 1986, "Extraction of Area Topology from Line Geometry", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 156-165.

White, D., 1985, "A Generalized Cartographic Data Processing Program", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 560-569.

White, M., 1979, "A Survey of the Mathematics of Maps", International Symposium on Computer Assisted Cartography (AUTO-CARTO IV), Falls Church, VA: ASP & ACSM, pp. 82-96.

_____, 1983, "Tribulations of Automated Cartography and How Mathematics Helps", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 408-418; reprinted in Cartographica, 21(2-3), pp. 148-159.

White, M., and P. Griffin, 1979, "Mapping Without Coordinates", URISA 1979, More for Less: Information Systems in an Era of Limits, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 19-23, 1979, San Diego, CA, ed. R. Schmitt, Chicago, IL: URISA, pp. 431-442.

Wilson, P., 1985, "Euler Formulas and Geometric Modeling", IEEE Computer Graphics and Applications, 5(8), pp. 24-36.

Wojcik, Z., 1984, "An Approach to the Recognition of Contours and Line-Shaped Objects", Computer Vision, Graphics, and Image Processing, 25(2), pp. 184-204.

Youngmann, C., 1978, "A Linguistic Approach to Map Description", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

page 21 follows

DATA ORGANIZATION

Aangeenbrug, R., 1975, "Computer Graphic Editing Urban Maps: A Topologic Classification of Urban Polygon Files", Commission III, Automation in Cartography, Enschede, Netherlands: International Cartographic Association, pp. 1-9.

Abel, D., 1985, "Some Elemental Operations on Linear Quadtrees for Geographic Information Systems", Computer Journal, 28(1), pp. 73-77.

Abel, D., and J. Smith, 1986, "A Relational GIS Database Accomodating Independent Partitionings of the Region", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 213-224.

Adams, J., and J. Gary, 1974, "Compact Representation of Contour Plots for Phone Line Transmission", Communications of the ACM, 17(6), pp. 333-336.

Ahuja, N., 1983, "On Approaches to Polygonal Decomposition for Hierarchical Image Representation", Computer Vision, Graphics, and Image Processing, 24(2), pp. 200-214

Allam, M., 1982, "Acquisition of Digital Topographic Data and the Need for a Standardized Digital Data Base", Proc. ISPRS Commission IV Symposium 1982, Vol. 24-IV, Falls Church, VA: ASP & ACSM, pp. 1-11.

_____, 1986, "The Development of a Data Model and National Standards for the Exchange of Digital Topographic Data", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 359-371.

American Public Works Association, 1979, "File Format for Data Exchange between Graphic Databases", Computer Assisted Mapping and Records Activity System, Vol. 3, Chicago, IL: Utility Location and Coordination Council of the American Public Works Association.

American National Standards Institute, Inc., 1975, American National Standard for the Representation of Numeric Values in Character Strings for Information Interchange, ANSI S3.42-1975, August 4, 1975.

_____, 1977, American National Standard Code for Information Interchange, ANSI X3.4-1977, June 9, 1977.

_____, 1980, Draft Proposed, American National Standard Specification for an Information Interchange Data Descriptive File, ANSI X3L5 Document X3L5/80-16F, March 24, 1980.

_____, 1983a, Draft Proposed Relational Database Language, ANSI X3H2 Document X3H2-83-49, February, 1983.

_____, 1983b, Draft Proposed Network Database Language with Proposed Introduction and Concepts Section, ANSI X3H2 Document X3H2-83-48, March, 1983.

American National Standards Institute, Inc., ANSI/X3/SPARC Database System Study Group, Database Architecture Framework Task Group (DAFTG), 1986, "Reference Model for DBMS Standardization", ACM SIGMOD Record, 15(1), pp. 19-58.

Amidon, E., and G. Akin, 1971, "Algorithmic Selection of the Best Method for Compressing Map Data Strings", Communications of the ACM, 14(12), pp. 769-774.

Anderson, T., and C. Kim, 1985, "Representation of Digital Line Segments and Their Preimages", Computer Vision, Graphics, and Image Processing, 30(3), pp. 279-288.

Anstaett, M., and H. Moellering, 1985, "Area Calculations Using Pick's Theorem on Freeman-Encoded Polygons in Cartographic Systems", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 11-21.

Aronson, P., and S. Morehouse, 1983, "The ARC/INFO Map Library: A Design for a Digital Geographic Database", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 372-382.

Austin, R., 1985, "Raster-Vector Systems in A Production Environment", URISA 1985, Computers in Public Agencies, Sharing Solutions, Papers from the annual conference of the Urban and Regional Information Systems Association, July 28 - August 1, 1985, Ottawa, Ontario, Vol. IV, Data Processing, Education, Public Administration, Public Works, Regional Agencies, Transportation, ed. R. Schmitt and H. Smolin, McLean, VA: URISA, Inc., pp. 203-211.

Babcock, H., 1978, "Automated Cartography Data Formats and Graphics: The ETL Experience", American Cartographer, 5(1), pp. 21-29.

Baker, J., 1979, "GeoModel - Integrated Data Structures for Representing Geographic Entities", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 275-282.

Barber, D., 1982, "Microcomputer Based Geographic Analysis", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 118-125.

Bärtschi, M., 1985, "An Overview of Information Retrieval Subjects", Computer, 18(5), pp. 67-84.

Başoğlu, Ü., and J. Morrison, 1977, "An Efficient Hierarchical Data Structure for the U.S. Historical County Boundary Data File", Proc. ACSM Fall Meetings, Little Rock, Falls Church, VA: ACSM.

Battelle-Pacific Northwest Laboratories, Interlaboratory Working Group for Data Exchange, 1978, Geographic Exchange Standard and Primer, PNL-2748 UC-32, Prepared for the U.S. Department of Energy under Contract EY-76-C-06-1830, Richland, WA: Battelle-Pacific Northwest Laboratories.

Bathke, W., 1978, "Computer Assisted Mapping and Records Activities Systems - CAMRAS", Land Data Systems Now, Proc. Second MOLDS Conference, Falls Church, VA: ACSM, pp. 121-141.

Baum, R., D. Hsiao, and K. Kannan, 1976, The Architecture of a Database Computer, Part I. Concepts and Capabilities, AD-A034 154, Springfield, VA: National Technical Information Service.

Baxter, R., 1976, "Some Methodological Issues in Computer Drawn Maps", Cartographic Journal, 13(2), pp. 145-155.

_____, 1978, "Data Structure Problems in Interactive Manipulation and Graphical Display of Nested Zone Thematic Maps", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1980, "A Computer File and Data Structure for Manipulating Digital Outlines of Polygons", Geo-Processing, 1(3), pp. 243-255.

Bédard, Yvan, 1987, "Uncertainties in land information systems databases", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 175-184.

Bell, S., B. Diaz, F. Holroyd and M. Jackson, 1983, "Spatially Referenced Methods of Processing Raster and Vector Data", Image and Vision Computing, 1(4), pp. 211-220.

Bell, S., B. Diaz and F. Holroyd, 1984, "Tesseral Image Processing" Proc. Remote Sensing Society Workshop in Digital Image Processing in Remote Sensing, London, United Kingdom: Imperial College.

Bennettson, A., 1978, "Computer Aids Systems Map-Based Record Systems", No. 15 Design Automation Conference Proc., New York, NY: IEEE, pp. 34-47.

Berry, C., R. Holliday, and W. Tuel, 1979, "Data Definition and Management Techniques for Interactive Geo-Facility Applications", in A. Blaser, ed., Data Base Techniques for Pictorial Applications, Lecture Notes in Computer Science, Berlin, Germany: Springer, pp. 27-48.

Berry, J., 1982, "Cartographic Modeling: Procedures for Extending the Utility of Remotely Sensed Data", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 414-424.

Bic, L., and J. Gilbert, 1986, "Learning from AI: New Trends in Database Technology", Computer 19(3), pp. 44-54.

Bie, S., 1982, "Introduction: Cartographic Databases and Raster/Vector Technology", Cartographica, 19(2), p. 110.

Biggs, R., 1978, "Cartographic Data Structures for Thematic Applications of Automated Cartography", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Billingsley, F., 1980, "Data Base Systems for Remote Sensing", in A. Blaser, ed., Data Base Techniques for Pictorial Applications, Lecture Notes in Computer Science, Berlin, Germany: Springer, pp. 299-313.

_____, 1985a, "A New Format Proposal", Proc. 1985 Machine Processing of Remotely Sensed Data Symposium, West Lafayette, IN: Purdue University.

_____, 1985b, "A New Format Proposal", Advanced Technology for Monitoring and Processing Global Environmental Data, Proc. International Conference of The Remote Sensing Society and the Center for Resources Management, held in the University of London, 9-12th September, 1985, Whitstable, United Kingdom: Remote Sensing Society and CERMA, pp. 247-256.

_____, 1987a, Specification for a General Data Interchange Language, typescript, preliminary version of JPL Pub. No. D-3606, April 10, 1987, Pasadena, CA: Jet Propulsion Laboratory.

_____, 1987b, General Data Interchange Language, Supporting Documents, typescript, latest issue, Pasadena, CA: Jet Propulsion Laboratory.

Billingsley, F., and N. Bryant, 1975, "Design Criteria for a Multiple Input Land Use System", NASA Earth Resources Symposium, NASA TM X-58168, Vol. I-B, pp. 1389-1396.

Billingsley, F., and J. Urena, eds., 1984a, Data Interchange Formats, Vol. I: Workshop Proceedings, JPL Pub. No. D-1723, Pasadena, CA: Jet Propulsion Laboratory.

_____, eds., 1984b, Data Interchange Formats, Vol. II: Supplementary Information, JPL Pub. No. D-1724, Pasadena, CA: Jet Propulsion Laboratory.

Blaser, A., ed., 1979, Data Base Techniques for Pictorial Applications, Lecture Notes in Computer Science, Berlin, Germany: Springer.

Blumberg, R., and M. Wagner, 1985, "Application of Standard Linear Format to Digital Hydrographic Products", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 43.

Boehm, B., 1967, Tabular Representations of Multivsriate Functions - with Applications to Topogrsphic Modeling, Memorandum rm-4636-pr, Santa Monica, CA: The Rand Corporation.

_____, and J. Rieber, 1967, A Compact Statistical Method of Topographic Representation, Memorandum rm-5081-pr, Santa Monica, CA: The Rand Corporation.

Bohner, M., 1979, "A Tape Format for Transferral of Image Data and Source Programs", Computer Graphics and Image Processing, 11(2), pp. 185-191.

Boisvenue, A., and R. Parenteau, 1982, "The Geocoding System in Canada and its Area Master File", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 226-232.

Bonfatti, F., and P. Tiberio, 1983, "A Note on the Conversion of Polygonal to Cellular Maps", Computer and Graphics, 7(3-4), pp. 355-360.

Bossler, J., 1983, "Status of the National Geodetic Survey Data Base", Proc. ACSM-ASP Fall Meetings, Salt Lake City, Falls Church, VA: ACSM & ASP, pp. 738-744.

Boudriault, G., 1987, "Topology in the TIGER file", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 258-263.

Bouille, F., 1976, "Creation et Utilisation d'une Banque de Donnees de Cartes Geologiques", International Yearbook of Cartography, XVI, pp. 44-60.

_____, 1978, "Structuring Cartographic Data and Spatial Processss with the Hypergraph-Based Data Structure", in G. Dutton, ed., Data Structures: Surficial and Multi-Dimensional, Vol. 5, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1980, "General Methodology of Maps Digitization and Some Improvements Based upon Pattern Recognition", paper presented at 10th International Conference of the International Cartographic Association, Tokyo, 1980.

_____, 1981a, "Converting the HBDS Cartographic System to Microprocessors", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, p. 28.

_____, 1981b, "The Impact of 'ADA' on Cartography and Topological Terrain Modeling", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 289-298.

_____, 1981c, "A Multi-Layered HBDS with New Extensions", paper presented at the 2nd Annual International HBDS Symposium, March 1981, Richmond, Va.

_____, 1981d, "General Methodology for Maps Digitization and Digital Images Restructuring", paper presented at the 2nd Annual International HBDS Symposium, March 1981, Richmond, Va.

_____, 1982, "Actual Tools for Cartography Today", Cartographica, 19(2), pp. 27-32.

_____, 1983, "A Structured Expert System for Cartography Based on the HBDS", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 202-210.

_____, 1984a, "Architecture of a Multipurpose Cartographic V.L.D.B.", Technical Papers of the Austra Carto One Seminar, Perth, Australia: The 12th ICA Conference Committee, pp. 19-26.

_____, 1984b, "Knowledge Structuring with the HBDS in a Cartographic Structured Expert System", Technical Papers of the Austra Carto One Seminar, Perth, Australia: The 12th ICA Conference Committee, pp. 313-323.

Bouille, F., and R. Rugg, eds., 1983, Proc. Second International Seminar in Hypergraph-Based Data Structures (HBDS), Vol. 1, Richmond, VA: Center for Public Affairs, Virginia Commonwealth University.

Boyle, A., 1981, "Concerns About the Present Applications of Computer Assisted Cartography", Cartographica, 18(1), pp. 31-33.

Brassel, K., 1978, "A Topological Data Structure for Multi-Element Map Processing", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Breward, R., 1972, "A Mathematical Approach to the Storage of Digitised Contours", Cartographic Journal, 9(2), pp. 82-86.

Bright, C., and H. Pywell, 1978, "Data Base Development for the National Wetlands Inventory", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 329-334.

Brooks, A., and J. Upperman, 1986, "Appendix A, Interim NCDCDS Testing Report", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 33-43.

Brooks, K., 1982, "GIS Database Design Considerations; A Determination of User Tradeoffs", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 147-157.

Brooks, W., 1985, "TLDB: A Global Data Base Designed for Rapid Digital Image Retrieval", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 44-45.

Broome, F., 1985, "Tiger Preliminary Design and Structure Overview: The Core of the Geographic Support System for 1990", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 53-54.

Brooner, W., 1982, "An Overview of Remote Sensing Input to Geographic Information Systems", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 318-329.

Bryant, N., and A. Zobrist, 1978, "An Image Based Information System: Architecture for Correlating Satellite and Topological Data Bases", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1979, "An Image Based Information System: Architecture for Integrating Satellite Imagery and Cartographic Data Bases", Mapping Software and Cartographic Data Bases, Harvard Library of Computer Graphics, 1979 Mapping Collection, Vol. 2, pp. 43-48.

_____, 1982, "Some Technical Considerations on the Evolution of the IBIS System", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 465-475.

Burkard, R., 1980, "Data Storage Technology Assessment", Proc. ACSM Fall Meetings, Niagara Falls, Falls Church, VA: ACSM, pp. CD-2-D-1 - CD-2-D-9.

Burrough, P., 1980, "The Development of a Landscape Information System in the Netherlands, Based on a Turnkey Graphics System", Geo-Processing, 1(3), pp. 257-274.

Burton, W., 1977, "Representation of Many-Sided Polygons and Polygonal Lines for Rapid Processing", Communications of the ACM, 20(3), pp. 166-171.

Calkins, H., and D. Marble, 1987, "The Transition to Automated Production Cartography: Design of the Master Cartographic Database", American Cartographer, 14(2), pp. 105-119.

_____, 1979a, "Implementation of the Binary Searchable Grid Chain Representation for Curves and Regional Boundaries", Geo-Processing, 1(1), pp. 37-52.

_____, 1979b, "Logical and Physical Data Types in Geographical Information Systems", Geo-Processing, 1(2), pp. 167-181.

Canada, Energy, Mines and Resources, 1979, Standard Format for the Transfer of Geocoded Polygon Data, by the Spatial Data Transfer Committee, Ottawa, Canada: Canada Centre for Remote Sensing.

_____, 1982, EDP Standards Applied to Digital Topographic Data, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Technical Committee No. III, Draft, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch.

_____, 1984, EDP Standards Applied to Digital Topographic Data, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Second Draft Report, Vol. I, Part III, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch.

Canadian Council on Surveying and Mapping, The Technical Subcommittee, Working Group #1, 1985, Proposed Standards for a Digital Topographic Information Model, Ottawa, Canada: Minister of Energy, Mines and Resources.

Canadian Council on Surveying and Mapping, 1986, Part III, Standard Transfer Format for Digital Topographic Data, in Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Ottawa, Canada: Minister of Energy, Mines and Resources.

_____, 1986, National Standards for the Exchange of Digital Topographic Data, Vol. I, Part III, Standard EDP File Exchange Format for Digital Topographic Data, Version #0.0 (Revision to Second DRAFT Report), Ottawa, Canada: Minister of Energy, Mines and Resources, Surveys and Mapping Branch.

Cardenas, A., 1973, "Evaluation and Selection of File Organization- A Model and System", Communications of the ACM, 16(9), pp. 540-548.

_____, 1975, "Analysis and Performance of Inverted Data Base Structures", Communications of the ACM, 18(5), pp. 253-263.

Carmichael, J., 1982a, "Content Addressing Technology and Cartographic Data", Cartographica, 19(2), pp. 119-121.

_____, 1982b, "Further Developments in CAFS (to June 1982)", Cartographica, 19(2), p. 122.

Caron, L., and D. Stewart, 1984, An Inventory of State Natural Resources Information Systems, Final Report, Grant No. NAG 2-201, Lawrence, KS: Kansas Applied Remote Sensing Program.

Carroll, R., and D. Edwards, 1984, "DEM Synthesis from Three-Dimensional Cartographic Data", Tech. Papers, 50th Annual Meeting, ASP, Vol. 2, Falls Church, VA: ASP, pp. 472-478.

Carson, G., and E. McGinnis, 1986, "The Reference Model for Computer Graphics", IEEE Computer Graphics and Applications, 6(8), pp. 17-23.

Data Organization

Carstensen, L., 1986, "Developing Regional Land Information Systems: Relational Databases and/or Geographic Information Systems", Surveying and Mapping, 46(1), pp. 19-27.

Catlow, D., R. Parsell, and B. Wyatt, 1984, "The Integrated Use of Digital Cartographic Data and Remotely Sensed Imagery", Earth-Oriented Applications of Space Technology, 4(4), pp. 255-260.

Cebrian, J., J. Mower, and D. Mark, 1985, "Analysis and Display of Digital Elevation Models Within a Quadtree-Based Geographic Information System", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 55-64.

Cederberg, R., 1979a, "Chain-Link Coding and Segmentation for Raster Scan Devices", Computer Graphics and Image Processing, 10(3), pp. 224-234.

_____, 1979b, "A Data Structure for a Raster Map Data Base", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 85-92.

Chang, N., and K. Fu, 1981, "Picture Query Languages for Pictorial Data-Base Systems", Computer, 14(11), pp. 23-33.

Chang, S., and T. Kunii, 1981, "Pictorial Data-Base Systems", Computer, 14(11), pp. 13-21.

Chassery, J., 1979, "Connectivity and Consecutivity in Digital Pictures", Computer Graphics and Image Processing, 9(3), pp. 294-300.

Chaudhuri, B., and M. Kundu, 1984, "Digital Line Segment Coding: A New Efficient Contour Coding Scheme", IEE Proceedings, Vol. 131, Pt. E, No. 4, pp. 143-147.

Chavez, P., 1986, "Digital Merging of Landsat TM and Digitized NHAP Data for 1:24,000-Scale Image Mapping", Photogrammetric Engineering and Remote Sensing, 52(10), pp. 1637-1646.

Chen, Z., and D. Peuquet, 1985, "Quad Tree Spatial Spectra Guide: A Fast Spatial Heuristic Search in a Large GIS", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 75-82.

Chock, M., A. Cardenas, and A. Klinger, 1984, "Database Structure and Manipulation Capabilities of a Picture Database Management System", IEEE Transactions on Pattern Analysis and Machine Intelligence, 6(4), pp. 484-492.

Chrisman, N., 1974, "The Impact of Data Structure on Geographic Information Processing", paper presented at the International Conference on Automation in Cartography (AUTO-CARTO I), December 10, 1974, Reston, VA.

_____, 1975, "Topological Information Systems for Geographic Representation", Proc. International Symposium on Computer Assisted Cartography (AUTO-CARTO II), September 21-25, 1975, Reston, VA., Falls Church, VA: ACSM, pp. 346-351.

_____, 1978, "Concepts of Space as a Guide to Cartographic Data Structures", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Chrisman, N., and Nieman, B., 1985, "Alternative Routes to a Multipurpose Cadastre: Merging Institutional and Technical Reasoning", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp.84-94.

Christensen, A., 1984, "Marrying a Vector and a Raster System", Proc. ACSM/ ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 334-344.

Chung, R., 1981, "Forcing Functions and Geo-Referenced Information Systems", Seventh International Symposium-Machine Processing of Remotely Sensed Data, West Lafayette, IN: Laboratory for Applications of Remote Sensing, pp. 548-552.

Claire, D., 1980, "Combining Cartographic Themes Using Data Structuring and Pattern Recognition", paper presented at 10th International Conference of the International Cartographic Association, Tokyo, 1980.

Claire, R., and S. Guptill, 1982, "Spatial Operators for Selected Data Structures", Proc. Sixth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 189-200.

Clark, R., 1980, Cartographic Raster Processing Programs at USAETL, Fort Belvoir, VA: Army Engineer Topographic Labs, AD-A082 236.

Clarke, A., 1984, "Development of a Geographic Digital Data Base", Technical Papers of the Austra Carto One Seminar, Perth, Australia: The 12th ICA Conference Committee, pp. 301-311.

Clarke, K., 1985, "A Comparative Analysis of Polygon to Raster Interpolation Methods", Photogrammetric Engineering and Remote Sensing, 51(5), pp. 575-582.

_____, 1985, "Strategies for Spatial Data Compression", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 97-107.

Clay, J., 1984, "A Corporate Computer Graphics Relational Database", Proc. ACSM/ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 280-286.

Codd, E., 1972, "Relational Completeness of Data Base Sublanguages", Data Base Systems, Courant Computer Science Symposia Series, Vol. 6, Prentice-Hall.

_____, 1979, "Extending the Database Relational Model to Capture More Meaning", ACM IODS, 4(4), pp. 397-434.

_____, 1981, "Data Models in Database Management", ACM SIGMOD Record, 11(2), pp. 111-114.

_____, 1982, "Relational Database: A Practical Foundation for Productivity", Communications of the ACM, 25(2), pp. 109-117.

Cohen, Y., M. Landy, and M. Pavel, 1985, "Hierarchical Coding of Binary Images", IEEE Transactions on Pattern Analysis and Machine Intelligence, 7(3), pp. 284-298.

Collins, S., G. Moon, and T. Lehan, 1983, "Advances in Geographic Information Systems", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 324-334.

Colvocoresses, A., 1973, "Data Referencing by Map Grid Cell", Surveying and Mapping, 33(1), pp. 57-60.

Comeau, M., 1983, "Compression and Compaction of Binary Raster Images", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 362-371.

Computer Sciences Corporation, 1979, Spatial Data Integration, I: Concepts, Requirements, and Current Capabilities, CSC/TM-79/6241, prepared for National Aeronautics and Space Administration by E. Knapp et al., Greenbelt, MD: Computer Sciences Corporation.

Computer Technology Associates, Inc., 1983, Space Data Systems Operations with Standard Format Data Units (SFDUs), report prepared for Euro- Space Agency, ESTEC/Contract No. 5271/82/NL/HP, October, 1983, McLean, VA: Computer Technology Associates, Inc.

Consultative Committee for Space Data Systems (CCSDS), Panel 2: Standard Data Interchange Structures, 1984, CCSDS Reference Documentation on Space Data Systems Operations with Standard Format Data Units. System and Implementation Aspects, Issue 2, prepared by CCSDS, Secretariate: Mr. Robert R. Stephens, NASA, Washington, DC: CCSDS.

Consultative Committee for Space Data Systems (CCSDS), 1987, Recommendation for Space Data System Standards: Standard Formatted Data Units -- Structure and Construction Rules, "Red Book", Issue - 2, Washington, DC: CCDSDS.

_____, 1987, Report Concerning Space Data System Standards, Space Data Systems Operations With Standard Formatted Data Units: System and Implementation Aspects, "Green Book", Issue - 2, Washington, DC: CCDSDS.

Cook, B., 1967, "A Computer Representation of Plane Region Boundaries", Australian Computer Journal, 1, pp. 44-50.

_____, 1978, "The Structural and Algorithmic Basis of a Geographic Data Base", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Cooke, D., 1967, "The Development of a Geographic Base File and Its Use for Mapping", URISA 1967, Urban and Regional Information Systems for Social Programs, Papers from the Fifth Annual Conference of the Urban and Regional Information Systems Association, Garden City, NY, Claremont, CA: URISA, pp. 207-218.

_____, 1978, "Technical Problems in a Multipurpose Land Data System: The Digital Geographic Subsystem", *Land Data Systems Now, Proc. Second MOLDS Conference*, Falls Church, VA: ACSM, pp. 93-95.

Corbett, J., 1978, "Memoranda on the Subject of the Symposium on Topological Data Structures", in G. Dutton, ed., *Summary of Proceedings*, Vol. 1, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley, pp. 123-127.

_____, 1979a, "Topological Models for Architectural and Engineering Projects", *Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV)*, Falls Church, VA: ASP & ACSM, pp. 223-235.

_____, 1979b, *Topological Principles in Cartography*, U.S. Department of Commerce, Bureau of the Census, Technical Paper No. 48, Washington, DC: U.S. Department of Commerce, Bureau of the Census.

_____, and G. Farnsworth, 1971, "Theoretical Basis of Dual Independent Map Encoding (DIME)", paper presented at the Ninth Annual Conference of the Urban and Regional Information Systems Association (URISA), September, 1971, New Orleans, LA.

Costanzo, D., 1983, "Mapping Applications of Video Disc Technology", *Proc. ACSM-ASP Fall Meetings, Salt Lake City*, Falls Church, VA: ACSM & ASP, pp. 396-405.

Cowen, D., 1982, "Using Standard Output Formats for Distributed Geographical Data Handling", *Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs*, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 133-138.

Cowen, D., W. Shirley, and L. Smith, 1979, "Making DIME User Friendly", *URISA 1979, More for Less: Information Systems in an Era of Limits, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 19-23, 1979, San Diego, CA*, ed. R. Schmitt, Chicago, IL: URISA, pp. 411-418.

Cox, N., B. Aldred, and D. Rhind, 1980, "A Relational Data Base System and a Proposal for a Geographical Data Type", *Geo-Processing*, 1(3), pp. 217-229.

Cramer, B., 1972, "Information Interchange - The Canadian Experience", *URISA 1972, Information Research for an Urban Society, Papers from the Tenth Annual Conference of the Urban and Regional Information Systems Association, San Francisco, CA*, Vol. I, ed. J. Rickert, C. Davis, V. di Matteo, and A. Bose, Claremont, CA: Urban and Regional Information Systems, pp. 258-264.

Croswell, P., 1986, "Developments in Data Transfer Between Geographic Information Systems and Mainframe Computer Databases", *URISA 1986, What's the Difference?, Papers from the annual conference of the Urban and Regional Information Systems Association, August 10-14, Denver, CO*, Vol. II, Geoprocessing and Geographic Information Systems, ed. R. Somers, Washington, DC: URISA, pp. 47-61.

Dakan, A., 1982, "Microprocessor Based Cartography for Urban Information Systems", *URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN*, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 147-158.

Dangermond, J., 1983, "ARC/INFO, A Modern GIS System for Large Spatial Data Bases", *Proc. ACSM-ASP Fall Meetings, Salt Lake City*, Falls Church, VA: ACSM & ASP, pp. 81-89.

_____, 1984, "Geographic Data Base Systems", *Proc. ACSM/ASP Fall Meetings, San Antonio*, Falls Church, VA: ACSM & ASP, pp. 201-211.

Danielsson, P., and S. Levialdi, 1981, "Computer Architectures for Pictorial Information Systems", *Computer*, 14(11), pp. 53-67.

Date, C., 1982, "A Formal Definition of the Relational Model", *ACM SIGMOD Record*, 13(1), pp. 18-29.

Davis, W., and C. Hwang, 1986, " Organizing & Indexing of Spatial Data", *Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A.*, Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 5-14.

Dearborn, B., 1986, "A Theoretical Mapping of MOSS to FGEF", FGEF Final Testing Report, Appendix N of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, *Federal Geographic Exchange Format*, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Devadason, F., 1985, "Computerization of Deep Structure Based Indexes", *International Classification*, 12(2), pp. 87-94.

Devereux, B., 1986, "The Integration of Cartographic Data Stored in Raster and Vector Formats", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 257-266.

DGIWG Panel of Experts, 1986, DGIWG Digital Geographic Information Exchange Structure, October 1986, Washington, DC: Defense Mapping Agency.

DiNardo, T., and R. Jackson, 1984, "A GIRAS to MOSS Interface", Proc. ACSM/ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 253-258.

Distefano, J., 1986, "Appendix B, Report to The National Committee for Digital Cartographic Data Standards", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 44-51.

Dodonov, S., and V. Visikirskii, 1984, "Data Models in An Interactive Computer-Aided Design System of Industrial Objects", Cybernetics, 20(5), pp. 666-672.

Dolton, L., and K. Dueker, 1986, "A Comparison of Functionality of Grid and Vector Data Structures in a Microcomputer Environment", URISA 1986, What's the Difference, pers from the annual conference of the Urban and Regional Information Systems Association, August 4, Denver, CO, Vol. I, Land Records Systems and Natural Resources, ed. B. Niemann Jr., Washington, DC. URISA, pp. 214-231.

Domaratz, M., and H. Moellering, 1986, "The Encoding of Cartographic Objects Using HBDS Concepts", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 96-105.

Dougenik, J., 1979, "WHIRLPOOL: A Geometric Processor for Polygon Coverage Data", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 304-311.

Drummond, J., 1984, "Polygon Handling at the Experimental Cartography Unit", Cartographic Journal, 21(1), pp. 3-12.

Dueker, K., 1972, "A Framework for Encoding Spatial Data", Geographical Analysis, 4(1), pp. 98-105.

_____, 1985, "Geographic Information Systems: Toward a Georelational Structure", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 172-177.

Dutton, G., ed, 1978a, Summary of Proceedings, Vol. 1, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, ed., 1978b, Data Structures: Surficial and Multi-Dimensional, Vol. 5, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1983, "Geodesic Modelling of Planetary Relief", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 186-201; reprinted in Cartographica, 21(2-3), pp. 188-207.

Edson, D., and G. Lee, 1978, "Structuring Cartographic Data Within a Digital Cartographic Data Base", Commission III Computer-Assisted Cartography, Enschede, Netherlands: International Cartographic Association, pp. 137-150.

Edwards, K., and R. Batson, 1980, "Preparation and Presentation of Digital Maps in Raster Format", American Cartographer, 7(1), pp. 39-49.

Edwards, R., R. Durfee, and P. Coleman, 1978, "Definition of a Hierarchical Polygonal Data Structure and the Associated Conversion of a Geographic Base File from Boundary Segment Format", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison- Wesley.

Eichelberger, P., 1986, "Land/Structure/Occupancy Database Design: Handling an Increasingly Complex Urban Reality", URISA 1986, What's the Difference?, Papers from the annual conference of the Urban and Regional Information Systems Association, August 10-14, Denver, CO, Vol. II, Geoprocessing and Geographic Information Systems, ed. R. Somers, Washington, DC: URISA, pp. 1-12.

Environmental Systems Research Institute, 1978, Topological Entry of Data for Geographic Information Systems, ESRI Technical Report, January 1978, Redlands, CA: Environmental Systems Research Institute.

Evatt, B., 1982, "Adapting the GBF/DIME System to a Microcomputer Environment", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 126-146.

Fauconnier, M., 1986, "Implementing FGEF", FGEF Final Testing Report, Appendix I of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Federal Emergency Management Agency, 1986, "Testing Agency Report", submitted by W. Millard, FGEF Final Testing Report, Appendix K of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, 1986a, "FGEF Data Mapping Guidelines", FGEF Final Testing Report, Appendix A of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986b, "FGEF Tags Related to the FGEF Specifications", FGEF Final Testing Report, Appendix B of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986c, "Guidelines for Reporting FGEF Testing Results", FGEF Final Testing Report, Appendix H of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Federhen, H., 1984, "A Spatial Analysis System for Digital Feature Data", Proc. ASP Spring Meetings, Washington, Vol. 1, Falls Church, VA: ASP, pp. 323-331.

Fegeas, R., 1978a, "Report on USGS Digitizing", Proc. International Conference on Computer-Assisted Cartography (AUTO-CARTO III), Falls Church, VA: ASP & ACSM, pp. 457-471.

_____, 1978b, "The Graphic Input Procedure - An Operational Line Segment/Polygon Graphic to Digital Conversion", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1985, "A Data Model for Spatial Data Processing", (abstract), Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 189.

_____, 1987, "Testing a prototype spatial data exchange format - the Federal Geographic Exchange Format experience", (abstract), Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, p. 753.

Fegeas, R., and R. Pearsall, 1984, "Topological Structuring of Raster- Scanned Line Map Data", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 264-272.

Forbes, R., 1985, "Very High Level Relational Languages and GIS: Toward the 5th Generation", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 414-420.

Forsström, Å., and R. Olsson, 1975, Geografisk informations-behandling. En introduktion i kartografiska och korologiska metoder, Stockholm, Sweden: Esselte Studium.

Foster, H., and J. Bos, 1979, "Integrated Geographic Data Base Technology", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 406-412.

Frank, A., 1982, "MAPQUERY: Data Base Query Language for Retrieval of Geometric Data and their Graphical Representation", Computer Graphics, 16(3), pp. 199-207.

Frank, A., and W. Kuhn, 1986, "Cell Graphs: A Provable Correct Method for the Storage of Geometry", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 411-436.

Frank, T., 1981, "Comprehensive Geo-Data Base Control with an Electronic Coordinate Digitizer", Seventh International Symposium - Machine Processing of Remotely Sensed Data, West Lafayette, IN: Laboratory for Applications of Remote Sensing, pp. 497-504.

Franklin, D., 1982, "Charting Utilization Requirements for a Digital Cartographic Data Base", Proc. ISPRS Commission IV Symposium 1982, Vol. 24-IV, Falls Church, VA: ASP & ACSM, pp. 273-282.

Franklin, R., 1983, "Adaptive Grids for Geometric Operations", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 230-239.

Frasson, C., 1978, "Generalized Translation in a Data Base System", No. 15 Design Automation Conference Proc., New York, NY: IEEE, pp. 176-181.

Freeman, H., 1961, "On the Encoding of Arbitrary Geometric Configurations", IRE Transactions on Electronic Computers, Vol. 10, pp. 260-268.

_____, 1978a, "Some New Map Data Encoding Schemes", in J. Moneta, ed., Information Technology, Amsterdam, Netherlands: North Holland, pp. 689-696.

_____, 1978b, Application of the Generalized Chain Coding Scheme to Map Data, Troy, NY: Rensselaer Polytechnic Inst., AD-A054 314.

_____, 1978c, The Generalized Chain Code for Map Data Encoding and Processing, Technical Report CRL-59, AD-A060 690, prepared for Air Force Systems Command, USAF, Troy, NY: Rensselaer Polytechnic Institute.

_____, chairman, 1981, "Panel on Map Data Processing", Proc. Conference on Pattern Recognition and Image Processing, Dallas 1981, New York, NY: IEEE, pp. 619-621.

Fry, J., et al., 1981, Draft Specification for a Structured Data Interchange Form, rep. NBSIR 81-2315, National Bureau of Standards, July, 1981.

Gibson, L., and D. Lucas, 1982, "Vectorization of Raster Images Using Hierarchical Methods", Computer Graphics and Image Processing, 20(1), pp. 82-89.

Gligor, V., and G. Luckenbaugh, 1984, "Interconnecting Heterogeneous Database Management Systems", Computer, 17(1), pp. 33-43.

Gobmann, H., and P. Haberacker, 1980, "Image Processing of HCMM-Satellite Imagery and Topographic and Thematic Maps", International Archives of Photogrammetry, XXIII(B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 256-271.

Godfrey, M., 1982, "Cartographic Computing Technology", Cartographica, 19(2), pp. 2-8.

Goldberg, M., A. Schmidt, and N. Chrisman, 1979, "Integration and Analysis of Multiple Geographic Data Bases: An Application of ODYSSEY", Mapping Software and Cartographic Data Bases, Harvard Library of Computer Graphics, 1979 Collection, Vol. 2, pp. 81-97.

Gomez, D., and A. Guzman, 1979, "Digital Model for Three-Dimensional Surface Representation", Geo-Processing, 1(1), pp. 53-70.

Goodchild, M., and A. Grandfield, 1983, "Optimizing Raster Storage: An Examination of Four Alternatives", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 400-407.

Goodenough, D., and G. Plunkett, 1983, "On the Transfer of Remote Sensing Classifications into Polygon Geocoded Data Bases in Canada", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 598-606.

Gottschalk, H., 1980, "Standards for the Exchange of Digital Cartographic Data", Paper presented at 10th International Conference of the International Cartographic Association, Tokyo, 1980.

Data Organization

Graphics Standard Planning Committee, 1979, "Graphics Metafile Description", Computer Graphics Quarterly.

Gribb, W., 1984, "The Combining of Geographic and Other Information Systems to Create a New Type of Information System", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 14-19.

Green, R., 1986, "Notes from the Devember 2-3, 1986 Programmers' Workshop in Denver, Colorado", FGEF Final Testing Report, Appendix G of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Grosky, W., 1984, "Toward a Data Model for Integrated Pictorial Databases", Computer Vision, Graphics, and Image Processing, 25(3), pp. 371-382.

Gross, A., 1978, "File Format for Data Exchange Between Graphic Data Bases", No. 15 Design Automation Conference Proc., New York, NY: IEEE, pp. 54-59.

Guevara, J., and D. Bishop, 1985, "A Fuzzy and Heuristic Approach to Segment Intersection Detection and Reporting", (abstract), Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 228.

Guibas, L., and J. Stolfi, 1985, "Primitives for the Manipulation of General Subdivisions and the Computation of Voronoi Diagrams", ACM Transactions on Graphics, 4(2), pp. 74-123.

Guptill, S., 1979a, "The Development and Use of Digital Cartographic Data Bases", in A. Blaser, ed., Data Base Techniques for Pictorial Applications, Lecture Notes in Computer Science, Berlin, Germany: Springer, pp. 65-77.

_____, 1979b, "A Digital Cartographic Data Base for Land Use and Land Cover and Associated Maps", Mapping Software and Cartographic Data Bases, Harvard Library of Computer Graphics, 1979 Mapping Collection, Vol. 2, pp. 99-106.

_____, 1982, "A Systems Approach to Spatial Data Handling", Proc. ACSM-ASP Fall Meetings, Hollywood, Florida, Falls Church, VA: ACSM & ASP, pp. 170-177.

Hagan, P., 1980, A Network Data Model for Cartographic Data, D.Sc. Dissertation, Sever Institute of Technology, Washington University, St. Louis, MO.

_____, 1981, "The Evaluation of a Network Data Structure for Cartographic Features", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 16-27.

Hakalahti, H., D. Harwood, and L. Davis, 1984, "Two-Dimensional Object Recognition by Matching Local Properties of Contour Points", Pattern Recognition Letters, 2(4), pp. 227-234.

Hallam, C., 1979, "The USGS Geographic Information Retrieval and Analysis System: Overview", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 229-246.

Hamm, J., 1983, "Engineering Standards and CAD - A Perfect Marriage", Design Graphics World, January 1983, pp. 16-19.

Haralick, R., and L. Shapiro, 1979, "A Data Structure for a Spatial Information System", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 291-303.

Harary, F., 1969, Graph Theory, Reading, MA: Addison-Wesley.

Harris, J., J. Kittler, B. Llewellyn, and G. Preston, 1982, "A Modular System for Interpreting Binary Pixel Representations of Line-Structured Data on Maps", Cartographica, 19(2), pp. 145-175.

Herring, J., 1987, "TIGRIS: topologically integrated geographic information system", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 282-291.

Herrmann, R., 1985, "Army Requirements for Digital Topographic Data", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 267-274.

Hlynka, A., 1978, "Hierarchical Projection Tree as a Data Structure for Pattern Recognition", Proc. IEEE Computer Soc. Conf. on Pattern Recognition and Image Processing, New York, NY: IEEE, pp. 427-432.

Holecheck, B., 1983, "Interactive Stereo Display and Manipulation of Raster Contour Data", Proc. ACSM-ASP Fall Meetings, Salt Lake City, Falls Church, VA: ACSM & ASP, pp. 189-198.

Holland, D., 1979, "Large System Mapping and Related Data Base Experience", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. II, Falls Church, VA: ASP & ACSM, pp. 244-249.

Hopkins, L., 1985, "Analytic and Cartographic Data Storage: A Two- Tiered Approach to Spatial Decision Support Systems", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 283-292.

Hsiao, D., 1971, "A Generalized Record Organization", IEEE Transactions on Computers, 20(12), pp. 1490-1495.

_____, and F. Haray, 1970, "A Formal System for Information Retrieval from Files", Communication of the ACM, 13(2), pp. 67-73.

Hsu, S., and X. Huang, 1982, "Construction of Polygon Maps with Raster- Vector Data Base Conversion Method", Proc. ACSM-ASP Fall Meetings, Hollywood, Florida, Falls Church, VA: ACSM & ASP, pp. 212-215.

Huang, X., and S. Hsu, 1983, "A Chained Data Structure for Efficient Extraction and Display of Information from Polygon Maps", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 170-176.

Humphrey, D., and S. Zoraster, 1985, "Vectorizing Surface Modeling Algorithms", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp.293-300.

IDON Corporation, 1986a, MACDIF - Map and Chart Data Interchange Format Concept Definition, submitted to T. Evangelatos, Chief, Cartographic Development Division, Marine Cartography, Canadian Hydrographic Service, Fisheries and Oceans, Document No: ACN 3-R&D-068-CD, Ottawa, Canada.

_____, 1986b, MACDIF: Structure and Coding, Draft Specification, submitted to T. Evangelatos, Chief, Cartographic Development Division, Marine Cartography, Canadian Hydrographic Service, Fisheries and Oceans, Document No: ACN 3-R&D-068-SC, Ottawa, Canada.

Ingram, K., and W. Phillips, 1987, "Geographic information processing using a SQL-based query language", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 326-335.

Intergraph Corporation, 1980, Graphics Standard Interchange Format, November 1980.

International Standards Organization, 1983, Information Processing - Specification for a Data Descriptive File for Information Interchange, Draft Proposal ISO/DP8211.

_____, 1985, Information Processing - Specification for a Data Descriptive File for Information Interchange, Draft Proposal ISO/8211.

Jackson, M., 1984a, "A Methodology for an Integrated Spatial Data Model and its Application to Image Classification", Proc. EARSeL/ESA Symposium on Integrative Approaches, Guildford, UK, 1984.

_____, 1984b, "Image Analysis and Digital Cartography Within The NERC Thematic Information Service", Photogrammetric Record 11(64) (October 1984), pp. 383-393.

_____, S. Bell, and B. Diaz, 1983, "Database Developments in the Experimental Cartography Unit", Cartographica, 20(3), pp. 55-68.

Jancaitis, J., and J. Junkins, 1973, "Modeling Irregular Surfaces", Photogrammetric Engineering, 39(4), pp. 413-420.

Jiwani, Z., 1986, "MDIF - A Standard for Communication of Digital Map Data over Public Data Communication Systems", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 391-401.

John, R., 1982, "Data Structure Considerations in Topographic Mapping", Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 21-29.

Joshi, R., and H. Arunachalam, 1984, "Multilevel Picture Segmentation in the Graphics System-- GRASP", Computer and Graphics, 8(2), pp. 167-176.

Kansy, K., 1978, "Capture and Encoding of Area-Oriented Geographic Maps", in J. Moneta, ed., _Information Technology_, Amsterdam, Netherlands: North Holland, pp. 705-709.

Karimi, H., E. Krakiwsky, C. Harris, G. Craig, and R. Goss, 1987, "A relational database model for an AVL system and an expert system for optimal route selection", _Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8)_, Falls Church, VA: ASP & ACSM, pp. 584-593.

Kavouras, M., and S. Masry, 1987, "An information system for geosciences: design considerations", _Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8)_, Falls Church, VA: ASP & ACSM, pp. 336-345.

Ke, L., L. Yue, and L. Qizhang, 1980, "Multi-Component Mapping in Environmental and its Auto-Analytical and Cartographic Systems", _International Yearbook of Cartography_, XX, pp. 118-128.

Keegan, H., and P. Aronson, 1985, "Considerations in the Design and Maintenance of a Digital Geographic Library", _Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7)_, Falls Church, VA: ASP & ACSM, pp.313-321.

Keil, C., and E. Holler, 1978, "Architectures for Heterogenous Distributed Database Systems", in J. Moneta, ed., _Information Technology_, Amsterdam, Netherlands: North Holland, pp. 299-309.

Kelley, J., R. Wolf, P. Kennicott, and R. Nagel, 1981, _A Technical Briefing on the Initial Graphics Exchange Specification (IGES), Rep. NBSIR 81-2297_, National Bureau of Standards, July 1981.

Kinnear, C., 1987, "The TIGER structure", _Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8)_, Falls Church, VA: ASP & ACSM, pp. 249-257.

Kjerne, D., and K. Dueker, 1986, "Modeling Cadastral Spatial Relationships using an Object-Oriented Language", _Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A._, Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 142-157.

King, R., and N. Nasrabadi, 1983, "Image Coding Using Vector Quantization in the Transform Domain", _Pattern Recognition Letters_, 1(5-6), pp. 323-329.

King, D., J. Daroussin, P. Bonneton, and B. Nicoullaud, 1986, "An improved method for combining map data", _Soil Use and Management_, 2(4), pp. 140-145.

Klaver, J., 1983, "The Data Collector and the Digital Data Base", _Proc. ASP Spring Meetings, Washington_, Falls Church, VA: ASP, pp. 501-510.

Kloosterman, B., and S. Faulkner, 1977, "A Cartographic Data Structure for Efficient Computer Processing", _URISA_, 77, pp. 269-277.

Knapp, E., and D. Rider, 1979, "Automated Geographic Information Systems and Landsat Data: A Survey", _Computer Mapping in Natural Resources and the Environment_, Harvard Library of Computer Graphics, 1979 Mapping Collection, Vol. 4, pp. 57-68.

Korporal, K., 1983, "A Demonstration Transfer of Remotely Sensed Data Utilizing the Standard Format for the Transfer of Geocoded Polygon Data", _Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six)_, Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 607-615.

Kozik, E., 1975, "A Data Management Systems Model", _URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA_, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 14-34.

Kunt, M., 1983, "Image Coding", in O. Faugeras, ed., _Fundamentals in Computer Vision_, Cambridge, United Kingdom: Cambridge University Press, pp. 91-116.

Kurozumi, Y., and W. Davis, 1982, "Polygonal Approximation by the Minimax Method", _Computer Graphics and Image Processing_, 19(3), pp. 248-264.

Landsat Technical Working Group, 1979, _The Standard CCT Family of Tape Formats_, Document CCB-CCT-0002, available through Ms. Lynn Buhler, ORI, Inc., 1300 Spring Street, Silver Spring, MD., 20910.

Landy, M., and Y. Cohen, 1985, "Vectorgraph Coding: Efficient Coding of Line Drawings", _Computer Vision, Graphics, and Image Processing_, 30(3), pp. 331-344

Langran, G., and B. Buttenfield, 1987, "Formatting geographic data to enhance manipulability", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 201-210.

Lauer, D., 1986, "Applications of Landsat Data and the Data Base Approach", Photogrammetric Engineering and Remote Sensing, 52(8), pp. 1193-1199.

Lauzon, J., D. Mark, L. Kikuchi, and J. Guevara, 1985, "Two-Dimensional Run-Encoding for Quadtree Representation", Computer Vision, Graphics, and Image Processing, 30(1), pp. 56-69.

Lauzon, J., R. McLaren, and C. Harwood, 1985, "Database Support for Geographic Information Systems: The Wild System 9 Approach", Proc. ACSM-ASPRS Fall Convention, Indianapolis, Falls Church, VA: ACSM & ASPRS, pp. 583-594.

Lavallee, L., 1975, "Data Directories and Data Standardization", URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 48-59.

Leberl, F., and D. Olson, 1985, "ASTRA - A System for Automated Scale Transition", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 1-13.

Lee, Y., 1983, "A Data Structure for Resource Mapping with CARIS", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 151-160.

Lefebvre, D., 1981, "Analysis of Fracturation Field: Contribution of Data Structuring", Proc. ASP Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ASP, pp. 223-233.

Lefschetz, S., 1975, Applications of Algebraic Topology, New York, NY: Springer.

Lehan, T., 1986, "The Influence of Spatial Information on Data Queries", Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, 1986, Vol. 3, Geographic Information Systems, Falls Church, VA: ACSM & ASPRS, pp. 250-257.

Levine, M., and A. Nazif, 1984, "An Optimal Set of Image Segmentation Rules", Pattern Recognition Letters, 2(4), pp. 243-248.

Liewald, M., and P. Kennicott, 1982, "Intersystem Data Transfer via IGES", IEEE Computer Graphics and Applications, 2(3), pp. 55-63.

Light, D., 1983, "Mass Storage Estimates for the Digital Mapping Era", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 152-164.

_____, 1984, "Planning for Optical Disk Technology with Digital Cartography", Proc. ACSM/ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 453-459.

Liles, W., and E. Nugent, 1981, "Data Management Considerations for Large Cartographic Information Systems", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 211-222.

Linders, J., 1978, "Data Base Designs for Cartographic Applications", International Symposium Commission IV New Technology for Mapping, Ottawa, Canada: International Society of Photogrammetry, p. 303.

Litwin, W., and A. Abdellatif, 1986, "Multidatabase Interoperability", Computer, 19(12), pp. 10-18.

Lorie, R., and A. Meier, 1984, "Using a Relational DBMS for Geographical Databases", Geo-Processing, 2(3), pp. 243-257.

Lowe, D., 1979, "Use of LANDSAT in Computer Data Bases", Computer Mapping in Natural Resources and the Environment, Harvard Library of Computer Graphics, 1979 Mapping Collection, Vol. 4, pp. 69-75.

Lucas, D., and L. Gibson, 1982, "Generalized Balanced Ternary An Approach to Handling Spatial Data", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 543-552.

Maher, R., D. Colville, and D. Rigby, 1983, "Two Way Data Transfer Between Aries Image Analysis System and ARC-INFO Geographic Information System", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 588-597.

Data Organization

Makarovic, B., 1983, "A Test on Compression of Digital Terrain Model Data", ITC Journal, 2, pp. 133-138.

Manola, F., J. Orenstein, and U. Dayal, 1987, "Geographic information processing in the PROBE database system", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 316-325.

Marble, D., 1982, "Communications of the IGU on Software Exchange", in D. Douglas and A. Boyle, eds., Computer Assisted Cartography and Geographic Information Processing, Hope and Realism, Ottawa, Canada: Canadian Cartographic Association, pp. 63-64.

Mark, D., 1978, "Concepts of 'Data Structure' for Digital Terrain Models", Proc. Digital Terrain Models Symposium, Falls Church, VA: ASP, pp. 24-31.

_____, 1979, "Phenomenon-Based Data-Structuring and Digital Terrain Modelling", Geo-Processing, 1(1), pp. 27-36.

_____, 1982, "Digital Elevation Models and Data Structuring Issues", in D. Douglas and A. Boyle, eds., Computer Assisted Cartography and Geographic Information Processing, Hope and Realism, Ottawa, Canada: Canadian Cartographic Association, pp. 81-84.

Mark, D., and J. Lauzon, 1984, "Linear Quadtrees for Geographic Information Systems", Proc. International Symposium on Spatial Data Handling, Vol. II, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 412-431.

_____, 1985, "Approaches for Quadtree-Based Geographic Information Systems at Continental or Global Scales", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 355-364.

Mark, L., and N. Roussopoulos, 1986, "Metadata Management", Computer, 19(12), pp. 26-36.

Marx, R., 1984, "Developing an Integrated Cartographic/Geographic Data Base for the United States Bureau of the Census", paper presented at the 12th Conference of the International Cartographic Association, Perth, Australia, August 1984.

_____, 1986, "The TIGER System: Automating the Geographic Structure of the United States Census", Government Publications Review, 13(3), pp. 181-201.

Marx, R., and F. Broome, 1985, "A Topologically Based Data Structure for a Computer-Readable Map and Geographic System", paper presented at the Joint UDM-SORSA Symposium, The Hague, Netherlands, June 2-6, 1985.

Matsuyama, T., L. Hao, and M. Nagao, 1984, "A File Organization for Geographic Information Systems Based on Spatial Proximity", Computer Vision, Graphics and Image Processing, 26(3), pp. 303-318.

McEwen, R., 1979, "U.S. Geological Survey Digital Cartographic Data Acquisition", Mapping Software and Cartographic Data Bases, Harvard Library of Computer Graphics, 1979 Mapping Collection, Vol. 2, pp. 136-142.

_____, 1980, "USGS Digital Cartographic Applications Program", Journal of the Surveying and Mapping Division, 106(sul), pp. 13-22.

_____, 1981, "Information Potential of a Digital Cartographic Data Base", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 150-153.

_____, and H. Jacknow, 1979, "USGS Digital Cartographic Data Base", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. II, Falls Church, VA: ASP & ACSM, pp. 225-235.

_____, and H. Calkins, 1982, "Digital Cartography in the USGS National Mapping Division: A Comparison of Current and Future Mapping Processes", Cartographica, 19(2), pp. 11-26.

McKenna, D., 1987, "The inward spiral method: an improved TIN generation technique and data structure for land planning applications", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 670-679.

Meagher, D., 1982, "Geometric Modeling Using Octree Encoding", Computer Graphics and Image Processing, 19(2), pp. 129-147.

Meier, A., 1982, "A Graph Grammar Approach to Geographic Data Bases", paper presented at the 2nd International Workshop on Graph Grammars and their Applications to Computer Science, Osnabrück, Germany, October 4-8, 1982.

Meier, A., and M. Ilg, 1986, "Consistent Operations on a Spatial Data Structure", IEEE Transactions on Pattern Analysis and Machine Intelligence, 8(4), pp. 532-538.

Merrill, R., 1973, "Representation of Contours and Regions for Efficient Computer Search", Communications of the ACM, 16(2), pp. 69-82.

Miller, S., 1980, "A Compact Raster Format for Handling Spatial Data", Proc. ACSM Fall Meetings, Niagara Falls, Falls Church, ACSM, pp. CD-4-A-1 - CD-4-A-18.

_____, 1982, "Compressing Interpreted Satellite Imagery for Geographic Information Systems Applications Over Extensive Regions", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 341-358.

_____, 1984, "A Spatial Data Structure for Hydrologic Applications", Proc. International Symposium on Spatial Data Handling, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 267-288.

_____, 1985, "A Spatial Data Structure for Hydrologic Applications", Geo-Processing, 2(4), pp. 385-408.

_____, and J. Goldberg, 1984, "Integrating Digital Map Data from the National Topographic Map Series with Other Digital Data Sets for Land and Water Resource Assessment", Proc. ACSM/ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 486-499.

Mirante, A., and N. Weingarten, 1982, "The Radial Sweep Algorithm for Constructing Triangulated Irregular Networks", IEEE Computer Graphics and Applications, 2(3), pp. 11-21.

Mirkay, F., 1982, "Defense Mapping Agency Large Scale Data Base Integration", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 537-546.

Modeleski, M., 1977, "A Fast Chain Gridder", paper submitted to the Special Interest Group on Geoprocessing, Geographic Data File Access and Structure, Fifteenth Annual Conference of the Urban and Regional Information Systems Association - Information System Inputs to Policies, Plans, and Programs, August 7-11, 1977, Kansas City, MO.

_____, 1978, "Mini Gridding a Large Region: Data Structures and Related Software for the Bay Area Spatial Information System", in G. Dutton, ed., Geographic Information Systems: Cartographic and Analytic Applications, Vol. 3, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Moise, E., 1977, Geometric Topology in Dimension 2 and 3, New York, NY: Springer.

Monmonier, M., 1975, "Internally-stored Scan-lines for Line-printer Mapping", American Cartographer, 2(2), pp. 145-153.

_____, 1981, "Trends in Atlas Development", Cartographica, 18(2), pp. 187-213.

Morehouse, S., 1978, "The ODYSSEY File System", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1985, "ARC/INFO: A Georelational Model for Spatial Information", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 388-397.

_____, and G. Dutton, 1979, "Extraction of Polygonal Information from Gridded Data", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 320-327.

Morgan, J., L. Spradley, G. Worthington, and I. McClelland, 1983, "SEG Standard Exchange Formats for Positional Data", Geophysics, 48(4), pp. 488-490.

Morse, S., 1968, "Computer Storage of Contour-Map Data", Proc. 1968 ACM National Conference, pp. 45-51.

Mruk, S., 1982, "Systems Analysis and Design of an Interactive Digital Terrain Modelling System", Proc. ACSM-ASP Fall Meetings, Hollywood, Florida, Falls Church, VA: ACSM & ASP, pp. 303-314.

Data Organization

Muller, J., and R. O'Connor, 1982, "Representing Topologic Properties in Raster Data Structures", *Proc. ISPRS Commission IV Symposium 1982*, Vol. 24-IV, Falls Church, VA: ASP & ACSM, pp. 473-482.

Murch, R., 1975, "Data Base Administration: An Outgrowth of Technology", *URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA*, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 1-13.

Myers, W., 1982, "GIS Information Layers Derived from Landsat Classification", *Proc. Pecora VII Symposium*, Falls Church, VA: ASP, pp. 366-372.

Nagata, M., 1981, "A Relational Image Data Base System for Remote Sensing (Land DBMS)", *Proc. Conference on Pattern Recognition and Image Processing, Dallas 1981*, New York, NY: IEEE, pp. 491-495.

Nagy, G., and S. Wagle, 1979a, "Geographic Data Processing", *Computing Surveys*, 11(2), pp. 139-181.

_____, 1979b, "Approximation of Polygonal Maps by Cellular Maps", *Communications of the ACM*, 22(9), pp. 518-525.

Naor, J., and S. Peleg, 1983, "Hierarchical Image Representation for Compression, Filtering and Normalization", *Pattern Recognition Letters*, 2(1), pp. 43-46.

National Committe for Digital Cartographic Data Standards, 1987, "Part II - Spatial Data Exchange", H. Moellering, ed., *A Draft Proposed Standard for Digital Cartographic Data*, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

_____, 1987, *Spatial Data Exchange*, March, 1987, updated version of "Part II -Spatial Data Exchange", H. Moellering, ed., *A Draft Proposed Standard for Digital Cartographic Data*, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

National Mapping Council of Australia, 1985, *Recommended Procedures for the Interchange of Small and Medium Scale Digital Vector Topographic Mapping Data*, Special Publication 12, Belconnen, Australia: National Mapping Council of Australia.

Neumann, D., 1983, "A Digital Cartographic Information Utility", *Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six)*, Vol. I, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 161-167. The same article also appears in *Technical Papers of the 44th Annual Meeting - ACSM, March*, 1984, Falls Church, VA: ACSM, pp. 301-307.

Nichols, D., 1982, "Conversion of Raster Coded Images to Polygonal Data Structures", *Proc. Pecora VII Symposium*, Falls Church, VA: ASP, pp. 508-515.

Noma, A., and N. Spencer, 1978, "Development of a DMATC Digital Terrain Data Base System", *Proc. Digital Terrain Models Symposium*, Falls Church, VA: ASP, pp. 493-505.

Nyerges, T., 1979, "A Formal Model of a Cartographic Information Base", *Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV)*, Vol. 2, Falls Church, VA: ASP & ACSM, pp. 312-319.

_____, 1980a, *Modeling the Structure of Cartographic Information for Query Processing*, unpublished Ph. D. dissertation, Dept. of Geography, Ohio State University.

_____, 1980b, "Representing Spatial Properties in Cartographic Data Bases", *Proc. ACSM Spring Meetings, St. Louis*, Falls Church, VA: ACSM, pp. 29-41.

_____, 1982, "Report on the Activities of Working Group I, Data Set Organization", in H. Moellering, ed., *Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982*, Issues in Digital Cartographic Data Standards, Report #2, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 9-10.

_____, ed., 1984a, "Digital Cartographic Data Standards: Alternatives in Data Organization", in H. Moellering, ed., *Digital Cartographic Data Standards: Examining the Alternatives*, Issues in Digital Cartographic Data Standards, Report #4, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 73-92.

_____, 1984b, "Digital Cartographic Data Standards: Alternatives in Data Organization", (abstract), *Proc. ACSM Spring Meetings, Washington*, Falls Church, VA: ACSM, p. 62.

_____, 1985a, "An Interim Proposed Standard for Digital Cartographic Data Organization", in H. Moellering, ed., Digital Cartographic Data Standards: An Interim Proposed Standard, Issues in Digital Cartographic Data Standards, Report #6, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 5-22.

_____, 1985b, "An Interim Proposed Standard for Digital Cartographic Data Organization", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 398.

_____, 1986a, "Testing the Interim Proposed Standard for Digital Cartographic Data Exchange", (abstract), Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, 1986, Vol. 1, Cartography and Education, Falls Church, VA: ACSM & ASPRS, p. 3.

_____, 1986b, "Testing the Interim Proposed Standard for Cartographic Data Exchange", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 21-31.

_____, 1987, Methodology for Spatial Information Integration: Leading to a Multipurpose Cadastre, (typescript), Seattle, WA: University of Washington, Department of Geography.

Nyerges, T., and C. Smyth, 1983, "An Integrated Geographic Data Management System", (abstract), Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. II, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, p. 628.

Nyerges, T., and M. White, 1983, "Issues in Digital Cartographic Data Standards: A Progress Report, Working Group I", in H. Moellering, ed., Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work, Issues in Digital Cartographic Data Standards, Report #3, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 11-21.

Oliviero, A., and G. Scarpetta, 1981, "A New Approach to Contour Coding", Computer Graphics and Image Processing, 15(1), pp. 87-92.

Opheim, H., 1982, "Fast Data Reduction of a Digitized Curve", Geo-Processing, 2(1), pp. 33-40.

Ore, O., 1963, Graphs and their Uses, New York, NY: Random House.

Palmer, D., and J. McLaughlin, 1984, "Land Related Information Networks: Assessing User Requirements", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 101-109.

Parks, C., 1984, "IGES Update, A Report from the Electrical Subcommittee", Computer Graphics World, 7(3), pp. 43-50.

Parr, D., 1986, "Management of the Public Right-of-Way and Geographic Data Base Structures", URISA 1986, What's the Difference?, Papers from the annual conference of the Urban and Regional Information Systems Association, August 10-14, Denver, CO, Vol. IV, Public Administration, Public Works/Utilities, Facilities Management and Mapping, Regional Agencies, Transportation, Electronic Office Integration, Legal Issues, ed. M. Salling and R. Surridge, Washington, DC: URISA, pp. 101-109.

Pearson, M., and R. Gareau, 1986, "Exchanging Digital Base Mapping Data", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 611-615.

Pellerin, G., 1983, "Fabrication de Bases de Donnees a Reference Spatiale a Partir de Donnees Numeriques de la Carte de Base du Quebec a L'Echelle 1:1 000", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp.99-107.

Penny, J., 1986, "Relational methods for format conversion of map data", Cartography, Journal of the Australian Institute of Cartographers, 15(1), pp. 26-34.

Peucker, T., and N. Chrisman, 1975, "Cartographic Data Structures", American Cartographer, 2(1), pp. 55-69.

Peucker, T., and A. Clement, 1979, "Interactive Computer Mapping", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Falls Church, VA: ASP & ACSM, pp. 165-171.

Peuquet, D., 1978, "The Need for Raster Processing of Cartographic Data", Proc. International Conference on Computer-Assisted Cartography (AUTO-CARTO III), Falls Church, VA: ASP & ACSM, pp. 139-147.

Data Organization

_____, 1979, "Raster Processing: An Alternative Approach to Automated Cartographic Data Handling", American Cartographer, 6(2), pp. 129-139.

_____, 1981a, "An Examination of Techniques for Reformatting Digital Cartographic Data/Part 1: The Raster-to-Vector Process", Cartographica, 18(1), pp. 34-48.

_____, 1981b, "An Examination of Techniques for Reformatting Digital Cartographic Data/Part 2: The Vector-to-Raster Process", Cartographica, 18(3), pp. 21-33.

_____, 1982a, "Vector/Raster Options for Digital Cartographic Data", Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 29-35.

_____, 1982b, "Comparative Data Structures: Raster Versus Vector", in D. Douglas and A. Boyle, eds., Computer Assisted Cartography and Geographic Information Processing, Hope and Realism, Ottawa, Canada: Canadian Cartographic Association, pp. 73-80.

_____, 1983a, "The Application of Artificial Intelligence Techniques to Very Large Geographic Databases", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 419-420.

_____, 1983b, "A Hybrid Structure for the Storage and Manipulation of Very Large Spatial Data Sets", Computer Vision, Graphics, and Image Processing, 24(1), pp. 14-27.

_____, 1984a, "Data Structures for a Knowledge-Based Geographic Information System", Proc. International Symposium on Spatial Data Handling, Vol. II, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 372-391.

_____, 1984b, "A Conceptual Framework and Comparison of Spatial Data Models", Cartographica, 21(4), pp. 66-113.

_____, 1986, "The Use of Spatial Relationships to Aid Spatial Database Retrieval", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 459-471.

_____, and R. Boyle, 1984, Raster Scanning, Processing and Plotting of Cartographic Documents, Williamsville, N.Y.: SPAD Systems, Ltd.

Pfaltz, J., 1976, "Surface Networks", Geographical Analysis, 8(1), pp. 77-93.

_____, 1979, "Efficient Multi-Attribute Retrieval over Very Large Geographical Data Files", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. II, Falls Church, VA: ASP & ACSM, pp. 54-62.

_____, and A. Rosenfeld, 1967, "Computer Representation of Planar Regions by Their Skeletons", Communications of the ACM, 10(2), pp. 119-125.

Pierce, R., 1982, "Evolution of the Defense Mapping Agency's Digital Data Specifications", Proc. ACSM-ASP Fall Meetings, Hollywood, Florida, Falls Church, VA: ACSM & ASP, pp. 320-329.

Puk, R., and J. McConnell, 1986, "GKS-3D" A Three-Dimensional Extension to the Graphic Kernel System", IEEE Computer Graphics and Applications, 6(8), pp. 42-48.

Reed, C., 1980, "A Minimum Set of Criteria for Selecting a Turn Key Geographic Information System", URISA 1980, Ends and Means of Urban and Regional Information Systems: Bridging the Gap in the 1980's, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 17-21, 1980, Toronto Ontario, ed. R. Schmitt, Chicago, IL: URISA, pp. 144-151.

Reed, T., 1982, "A Metafile for Efficient Sequential and Random Display of Graphics", Computer Graphics, 16(3), pp. 39-43.

Reyes, C., and C. Payno, 1985, "A Geographical Meta-Information System", URISA 1985, Computers in Public Agencies, Sharing Solutions, Papers from the annual conference of the Urban and Regional Information Systems Association, July 28 - August 1, 1985, Ottawa, Ontario, Vol. IV, Data Processing, Education, Public Administration, Public Works, Regional Agencies, Transportation, ed. B. Niemann, McLean, VA: URISA, pp. 142-152.

Rhind, D., N. Green, H. Mounsey, and J. Wiggins, 1984, "The Integration of Geographical Data", Technical Papers of the Austra Carto One Seminar, Perth, Australia: The 12th ICA Conference Committee, pp. 237-251.

Robinson, V., and R. Wong, 1987, "Acquiring approximate spatial representations of spatial relations: theory and results of tests", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 604-622.

Rosenberg, A., 1981, "On Uniformly Inserting One Data Structure into Another", Communications of the ACM, 24(2), pp. 88-90.

Rosenberg, J., 1985, "Geographical Data Structures Compared: A Study of Data Structures Supporting Region Queries", IEEE Transactions on Computer-Aided Design, 4(1), pp. 53-67.

Rosenfeld, A., 1983a, "Digital Geometry: Geometric Properties of Subsets of Digital Images", in O. Faugeras, ed., Fundamentals in Computer Vision, Cambridge, United Kingdom: Cambridge University Press. pp. 197-207.

_____, 1983b, "Hierarchical Representation: Computer Representations of Digital Images and Objects", in O. Faugeras, ed., Fundamentals in Computer Vision, Cambridge, United Kingdom: Cambridge University Press, pp. 315-324.

_____, 1983c, "Relaxation: Pixel-Based Methods", in O. Faugeras, ed., Fundamentals in Computer Vision, Cambridge, United Kingdom: Cambridge University Press, pp. 373-383.

_____, 1983d, "Quadtrees and Pyramids: Hierarchical Representation of Images", in R. Haralick, ed., Pictorial Data Analysis, NATO ASI Series, Vol. F4, Berlin, Germany: Springer, pp. 29-42.

_____, and H. Samet, 1979, "Tree Structures for Region Representation", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. II, Falls Church, VA: ASP & ACSM, pp. 108-118.

Rugg, R., 1980, "Pilot Application of HBDS Concepts to Regional Environmental Assessment", paper presented at 10th International Conference of the International Cartographic Association, Tokyo, 1980.

_____, 1983, "Building a Hypergraph-Based Data Structure: The Examples of Census Geography and the Road System", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 211-220; reprinted in Cartographica, 21(2-3), pp. 179-187.

Saalfeld, A., 1985, "Topics in Advanced Topology for Cartography", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 490.

_____, 1985, "Lattice Structures in Geography", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 482-489.

_____, 1985, "A Fast Rubber-Sheeting Transformation Using Simplicial Coordinates", Technical Note, American Cartographer, 12(2), pp. 169-173.

Saalfeld, A., and R. T. O'Reagan, 1985, "Streamlining Curve-Fitting Algorithms that Involve Vector-to-Raster Conversion", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 491-497.

Samet, H., 1982, "Hierarchical Data Structures for Representing Geographical Information", Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 36-50.

_____, 1984a, "The Quadtree and Related Hierarchical Data Structures", ACM Computing Surveys, 16(2), pp. 187-260.

_____, 1984b, "Algorithms for the Conversion of Quadtrees to Rasters", Computer Vision, Graphics, and Image Processing, 26(1), pp. 1-16.

Samet, H., A. Rosenfeld and C. Shaffer, 1984, "Use of Hierarchical Data Structures in Geographical Information Systems", Proc. International Symposium on Spatial Data Handling, Vol. II, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 392-411.

Samet, H., C. Shaffer, R. Nelson, Y. Huang, K. Fujimura, and A. Rosenfeld, 1986, "Recent Developments in Quadtree-Based Geographic Information Systems", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 15-32.

Satharanond, V., 1981, "An Application of the Hypergraph-Based Data Structure (HBDS) in an Agricultural Suitability Study", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, ACSM, pp. 29-38.

_____, 1984, "New Data Structure Model for Digital Cartographic Database", Proc. XV ISPRS Congress, Commission IV, Rio de Janeiro, pp. 423-432.

Saulnier, L., 1978, "The Design and Implementation of the Cartographic Data Base (CDB) for the Defense Mapping Agency", Commission III Computer-Assisted Cartography, Enschede, Netherlands: International Cartographic Association, pp. 179-205.

SCCAMA (Southern California Computer Aided Mapping Association), 1984, SCCAMA Common Land Base and Data Interchange Specifications (Draft No. 2.1 3/16/84) (proposed), Los Angeles, CA: SCCAMA.

SCCAMA Specification Committee, 1984, SCCAMA Common Land-Base and Interchange Specification (CLIS), Progress Report, Los Angeles, CA: SCCAMA.

SCCAMA Specifications Committee, Technical Subgroup, 1983, General Overview of Common Land Base Requirements, Los Angeles, CA: SCCAMA.

Schiro, R., and G. Williams, 1983, "An Adaptive Method for Numerically Modeling Large Numbers of Irregularly Spaced Data", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 252-261.

Schlichtmann, H., 1979, "Codes in Map Communication", Canadian Cartographer, 16(1), pp. 81-97.

Schumacher, H., 1980, "Eine Methode zur einheitlichen Speicherung und Verarbeitung Geographischer Flächendaten für die Regional-Planung", International Archives of Photogrammetry, XXIII(B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 623-628.

Shapiro, L., 1979, "Data Structures for Picture Processing: A Survey", Computer Graphics and Image Processing, 11(2), pp. 162-184.

Shapiro, L., and S. Engineer, 1984, "A Query Language for A Spatial Information System", Proc. XV ISPRS Congress, Commission IV, Rio de Janeiro, pp. 450-459.

Shapiro, L., and R. Haralick, 1978, "A General Spatial Data Structure", Proc. IEEE Computer Society Conference on Pattern Recognition and Image Processing, New York, NY: IEEE, pp. 238-249.

_____, 1980, "A Spatial Data Structure", Geo- Processing, 1, pp. 313-337.

Sharman, G., 1979, "A Picture Drawing System Using a Binary Relational Database", in A. Blaser, ed., Data Base Techniques for Pictorial Applications, Lecture Notes in Computer Science, Berlin, Germany: Springer, pp. 495-507.

Sharpley, W., J. Leiserson, and A. Schmidt, 1978, A Unified Approach to Mapping, Charting, and Geodesy (MC & G) Data Base Structure Design, Reading, MA: The Analytic Sciences Corp., AD-B028 228.

Shemer, J., and P. Neches, 1984, "The Genesis of a Database Computer", Computer, 17(11), pp. 42-56.

Shiryaev, E., 1977, "Theory and Practice of Cartographic Representation and Analysis of Information in Normalized Form by Computers", International Yearbook of Cartography, XVII, pp. 155-165.

Shlien, S., 1982, "Raster to Polygon Conversion of Images", Computer and Graphics, 7(3-4), pp. 327-332.

Shneiderman, B., 1978, "A Framework for Automatic Conversion of Network Database Programs under Schema Transformations", in J. Moneta, ed., Information Technology, Amsterdam, Netherlands: North Holland, pp. 279-288.

Simonsson, G., E. Westermark, and B. Wiberg, 1980, "Digital Mapping", International Archives of Photogrammetry, XXIII(B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 639-644.

Sinton, D., 1978, "The Inherent Structure of Information as a Constraint to Analysis: Mapped Thematic Data as a Case Study", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Smedley, B., and B. Aldred, 1979, "Problems with Geo-Data", in A. Blaser, ed., Data Base Techniques for Pictorial Applications, Lecture Notes in Computer Science, Berlin, Germany: Springer, pp. 539-554.

Smith, C., and D. Ducoff, 1984, "Problems of Data Interchange Between Geographic Information Systems", (abstract), Proc. ASP Spring Meetings, Washington, Vol. 2, Falls Church, VA: ASP, p. 627.

Smith, D., 1981, "Raster Data Development in the National Mapping Division, U.S. Geological Survey", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 284-288.

Somers, R., 1980, "A Geographic Data Management System for GBF/DIME Related Data", URISA 1980, Ends and Means of Urban and Regional Information Systems: Bridging the Gap in the 1980's, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 17-21, 1980, Toronto, Ontario, ed. R. Schmitt, Chicago, IL: URISA, pp. 210-220.

Sparks, M., and J. Gallop, 1986, "Language Bindings for Computer Graphic Standards", IEEE Computer Graphics and Applications, 6(8), pp. 58-65.

Standards Association of Australia, 1981, Interchange of Feature Coded Digital Mapping Data, Australian Standard 2482-1981, North Sydney, Australia: Standards Association of Australia.

_____, 1984, Interchange of Feature Coded Digital Mapping Data, Australian Standard 2482-1984, North Sydney, Australia: Standards Association of Australia.

Steiner, D., and H. Gilgen, 1984, "Relational Modeling as a Design and Evaluation Technique for Interactive Geographical Data Processing", Proc. International Symposium on Spatial Data Handling, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 61-77.

_____, 1985, "Binary Relational Modelling and Interactive Statistical Mapping", Geo-Processing, 2(4), pp. 329-366.

Stephens, M., 1980, "The USGS 1:2,000,000-Scale Digital Data Base", Proc. ACSM Spring Meetings, St. Louis, Falls Church, VA: ACSM, pp. 436-443.

_____, M. Domaratz, and W. Schmidt, 1979, "The Development of a National Small-Scale Digital Cartographic Data Base", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 345-352.

Stockman, D., 1983, Memorandum M-83-12, on the Coordination of Federal Digital Cartographic Data Programs, OMB, April 4, 1983.

Stoyan, D., H. Stoyan, and Freiberg, 1981, "Quantifizierung von Korrelationen zwischen Geometrischen Strukturen auf Geologischen Karten", Zeitschrift für Angewandte Geologie, 28(5), pp. 240-244.

Synectics Corporation, 1981, Interactive Raster Data Structuring Techniques, Overview, W-81-AO-003, by J. Muller, Rome, NY: Synectics Corporation.

Taketa, R., 1981, "Algorithmic Descriptions of Map Symbol, Form and Pattern", paper presented at the American Association of Geographers Meeting, April 1981, Los Angeles.

Tamminen, M., 1983, "Performance Analysis of Cell Based Geometric File Organizations", Computer Vision, Graphics, and Image Processing, 24(2), pp. 160-181.

_____, 1984, "Efficient Geometric Access to a Multirepresentation Geo-Database", Geo-Processing, 2(3), pp. 177-196.

Tamura, H., and N. Yokoya, 1984, "Image Database Systems: A Survey", Pattern Recognition, 17(1), pp. 29-43.

Tang, G., 1981, "A Management System for an Integrated Database of Pictures and Alphanumerical Data", Computer Graphics and Image Processing, 16(3), pp. 270-286.

Tarvydas, A., 1984, "Terrain Approximation by Triangular Facets", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 524-531.

Taylor, R., 1982, "Experience Using Generalized Data Translation Techniques for Database Interchange", Computers and Standards, 1, pp. 111-118.

Teng, A., 1983, "Cartographic and Attribute Data Base Creation for Planning Analysis Through GBF/DIME and Census Data Processing", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 348-354.

_____, 1985, "Interfacing with GBF/DIME and AMF: A Comparison", URISA 1985, Computers in Public Agencies, Sharing Solutions, Papers from the annual conference of the Urban and Regional Information Systems Association, July 28 - August 1, 1985, Ottawa, Ontario, Vol. II, Geoprocessing, ed. B. Niemann, McLean, VA: URISA, , pp. 179-192.

_____, 1986, "Toward a Topologically Integrated Geographic Information System for Cartographic Modeling", URISA 1986, What's the Difference?, Papers from the annual conference of the Urban and Regional Information Systems Association, August 10-14, Denver, CO, Vol. II, Geoprocessing and Geographic Information Systems, ed. R. Somers, Washington, DC: URISA, pp. 62-74.

Tobler, W., and Z. Chen, 1986, "A Quadtree for Global Information Storage", Geographical Analysis, 18(4), pp. 360-371.

Tomlin, C., 1983, "A Map Algebra", paper presented at the Harvard Computer Graphics Week 1983, Cambridge, MA.

_____, and J. Berry, 1979, "A Mathematical Structure for Cartographic Modeling in Environmental Analysis", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 269-283.

Tomlinson, R., 1978, "Difficulties Inherent in Organizing Earth Data in a Storage Form Suitable for Query", Proc. International Conference on Computer-Assisted Cartography (AUTO-CARTO III), Falls Church, VA: ASP & ACSM, pp. 181-201.

Tsurutani, T., Y. Kasahara, and M. Naniwada, 1981, "Data Structure and Language of the Geographic Information System ATLAS", N.E.C. (Nippon Electric Company) Research and Development, 1981(62), pp. 57-64.

Tuori, M., 1984, "A Topographical Map Conceptual Data Model", Proc. International Symposium on Spatial Data Handling, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 28-37.

Turner, S., 1981, "Polygon to Grid Conversion Using a Y-Coordinate Sorting Technique", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 528-536.

_____, 1986, "Notes from the October 7-9, 1986 Programmers' Workshop in Reston, Virginia", FGEF Final Testing Report, Appendix F of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

Ulfsby, S., S. Meen, and J. Oian, 1982, "Tornado: A Data-Base Management System for Graphics Applications", IEEE Computer Graphics and Applications, 2(3), pp. 71-79.

U.K. Ordnance Survey, 1983, Beginners Guide to Plotting Ordnance Survey Digital Map Data, DO9-DMC, Southampton, United Kingdom: Ordnance Survey.

U.S. Department of Agriculture, Forest Service, 1986, "Testing Agency Report", submitted by R. Mahoney, FGEF Final Testing Report, Appendix L of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

U.S. Department of Agriculture, Soil Conservation Service, Cartography / Geographic Information Systems Division, 1986, "Testing Agency Report", submitted by R. Listand and R. Glenn, FGEF Final Testing Report, Appendix J of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

U.S. Department of Commerce, National Bureau of Standards, 1980a, Computer Science & Technology: Data Base Directions - The Conversion Problem, J. Berg, ed., Nat. Bur. Stand. Spec. Publ. 500-64, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1980b, Initial Graphics Exchange Specification, now published as ANSI Standard Y14.26M.

_____, 1984, Report on Approaches to Database Translation, NBS Special Publication 500-115, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1986a, Federal Information Processing Standards Publications (FIPS PUBS) Index, NBS Publications List 58, Springfield, VA: U.S. Department of Commerce, National Bureau of Standards.

_____, 1986b, Report on Approaches to Database Translation, NBS Special Publication 500-115, Computer Science and Technology, Gaithersburg, MD: U.S. Department of Commerce, National Bureau of Standards.

U.S. Department of Defense, Defense Mapping Agency, 1981, DMA Standard Format for Linear Digital Data, St. Louis, MO: Defense Mapping Agency Aerospace Center, Aerospace Cartography Department.

_____, 1983, Defense Mapping Agency Standard Linear Format (SLF) for Digital Cartographic Feature Data, Washington, DC: Defense Mapping Agency.

U.S. Department of Housing and Urban Development, Federal Urban Information Systems Inter-Agency Committee, 1970, The Wichita Falls Consortium Phase II Report, Vol. XII - Conceptualization Themes: Transferability, Data Standardization, Confidentiality, and Geographic Information Systems, PB-208 485-12, Springfield, VA: U.S. Department of Housing and Urban Development, Federal Urban Information Systems Inter-Agency Committee.

U.S. Department of the Interior, Bureau of Land Management, 1986, "Results of a Test of Federal Geographic Exchange Format (FGEF) Using Data Captured With Automated Digitizing System (ADS)", prepared by R. Green, FGEF Final Testing Report, Appendix O of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

U.S. Department of the Interior, Fish and Wildlife Service, National Ecology Center, 1986, "Testing Agency Report", submitted by B. Tepley, FGEF Final Testing Report, Appendix M of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

U.S. Department of the Interior, Geological Survey, 1983a, Overview and USGS Activities, by R. McEwen, H. Calkins, and B. Ramey, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-A, Reston, VA: USGS.

_____, 1983b, Digital Line Graphs from 1:2,000,000-Scale Maps, by M. Domaratz, C. Hallam, W. Schmidt, and H. Calkins, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-D, Reston, VA: USGS.

_____, 1983c, Land Use and Land Cover Digital Data, by R. Fegeas, R. Claire, S. Guptill, K. Anderson, and C. Hallam, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-E, Reston, VA: USGS.

_____, 1983d, Scientific and Technical, Spatial and Bibliographic Data Bases and Systems of the U.S. Geological Survey, Circular 817, Reston, VA: Office of the Data Administrator, U.S.G.S..

_____, 1985, Digital Line Graphs from 1:100,000-Scale Maps, Data Users Guide 2, Reston, VA: USGS.

U.S. Department of the Interior, Geological Survey, National Mapping Division, 1986, "Testing Agency Report", submitted by S. Turner and R. Fegeas, FGEF Final Testing Report, Appendix P of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

U.S. Department of the Interior, Geological Survey, National Mapping Division, EROS Data Center, 1986a, "Conversion of 7.5' DEM Data to FGEF, Phase 1: Data File Mapping", FGEF Final Testing Report, Appendix R of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986b, "Conversion of Alaska Interim Land CoverData to FGEF, Phase 1: Data File Mapping", FGEF Final Testing Report, Appendix S of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986c, "F.G.E.F. Encoding/Decoding Support Library", FGEF Final Testing Report, Appendix D of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986d, "F.G.E.F. Tags", FGEF Final Testing Report, Appendix C of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986e, "FGEF Support Subroutine Library, User Guide", FGEF Final Testing Report, Appendix E of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986f, "Observations of FGEF Standard for Standards Working Group III, F.I.C.C.D.C.", FGEF Final Testing Report, Appendix T of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

_____, 1986g, "Testing Agency Report", submitted by C. Rich, FGEF Final Testing Report, Appendix Q of Federal Interagency Coordinating Committee on Digital Cartography, Standards Working Group, Federal Geographic Exchange Format, A Standard Format for the Exchange of Spatial Data Among Federal Agencies, Washington, DC: Federal Interagency Coordinating Committee on Digital Cartography.

U.S. Government Accounting Office, 1982, Duplicative Federal Computer-Mapping Programs: A Growing Problem, Report GAO/RCED-83-19, November 22, 1983.

Vaidya, P., L. Shapiro, R. Haralick, and G. Minden, 1982, "An Experimental Relational Database System for Cartographic Applications", Proc. ASP Spring Meetings, Denver, Falls Church, VA: ASP, pp. 133-142.

van Berkel, P., 1987, LINZ Standard for the Interchange of Digital Land Information - A Discussion Document, Part A: Transfer File Format, Internal Report No 5, Draft 4, 2 February 1987, Wellington, New Zealand: LINZ Support Group.

van Biljon, W., 1987, "A geographic database system", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 356-362.

van Est, J., and A. van Lamsweerde, 1984, "Cost Saving Use of Segment Files for Local Planning and Policy Making in the Netherlands", paper presented at the 10th European Symposium on Urban Data Management, May 29-June 1, 1984.

van Roessel, J., 1986, "Design of a Spatial Data Structure Using the Relational Normal Forms", Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A., Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 251-272.

van Roessel, J., and E. Fosnight, 1984, "A Relational Approach to Vector Data Structure Conversion", Proc. International Symposium on Spatial Data Handling, Vol. I, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 78-95.

_____, 1985, "A Relational Approach to Vector Data Structure Conversion", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 541-551.

van Vuuren, E., 1985, "A Computerized System for Integrating Vector and Satellite Data", <u>Proc. ACSM-ASPRS Fall Convention, Indianapolis, Falls Church, VA: ACSM & ASPRS</u>, pp. 636-645.

van Zuylen, L., 1980, "A Standard Format for the Exchange of Cartographic Data", <u>ITC Journal</u>, 1, pp. 95-102.

Vitek, R., 1979, "Data Base Requirements for Geographical Mapping", in A. Blaser, ed., <u>Data Base Techniques for Pictorial Applications</u>, Lecture Notes in Computer Science, Berlin, Germany: Springer, pp. 1-25.

Vuillemin, J., 1980, "A Unifying Look at Data Structures", <u>Communications of the ACM</u>, 23(4). pp. 229-239.

Wang, J., 1984, "GBF/DIME Extensive Applications", <u>Proc. ACSM/ASP Fall Meetings, San Antonio</u>, Falls Church, VA: ACSM & ASP, pp. 212-217.

Waugh, T., 1986, "A response to recent papers and articles on the use of quadtrees for geographic information systems" <u>Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A.</u>, Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 33-37

Waugh, T., and R. Healey, 1986, "The GEOVIEW design : a relational database approach to geographical data handling", <u>Proc. Second International Symposium on Spatial Data Handling, July 5-10, 1986, Seattle, Washington, U.S.A.</u>, Williamsville, NY: International Geographical Union, Commission on Geographical Data Sensing and Processing, pp. 193-212.

Weaver, F., 1973, "Virtual Mapping a SIG GBF Working Paper", <u>URISA 1973, Urban and Regional Information Systems: Perspectives on Information Systems, Papers from the Eleventh Annual Conference of the Urban and Regional Information Systems Association, August 28-31, 1973, Atlantic City, NJ</u>, ed. J. Rickert, C. Davis, V. di Matteo, and D. Spitalnick, Claremont, CA: URISA, pp. 250-264.

Weber, W., 1978, "Three Types of Map Data Structures, Their ANDs and NOTs and a Possible OR", in G. Dutton, ed., <u>Data Structures: Hierarchical and Overlaid</u>, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Wellar, B., 1971, "Paradigms for the Development of Standarized Data Bases", paper presented at the Annual Conference of the American Institute of Planners, October 24-28, 1971, San Francisco.

_____, 1972, "Information Interchange: Focus on Standards and Compatibility", <u>URISA 1972, Information Research for an Urban Society, Papers from the Tenth Annual Conference of the Urban and Regional Information Systems Association, San Francisco, CA</u>, Vol. I, ed. J. Rickert, C. Davis, V. di Matteo, and A. Bose, Claremont, CA: Urban and Regional Information Systems, pp. 234-238.

Werner, P., and H. Bruck, 1975, "National Geocoding Systems: Design of a Converter", <u>URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA</u>, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 512-527.

White, M., 1975, "Map Editing Using a Topological Access System", <u>Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO II)</u>, Falls Church, VA: ACSM, pp. 422-429.

_____, 1977, "The Performance of a Topological File Access System", <u>URISA</u>, 77, pp. 249-257.

_____, 1978a, "The Cost of Topological File Access", in G. Dutton, ed., <u>Spatial Algorithms: Efficiency in Theory and Practice</u>, Vol. 6, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1978b, "The State of Land Data Systems Technology", <u>Land Data Systems Now, Proc. Second MOLDS Conference</u>, Falls Church, VA: ACSM, pp. 276-272.

_____, 1979, "A Survey of the Mathematics of Maps", <u>Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV)</u>, Falls Church, VA: ASP & ACSM, pp. 82-96.

_____, 1982, "Technical Requirements and Standards for a Multi-purpose Geographic Data System", paper presented to the "M.O.L.D.S." Board, January 7, 1982.

_____, 1983, "Tribulations of Automated Cartography and How Mathematics Helps", <u>Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six)</u>, Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 408-418.

_____, 1984, "Technical Requirements and Standards for a Multipurpose Geographic Data System", American Cartographer, 11(1), pp. 15-26.

White, M., and P. Griffin, 1979a, "Coordinate Free Cartography", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 236-245.

_____, 1979b, "Mapping Without Coordinates", URISA 1979, More for Less: Information Systems in an Era of Limits, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 19-23, 1979, San Diego CA, ed. R. Schmitt, Chicago, IL: URISA, pp. 431-442.

Wiederhold, G., 1984, "Databases", Computer, 17(10), pp. 211-223.

Wilcox, D., 1984, "Proposed Methods and Procedures for Building a Multipurpose Cadastre Base Map and Cadastral Boundary Overlay", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 196-205.

Willett, J., 1983, "Standard Format Data Units: Tools for Automatic Exchange of Space Mission Data", Proc. International Telemetry Conference, San Diego, October 24-27, 1983, Vol. XIX, p. 857, available through Instrument Society of America.

Williams, R., 1985, "Enquiry Systems for the Interrogation of Infrastructure", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 572-581.

_____, 1985, "A Codified Geographic Data Base Structure for Multilevel-Resolution Sensor Simulation Applications", paper presented at the Geographic Information Systems in the Government Workshop, Springfield, Virginia, December 13, 1985.

Wilson, P., 1981, "Integration of Local and Regional Data Bases", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 43-50.

_____, 1983, "Multiple Data Structures in a Regional Data Base", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 221-229.

_____, and D. Olmstead, 1979, "The Data Structure of Basis", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 248-253.

Wiseman, N., 1982a, "Data Persistence and Programming Languages", Cartographica, 19(2), pp. 9-10.

_____, 1982b, "Vectors, Rasters and Cartographic Databases", Cartographica, 19(2), pp. 111-118.

Witiuk, S., 1978, "Issues in Exchanging Spatial Systems Technology", in D. Taylor, ed., Proceedings of a Workshop on Current Issues in Geographic Data Processing, Ottawa, Canada: Carleton University, pp. 79-91.

Working Party to Produce National Standards for the Transfor of Digital Map Data, 1986, "The National Transfer Format, Final Draft (Issue 1.3)", in Working Party to Produce National Standards for the Transfer of Digital Map Data, Final Draft Papers of the Working Party to Produce National Standards for the Transfer of Digital Map Data, National Transfer Standards, NTF User Manual, London, United Kingdom: Ordnance Survey.

_____, 1987, National Transfer Format, Release 1.0, January 1987, London, United Kingdom: Ordnance Survey.

Wright, T., 1985, "An Update on GKS: the Final Changes", Computer Graphics, 19(1), pp. 8-14.

Wu, A., and A. Rosenfeld, 1983, "Top-Down Cellular Pyramids", Pattern Recognition Letters, 2(1), pp. 47-52.

Yan, J., 1982, "Geocartographics Technology Transfer and Exchange: Levels, Guidelines and Checklist", in D. Douglas and A. Boyle, eds., Computer Assisted Cartography and Geographic Information Processing: Hope and Realism, Ottawa, Canada: Canadian Cartographic Association, pp. 59-82.

Yan, J., J. Parker and R. Molnar, 1985, "An Interdepartmental Application of Spatial Data Bases-Building a Statistical Network File from a Topographic Feature File", Seventh Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 584-599.

Yan, J., S. Witiuk, and T. Fisher, 1977, "Exchange Spatial Systems Technology: Related Issues and a Case Study", in D. Douglas, ed., Applications of Geographic Information Processing, Ottawa, Canada: National Capital Geographic Information Processing Group, pp. 41-49.

Yashima, K., and K. Imai, 1984, "Present Situation and Problems of Electronic Chart in Japan", <u>Technical Papers of the Austra Carto One Seminar</u>, Perth, Australia: The 12th ICA Conference Committee, pp. 441-447.

Yau, M., 1984, "Generating Quadtrees of Cross Sections from Octrees", <u>Computer Vision, Graphics, and Image Processing</u>, 27(2), pp. 211-238.

_____, and S. Srihari, 1983, "A Hierarchical Data Structure for Multidimensional Digital Images", <u>Communications of the ACM</u>, 26(7), pp. 504-515.

Youngmann, C., 1978a, "Standards", in G. Dutton, ed., <u>Summary of Proceedings</u>, Vol. 1, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

_____, 1978b, "A Linguistic Approach to Map Description", in G. Dutton, ed., <u>Spatial Semantics: Understanding and Interacting with Map Data</u>, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Yu, C., and C. Chang, 1984, "Distributed Query Processing", <u>ACM Computing Surveys</u>, 16(4), pp. 399-433.

Ziemann, H., 1978, "The Geographical Referencing System", <u>Land Data Systems Now</u>, Proc. Second MOLDS Conference, Falls Church, VA: ACSM, pp. 253-261.

Zobrist, A., 1979, "Data Structures and Algorithms for Raster Data Processing", <u>Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV)</u>, Vol. II, Falls Church, VA: ASP & ACSM, pp. 127-137.

_____, 1982, "Integration of Landsat Image Data with Geographic Data Bases", <u>Proc. US/Australia Workshop on the Design and Implementation of Computer Based GISs</u>, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 51-63.

_____, and G. Nagy, 1981, "Pictorial Information Processing of Landsat Data for Geographic Analysis", <u>Computer</u>, 14(11), pp. 34-41.

page 51 follows

DATA QUALITY

Ackermann, F., 1978, "Experimental Investigation into the Accuracy of Contouring from DTM", Photogrammetric Engineering and Remote Sensing, 44(12), pp. 1537-1548.

Adler, R., 1985, "A Hybrid Method of Mapping and Photogeodetic Control Network Densification", Surveying and Mapping, 45(1), pp. 33-44.

Aeronautical Chart and Information Center, 1962, Principles of Error Theory and Cartographic Applications, ACIC, Tech. Report No. 96, Feb., 1962.

Allder, W., V. Caruso, R. Pearsall, and M. Troup, 1982, "An Overview of Digital Elevation Model Production at the United States Geological Survey", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 23-32.

American National Standard Institute, 1974, Control Chart Method of Controlling Quality During Production, ANSI Z1.1-1958(r1974), New York, NY: ANSI.

_____, 1975, Guide for Quality Control and Control Chart Method of Analyzing Data, ANSI Z1.1-1958(r1975) and Z1.2-1958(r1975), New York, NY: ANSI.

_____, 1978, Definitions, Symbols, Formulas and Tables for Control Charts, ANSI A1-1978, New York, NY: ANSI.

American Society of Photogrammetry, 1984, "Map-Accuracy Specifications", adopted Janurary 1940, Photogrammetric Engineering and Remote Sensing, 50(2), pp. 237-240.

_____, 1985, "Accuracy Specification for Large-Scale Line Maps", published for solicitation of comments, Photogrammetric Engineering and Remote Sensing, 51(2), pp. 195-199.

Anderson, J., 1985, "The Use of Landsat-4 MSS Digital Data in Temporal Data Sets and the Evaluation of Scene-to-Scene Registration Accuracy", Photogrammetric Engineering and Remote Sensing, 51(4), pp. 457-462.

Aronoff, S., 1981, "Classification Accuracy - A Review", Proc. ASP Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ASP, pp. 125-136.

_____, 1982a, "Classification Accuracy: A User Approach", Photogrammetric Engineering and Remote Sensing, 48(8), pp. 1299-1307.

_____, 1982b "The Map Accuracy Report: A User's View", Photogrammetric Engineering and Remote Sensing, 48(8), pp. 1309-1312.

_____, 1984, "An Approach to Optimized Labeling of Image Classes", Photogrammetric Engineering and Remote Sensing, 50(6), pp. 719-727.

_____, 1985, "The Minimum Accuracy Value as an Index of Classification Accuracy", Photogrammetric Engineering and Remote Sensing, 51(1), pp.99-111.

Atkinson, P., 1984, "Effects of Resampling on Image Accuracy", Satellite Remote Sensing - Review and Preview, Proc. Tenth Anniversary International Conference, Reading, U. K., September, 1984, Nottingham, United Kingdom: Remote Sensing Society, pp. 301-312.

Austin, B., 1978, Errors in Practical Measurement in Science, Engineering, and Technology, New York, NY: Wiley & Sons.

Ayeni, O., 1982, "Optimum Sampling for Digital Terrain Models: A Trend Towards Automation", Photogrammetric Engineering and Remote Sensing, 48(11), pp. 1687-1694.

Baker, D., B. Gogineni, G. Shepphird, L. Williams, and J. Bethel, 1981, "Linetrac - A Hardware Processor for Scanning and Vectorizing Contours, and Associated Systems Software for Automatically Generating Digital Terrain Elevation Data", Proc. ASP Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ASP, pp. 542-557.

Barnes, J., 1978, "Control Areas and Control Points in Isopleth Mapping", American Cartographer, 5(1), pp. 65-69.

Data Quality

Barr, M., 1983, "Standards for Cadastral Survey Control in the Space Age", URISA 1983, Decision Support Systems for Policy and Management. Papers from the annual conference of the Urban and Regional Information Systems Association, August 14-17, 1983, Atlanta, GA, ed. R. Schmitt and H. Smolin, Washington, DC: URISA, pp. 27-38.

Bartschi, M., 1985, "An Overview of Information Retrieval Subjects", Computer, 18(5), pp. 87-84.

Beaton, R., 1960, "Can the Mariner Trust His Chart?", Surveying and Mapping, 20(3), pp. 331-344.

Beck, F., and R. Olsen, 1986, "Quality Control and Standards for a National Digital Cartographic Data Base", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 372-380.

Beckett, P., P. Tomlinson, and S. Bie, 1972, "Map Quality: The Second St. Cross Seminar, Oxford, 1971", Cartographic Journal, 9(2), pp. 80-81.

Ben-Zvi, M., and S. Kesler, 1986, "Spatial Approach to Estimation of Missing Data", Journal of Hydrology, 88, pp. 69-78.

Bender, L., H. Niedzwiadek, 1986, "The Quality Control of Digical MC&G Products", Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, Vol. 4, Photogrammetry, Falls Church, VA: ACSM & ASPRS, pp. 337-349.

Benes, M., 1968, "Relative and Absolute Orientation Error Analysis", Photogrammetric Engineering, 34(11), pp. 1186-1197.

Bennett, H., 1976, "Cartographic Veracity - A Variable that Should Be a Constant", Proc. Land Records Symposium, Orono, MN: University of Maine, pp. 132-137.

Bennettson, A., 1978, "Computer Aids Systems, Map-Based Record Systems", No. 15 Design Automation Conference Proc., New York, NY: IEEE, pp. 34-47.

Benson, A., K. Dummer, and J. Hardin, 1981, "Accuracy Assessment of Remote Sensing Derived Information in Wildland Environments", Proc. ASP Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ASP, pp. 584-590.

Berry, B., and A. Baker, 1968, "Geographic Sampling" in B. Berry and D. Marble, eds., Spatial Analysis, Englewood Cliffs, NJ: Prentice Hall, pp. 91-100.

Bethel, J., and E. Mikhail, 1983, "On-Line Quality Assessment in DTM", Proc. ACSM-ASP Fall Meetings, Salt Lake City, Falls Church, VA: ACSM & ASP, pp. 578-584.

Beyer, E., 1982, "Geometric Error Characterization and Error Budgets", section 7.8 in N. Bryant, ed., Proc. NASA Workshop on Registration and Rectification, JPL Pub. No. 82-83, Pasadena, CA: Jet Propulsion Laboratory, pp. 377-386.

Billingsley, F., 1982a, "Data vs. Information: A System Paradigm", section 8.3 in N. Bryant, ed., Proc. NASA Workshop on Registration and Rectification, JPL pub. no. 82-23, Pasadena, CA: Jet Propulsion Laboratory, pp. 401-409.

_____, 1982b, "Modeling Misregistration and Related Effects on Multispectral Classification", section 8.4 in N. Bryant, ed., Proc. NASA Workshop on Registration and Rectification, JPL Pub. No. 82-23, Pasadena, CA: Jet Propulsion Laboratory, pp. 410-427.

Bilonick, R., 1985, "Using Indicator Kriging to Evaluate Aerial Map Quality", Modeling and Simulation, Proceedings of the Sixteenth Annual Pittsburgh Conference, Held April 25-26, 1985, ed. by R. Hanham, W. Vogt, and M. Mickle, Vol. 16, Part 1, Geography - Regional Sciences, Research Triangle Park, NC: Instrument Society of America, pp. 1-7.

Blakemore, M., 1983, "Generalisation and Error in Spatial Data Bases", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 313-322.

_____, 1985, "High or Low Resolution? Conflicts of Accuracy, Cost, Quality, and Application in Computer Mapping", Computers and Geosciences, 11(3), pp. 345-348.

Blakney, W., 1968, "Accuracy Standards for Topographic Mapping", Photogrammetric Engineering, 34(10), pp. 1040-1042.

Bonfatti, F., and P. Tiberio, 1983, "A Note on the Conversion of Polygonal to Cellular Maps", Computer and Graphics, 7(3-4), pp. 355-360.

Borgeson, W., R. Batson, and H. Kieffer, 1985, "Geometric Accuracy of Landsat-4 and Landsat-5 Thematic Mapper Images", Photogrammetric Engineering and Remote Sensing, 51(12), pp. 1893-1898.

Bossler, J., and R. Hanson, 1984, "The Impact of VLBI and GPS on Geodesy", Surveying and Mapping, 44(2), pp. 105-113.

Boyle, R., 1980, "Scan Digitizing and Drafting", Proc. ACSM Spring Meetings, St. Louis, Falls Church, VA: ACSM, pp. 136-142.

Bryant, N., ed., 1982, Proceedings of the NASA Workshop on Registration and Rectification, Pasadena, CA: Jet Propulsion Laboratory.

_____, and A. Zobrist, 1978, "An Image Based Information System: Architecture for Correlating Satellite and Topological Data Bases", in G. Dutton, ed., Data Structures: Hierarchical and Overlaid, Vol. 4, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Burns, J., 1960, "Accuracy Standards for Large Scale Maps", Surveying and Mapping, 20(4), pp. 445-448.

Burtch, R., 1982, "Photogrammetry - An Essential Element in a Multipurpose Land Data System", Proc. ACSM Spring Meetings, Denver, pp. 311-318.

_____, 1983, "Cadastral Accuracy Standards", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 655.

Burt, V., and S. Cohen, 1984, "A Comparison of Methods to Approximate Standard Errors for Complex Survey Data", Review of Public Data Use, 12(3), pp. 159-168.

Campbell, J., 1981, "Spatial Correlation Effects upon Accuracy of Supervised Classification of Land Cover", Photogrammetric Engineering and Remote Sensing, 47(3), pp. 355-363.

_____, 1983, Mapping the Land, Aerial Imagery for Land Use Information, Washington, DC: Association of American Geographers.

_____, and F. Henderson, 1981, "Comparisons of Land Cover Classifications from Selected Remote Sensing Systems", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 618-626.

Canada, Energy, Mines and Resources, 1982, Standards for the Quality Evaluation of Digital Topographic Data, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Technical Committee No. II, Draft, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch.

_____, 1984, Standards for the Quality Evaluation of Digital Topographic Data, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Second Draft Report, Vol. I, Part II, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch.

Canfield, D., D. Leavitt, and E. Coleman, 1983, "Line Joining of Digitized Stereomodel Data", Proc. ACSM-ASP Fall Meetings, Salt Lake City, Falls Church, VA: ACSM & ASP, pp. 138-146.

Card, D., 1982, "Using Known Map Category Marginal Frequencies to Improve Estimates of Thematic Map Accuracy", Photogrammetric Engineering and Remote Sensing, 48(3), pp. 431-439.

Chrisman, N., 1982a, "A Theory of Cartographic Error and its Measurement in Digital Data Bases", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 159-168.

_____, 1982b, "Beyond Accuracy Assessment: Correction of Misclassification", Proc. ISPRS Commission IV Symposium 1982, Vol. 24-IV, Falls Church, VA: ASP & ACSM, pp. 123-132.

_____, 1982c, "Estimating the Error of Categorical Maps", paper presented at the Harvard Computer Graphics Week 1982, Cambridge, MA.

Data Quality

_____, 1982d, Methods of Spatial Analysis Based on Error in Categorical Maps, Ph. D. Dissertation, University of Bristol.

_____, 1983a, "Issues in Digital Cartographic Quality Standards: A Progress Report, Working Group II", in H. Moellering, ed., Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work, Issues in Digital Cartographic Data Standards, Report #3, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 23-31.

_____, 1983b, "The Role of Quality Information in the Long-Term Functioning of a Geographic Information System", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 1, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 303-312; reprinted in Cartographica, 21(2-3), pp. 79-87.

_____, 1984a, "Alternatives for Specifying Quality Standards for Digital Cartographic Data", in H. Moellering, ed., Digital Cartograph: Data Standards: Examining the Alternatives, Issues in Digital Cartographic Data Standards, Report #4, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 43-71.

_____, 1984b, "Alternatives for Specifying Quality Standards for Digital Cartographic Data, Progress Report for Cycle 2", (abstract), Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 575.

_____, 1985a, "An Interim Proposed Standard for Digital Cartographic Data Quality", in H. Moellering, ed., Digital Cartographic Data Standards: An Interim Proposed Standard, Issues in Digital Cartographic Data Standards, Report #6, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 17-22.

_____, 1985b, "An Interim Proposed Standard for Digital Cartographic Data Quality", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 83.

_____, 1986a, "Testing the Interim Proposed Standard for Data Set Quality", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 53-55.

_____, 1986b, "Quality Report for Dane County Soil Survey Digital Files", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 78-88.

_____, 1986c, "Obtaining Information on Quality of Digital Data", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 350-358.

Clarke, A., A. Gruen, and J. Loon, 1982, "The Application of Contour Data for Generating High Fidelity Grid Digital Elevation Models", International Symposium on Computed-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 213-222.

Clarke, K., 1985, "A Comparative Analysis of Polygon to Raster Interpolation Methods", Photogrammetric Engineering and Remote Sensing, 51(5), pp. 575-582.

Clayton, C., and J. Estes, 1980, "Image Analysis as a Check on Census Enumeration Accuracy", Photogrammetric Engineering and Remote Sensing, 46(6), pp. 757-764.

Cole, G., 1985, "Accuracy Tests on the Use of Magnesium Tracers for Positioning", Technical Papers: ACSM 45th Annual Meeting, Falls Church, VA: ACSM, pp. 552-557.

Coleman, W., 1977, "An Automated Horizontal Chart Evaluation System", Proc. ACSM Fall Meetings, Little Rock, Falls Church, VA: ACSM, pp. 145-160.

Congalton, R., J. Heinen, and R. Oderwald, 1983, Remote Sensing Research Report 83-1, Update and Review of Accuracy Assessment Techniques for Remotely Sensed Data, Blacksburg, VA: VPI & SU, School of Forestry and Wildlife Resources.

Congalton, R., and R. Mead, 1981, "A Quantitative Method to Test for Similarity between Photo Interpreters", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 263-266.

_____, 1983, "A Quantitative Method to Test for Consistency and Correctness in Photointerpretation", Photogrammetric Engineering and Remote Sensing, 49(1), pp. 69-74.

Congalton, R., R. Oderwald, and R. Mead, 1982, Accuracy of Remotely Sensed Data: Sampling and Analysis Procedures, Remote Sensing Research Report 82-1, Blacksburg, VA: School of Forestry and Wildlife Resources, VPI & SU.

_____, 1983, "Assessing Landsat Classification Accuracy Using Discrete Multivariate Analysis Statistical Techniques", Photogrammetric Engineering and Remote Sensing, 49(12), pp. 1671-1678.

Cook, B., 1982, "Geographic Overlay and Data Reliability", Proc. US/ Australia Workshop on the Design and Implementation of Computer Based GISs, Honolulu, HI: IGU, Commission on Geographical Data Sensing and Processing, pp. 64-69.

Corbett, J., 1979, Topological Principles in Cartography, U.S. Department of Commerce, Bureau of the Census, Technical Paper No. 48, Washington, DC: U.S. Department of Commerce, Bureau of the Census.

Craig, W., 1983, "Problems of Spatial Accuracy", URISA 1983, Decision Support Systems for Policy and Management, Papers from the annual conference of the Urban and Regional Information Systems Association, August 14-17, 1983, Atlanta, GA, ed. R. Schmitt and H. Smolin, Washington, DC: URISA, pp. 2-10.

Crapper, P., 1984, "An Estimate of the Number of Boundary Cells in a Mapped Landscape Coded to Grid Cells", Photogrammetric Engineering and Remote Sensing, 50(10), pp. 1497-1503.

Cristy, D., 1975, "Boundary and Annexation Survey and Map Acquisition Program", URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 111-116.

Crossfield, J., 1980, "Proposed Minimum Accuracy Standards for Land Surveying in Arkansas", Proc. ACSM Spring Meetings, St. Louis, Falls Church, VA: ACSM, pp. 459-466.

_____, 1985, "A High Precision Photogrammetry Geodetic Positioning Cost Model", Photogrammetric Engineering and Remote Sensing, 51(12), pp. 1953-1962.

_____, and D. Mezera, 1981, "The Westport Section Line Accuracy Study", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 106-115.

Dangermond, J., and H. Grinnell, 1979, "Development of an Updating System and Procedures for the Land Use Planning Information and Forecasting System at Southern California Edison Company", URISA 1979, More for Less: Information Systems in an Era of Limits, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 19-23, 1979, San Diego, CA, ed. R. Schmitt, Chicago, IL: URISA, pp. 236-247.

Derenyi, E., and J. Drummond, 1979, "Map Quality Control Using Extra Aerotriangulated Points", Proc. ASP Spring Meetings, Washington, Vol. 2, Falls Church, VA: ASP, pp. 591-595.

Drummond, J., 1984, "Polygon Handling at the Experimental Cartography Unit", Cartographic Journal, 21(1), pp. 3-12.

Dueker, K., 1975, Geographic Data Encoding Issues, Technical Report No. 43, Iowa City, IA: Institute of Urban and Regional Research.

_____, 1979, "Land Resource Information Systems: Spatial and Attribute Resolution Issues", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 328-336.

_____, 1985, "Geographic Information Systems: Toward a Geo-Relational Structure", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 172-177.

Dutton, G., 1983, "Geodesic Modeling of Planetary Relief", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 186-201.

_____, 1984, "Truth and Its Consequences in Digital Cartography", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 273-283.

Data Quality

Eisenhart, C., 1962, "Realistic Evaluation of the Precision and Accuracy of Instrument Calibration Systems", Journal of Research of the National Bureau of Standards, C. Engineering and Instrumentation, 67c(2), pp. 161-187.

El-Hakim, S., 1986, "The Detection of Gross and Systematic Errors in the Combined Adjustment of Terrestrial and Photogrammetric Data", Photogrammetric Engineering and Remote Sensing, 52(1), pp. 59-66.

El-Hakim, S., and H. Zieman, 1984, "A Step-by-Step Strategy for Gross Error Detection", Photogrammetric Engineering and Remote Sensing, 50(6), pp. 713-718.

Ellis, T., D. Proffitt, D. Rosen, and W. Rutkowski, 1979, "Measurement of the Lengths of Digitized Curved Lines", Computer Graphics and Image Processing, 10(4), pp. 333-347.

Estes, J., D. Botkin, and J. Franklin, 1964, "Improving Accuracies of Global Land Cover Estimates Using Landsat Imagery", Proc. ASP Spring Meetings, Washington, Vol. 1, Falls Church, VA: ASP, pp. 368-378.

Fagen, G., and H. Soehngen, 1987, "Improvement of GBF/DIME file coordinates in a geobased information system by various transformation methods and "rubbersheeting" based on triangulation", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 481-491.

Fairchild, D., 1981, "The Effect of Enumeration Unit Shape on Isopleth Map Accuracy", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 423-432.

Fang, A., 1982, "Registration Accuracy and Attitude Accuracy", Proc. ISPRS Commission IV Symposium 1982, Vol. 24-IV, Falls Church, VA: ASP & ACSM, pp. 241-249.

Federal Geodetic Control Committee, 1974, Classification, Standards of Accuracy, and General Specifications of Geodetic Control Surveys, Rockville, MD: National Oceanic and Atmospheric Administration.

_____, 1978, Specifications to Support Classification, Standards of Accuracy, and General Specifications of Geodetic Control Surveys, Rockville, MD: National Oceanic and Atmospheric Administration.

_____, 1984, Standards and Specifications for Geodetic Control Networks, GPO-003-021-00031-9, Rockville, MD: National Oceanic and Atmospheric Administration.

Feldscher, C., 1980, "A New Manual on Map Uses, Scales, and Accuracies", Journal of the Surveying and Mapping Division, 160(SU1), pp. 143-148.

Fellows, J., and J. Stewart, 1979, "Use of Geocoded Aerial Photography as a Regional Data Base for Water Resources and Environmental Planning Studies", Proc. ASP Spring Meetings, Washington, Falls Church, VA: ASP, pp. 1-5.

Ferree, J., 1986, "Quality Report for Wilmington-East District BellSouth Digital Land Base", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 56-77.

Fischler, M., and R. Bolles, 1981, "Random Sample Consensus: A Paradigm for Model Fitting with Applications to Image Analysis and Automated Cartography", Communications of the ACM, 24(6), pp. 381-395.

Fitzpatrick-Lins, K., 1978a, "Accuracy and Consistency Comparisons of Land Use and Land Cover Maps Made from High-Altitude Photographs and Landsat Multispectral Imagery", U.S. Geological Survey, Journal of Research, 6(1), pp. 23-40.

_____, 1978b, "Accuracy of Selected Land Use and Land Cover Maps in the Greater Atlanta Region, Georgia", U.S. Geological Survey, Journal of Research, 6(2), pp. 169-174.

_____, 1978c, "An Evaluation of Errors in Mapping Land Use Changes for the Central Atlantic Regional Ecological Test Site", U.S. Geological Survey, Journal of Research, 6(3), pp. 339-346.

_____, 1980, "Accuracy of Selected Land Use and Land Cover maps at Scales of 1:250,000 and 1:100,000", U.S. Geological Survey Circular 829, 24 p.

_____, 1982, "Comparison of Sampling Procedures and Data Analysis for a Land-Use and Land-Cover Map", Photogrammetric Engineering and Remote Sensing, 47(3), pp. 343-351.

Flemming, N., 1975, "Continuous Updating - An Essential Requirement of a Modern Cadastre", Canadian Surveyor, 29(1), pp. 64-74.

Forstner, W., 1979, "On Internal and External Reliability of Photogrammetric Coordinates", Proc. ASP Spring Meetings, Washington, Vol. 1, Falls Church, VA: ASP, pp. 294-305.

Fried, R., 1978, "Monitoring Data Integrity", Datamation, 24(6), pp. 176-181.

Friedmann, D., J. Friedel, K. Magnussen, R. Kwok, and S. Richardson, 1983, "Multiple Scene Precision Rectification of Spaceborn Imagery with Very Few Ground Control Points", Photogrammetric Engineering and Remote Sensing, 49(12), pp. 1657-1667.

Funk, L., and G. Katibah, 1960, "Large Scale Mapping Requirements for Highway Design", Surveying and Mapping, 20(4), pp. 442-444.

Gergen, J. G., 1984, "The Geodetic Basis for Precise Photogrammetric Densification", Photogrammetric Engineering and Remote Sensing, 50(5), pp. 559-561.

Gersmehl, P., and D. Napton, 1982, "Interpretation of Resource Data: Problems of Scale and Spatial Transferability", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 471-482.

Gignilliat, R., 1975, "Cleaning Up, Matching and Rectifying Data Files or (Relief from Excedrin Headache No. 37)", URISA 1975, Computers, Local Government and Productivity, Papers from the Thirteenth Annual Conference of the Urban and Regional Information Systems Association, August 24-28, 1985, Seattle, WA, Vol. II, ed. O. Anochie, Chicago, IL: URISA, pp. 60-73.

Ginevan, M., 1979, "Testing Land-Use Map Accuracy: Another Look", Photogrammetric Engineering and Remote Sensing, 45(10), pp. 1371-1377.

Goodchild, M., 1980, "The Effects of Generalization in Geographical Data Encoding", in H. Freeman and G. Pieroni, eds., Map Data Processing, Academic Press, pp. 191-205.

_____, 1982, "Accuracy and Spatial Resolution: Critical Dimensions for Geoprocessing", in D. Douglas and A. Boyle, eds., Computer Assisted Cartography and Geographic Information Processing: Hope and Realism, Ottawa, Canada: Canadian Cartographic Association, pp. 87-90.

Greenberg, G., 1985, "Quality Evaluation Methods in Cartography", paper presented at Meeting of the California Map Society and the Society of University Cartographers at California State University, Northridge, Carlifornia, September 14, 1985.

Greenland, A., R. Socher and M. Thompson, 1985, "Statistical Evaluation of Accuracy for Digital Cartographic Data Bases", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 212-221.

Guevara, J., and D. Bishop, 1985, "A Fuzzy and Heuristic Approach to Segment Intersection Detection and Reporting", (abstract), Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, p. 228.

Gustafson, G., and J. Loon, 1981, "Updating the National Map Accuracy Standards", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 466-482.

_____, 1982, "Contour Accuracy and the National Map Accuracy Standards", Surveying and Mapping, 42(4), pp. 385-402.

Hanham, R., M. Hohn, and H. Chang, 1985, "Using Kriging to Estimate Missing Spatial Data in City Planning: The Example of Housing Conditions in Oklahoma City", Modeling and Simulation, Proceedings of the Sixteenth Annual Pittsburgh Conference, Held April 25-26, 1985, ed. by R. Hanham, W. Vogt, and M. Mickle, Vol. 16, Part 1, Geography - Regional Sciences, Research Triangle Park, NC: Instrument Society of America, pp. 9-13.

Hanigan, F., 1983, "Houston's Metropolitan Common Data Base: Four Years Later", Surveying and Mapping, 43, pp. 141-151.

Hannah, M., 1981, "Error Detection and Correction in Digital Terrain Models", Photogrammetric Engineering and Remote Sensing, 47(1), pp. 63-69.

Data Quality

Hardy, J., 1985, "Geometric Quality of A Thematic Mapper Image of the United Kingdom", *Proc. ACSM-ASPRS Fall Convention, Indianapolis*, Falls Church, VA: ACSM & ASPRS, pp. 937-948.

Harley, I., 1982, "Advances in the Quality of Image Data", *Photogrammetric Record*, 10(60), 7 pp.

Haug, M., 1984, "Application of Mohr's Circle Technique in Error Analysis", *Surveying and Mapping*, 44(4), pp. 309-321.

Hay, A., 1979, "Sampling Designs to Test Land-Use Map Accuracy", *Photogrammetric Engineering and Remote Sensing*, 45(4), pp. 529-533.

Heinzen, M., 1979, "Hydrographic Surveys: Geodetic Error Propagation", *Proc. ACSM Spring Meetings, Washington*, Falls Church, VA: ACSM, pp. 170-179.

Henderson, F., 1980, "Effects of Interpretation Techniques on Land-Use Mapping Accuracy", *Photogrammetric Engineering and Remote Sensing*, 46(3), pp. 359-367.

Hintz, R., and A. Vonderche, 1983, "Closure Limit Determination in General Horizontal Networks using Error Propagation", *Proc. ACSM Spring Meetings, Washington*, Falls Church, VA: ACSM, pp. 38-46.

Hixson, M., 1981, "Techniques for Evaluation of Area Estimates", *Seventh International Symposium - Machine Processing of Remotely Sensed Data*, West Lafayette, IN: Laboratory for Applications of Remote Sensing, pp. 84-90.

Hohle, J., 1983, "Performance Parameters of a Digital Plotting Table for Photogrammetry", *Photogrammetric Engineering and Remote Sensing*, 49(1), pp. 111-118.

Hojovec, V., and L. Jokl, 1981, "Relation Between the Extreme Angular and Areal Distortion in Cartographic Representation", *Studia Geoph. et Geod.*, 25(1981), pp. 132-151.

Holecheck, B., 1981, "Shaded Relief Validation of Digital Terrain Models", *Proc. ASP Spring Meetings, Washington*, Falls Church, VA: ACSM, p. 544.

Hunka, G., 1978, "Aided-Track Cursor for Improved Digitizing Accuracy", *Photogrammetric Engineering and Remote Sensing*, 44(8), pp. 1061-1066.

_____, 1979, "Engineering Evaluation of an Aided-Track Digitizing Cursor System", *Proc. ACSM Spring Meetings, Washington*, Falls Church, VA: ACSM, pp. 522-546.

Hutchinson, C., 1982, "Techniques for Combining Landsat and Ancillary Data for Digital Classification Improvement", *Photogrammetric Engineering and Remote Sensing*, 48(1), pp. 123-130.

Hyde, P., and L. Davis, 1983, "Subpixel Edge Estimation", *Pattern Recognition*, 16(4), pp. 413-420.

Hyde, R., and N. Vesper, 1983, "Some Effects of Resolution Cell Size on Image Quality", *Landsat Data Users Notes*, 29, pp. 9-12.

Irons, J., B. Markham, R. Nelson, D. Toll, D. Williams, R. Latty, and M. Stauffer, 1985, "The effects of spatial resolution on the classification of Thematic Mapper data", *International Journal of Remote Sensing*, 6(8), pp. 1385-1403.

Jacober, R., Jr., 1980, "Map Content and Symbols: Chapter V of Proposed Manual on Map Uses, Scales, and Accuracies for Engineering and Associated Purposes", *Journal of the Surveying and Mapping Division, American Society of Civil Engineers*, 106(1), pp. 41-72, also published as "Map Content and Symbols", Chapter 5 in American Society of Civil Engineers, 1983, *Map Uses, Scales and Accuracies for Engineering and Associated Purposes*, A report of the ASCA Surveying and Mapping Division Committee on Cartographic Surveying, New York, NY: American Society of Civil Engineers, pp. 92-127.

_____, 1982, "The Standardization of Map Symbology", *Technical Papers of the ACSM-ASP Fall Convention, Hollywood, Florida, 19-23 September, 1982*, Falls Church, VA: ASP.

Jenks, G., and F. Caspall, 1971, "Error on Choroplethic Maps: Definition, Measurement, Reduction", *Annals of the Assoc. Am. Geographers*, 61 (2), pp. 217-244.

Jensen, J., 1978, "Digital Land Cover Mapping Using Layered Classification Logic and Physical Composition Attributes", *American Cartographer*, 5(2), pp. 121-132.

Johannsen, T., 1979, "Genauigkeitstest an Kartographischen Geräten - Erste Ergebnisse", International Yearbook of Cartography, XIX, pp. 65-76.

Jones, O., 1982, "Building a Geographic Data Base Within a Budget", paper presented at the Harvard Computer Graphics Week 1982, Cambridge, MA.

Juran, J., ed., 1962, Quality Control Handbook, 2nd edition, McGraw-Hill.

_____, ed., 1974, Quality Control Handbook, 3rd edition, McGraw-Hill.

Kalkani, E., 1977, "Evaluation Techniques to Determine Relative Accuracies of Contour Maps", Geophysics, 42(4), pp. 860-867.

Kaunitz, J., and L. van Ekert, 1984, "Audit Trail Compaction for Database Recovery", Communications of the ACM, 27(7), pp. 678-683.

Kellie, A., and D. Bryan, 1981, "A Comparison of Field Methods for Testing the Vertical Accuracy of Topographic Maps", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 275-284.

Kelmelis, J., 1981, "Statistical Process-Control Techniques, an Introduction", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 82-93.

Kennedy-Smith, G., 1986, "Data Quality - A Management Philosophy", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 381-390.

King, D., J. Daroussin, P. Bonneton, and B. Nicoullaud, 1986, "An improved method for combining map data", Soil Use and Management, 2(4), pp. 140-145.

Kirby, M., 1979, "A Method to Correct Digitized UTM Map Control Points for Paper Distortions", Proc. ASP Spring Meetings, Washington, Vol. 2, Falls Church, VA: ASP, pp. 339-405.

Kulpa, Z., and M. Doros, 1981, "Freeman Digitization of Integer Circles Minimizes the Radial Error", Computer Graphics and Image Processing, 17(2), pp. 181-184.

Kunt, M., 1983, "Image Coding", in O. Faugeras, ed., Fundamentals in Computer Vision, Cambridge, United Kingdom: Cambridge University Press, pp. 91-116.

Labovitz, M., and J. Marvin, 1986, "Precision in Geodetic Correction of TM Data as a Function of the Number, Spatial Distribution, and Success in Matching of Control Points: A Simulation", Remote Sensing of Environment, 20(3), pp. 237-252

Leatherdale, J., 1980, "Specification for Mapping at Scales Between 1:1,000 and 1:10,000, First Edition", Royal Institution of Chartered Surveyors, International Archives of Photogrammetry, XXIII (B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 415-441.

Leberl, F., and D. Olson, 1982, "Raster Scanning for Operational Digitizing of Graphical Data", Photogrammetric Engineering and Remote Sensing, 48(4), pp. 615-627.

Lee, Y., "Comparison of Planimetric and Height Accuracy of Digital Maps", Surveying and Mapping, 45(4), pp. 333-340.

Leick, A., 1984, "GPS Surveying and Data Management", URISA 1984, The Changing Role of Computers in Public Agencies, Papers from the annual conference of the Urban and Regional Information Systems Association, August 12-15, 1984, Seattle, WA, ed. R. Schmitt and H. Smolin, McLean, VA: Society and Association Services, Inc., pp. 104-115.

Ley, R., 1981, "An Examination of Various Cartometric Vertical Accuracy Tests", Cartographic Journal, 18(1), pp. 25-31.

_____, 1986, "Accuracy Assessment of Digital Terrain Models", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 455-464.

Likens, W., and K. Maw, 1982, "Updating Landsat-Derived Land-Cover Maps Using Change Detection and Masking Techniques", Proc. ACSM-ASP Fall Meetings, Hollywood, Florida, Falls Church, VA: ACSM & ASP, pp. 256-271.

Data Quality

Linden, D., and J. Szajgin, 1981, "Verification of Land Cover Maps from Landsat Data", Proc. Western Regional Remote Sensing Conference, Monterey, CA., NASA Conference Publication 2195, Moffett Field, CA.: U.S. NASA Ames Research Center, pp. 119-125.

Lloyd, P., 1976, "Quantization Error in Area Measurement", Cartographic Journal, 13(1), pp. 22-25.

Loelkes, G., 1977, Specifications for Land Use and Land Cover and Associated Maps, Open File 77-555, Reston, VA: USGS.

Love, J., 1984, "Publication of NAD 83", Proc. ACSM/ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 377-384.

Lupien, A., and W. Moreland, "A General Approach to Map Conflation", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 630-639.

MacDougall, E., 1975, "The Accuracy of Map Overlays", Landscape Planning, 2(1), pp. 23-30.

MacEachren, A., 1982a, "Thematic Map Accuracy: The Influence of Enumeration Unit Size and Compactness", Proc. ACSM Spring Meetings, Denver, Falls Church, VA: ACSM, pp. 512-521.

_____, 1982b, "Choropleth Map Accuracy: Characteristics of the Data", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 499-507.

Maeda, K., and D. Goodenough, 1981, "Data Compression of SAR/MSS Data Sets", Seventh International Symposium-Machine Processing of Remotely Sensed Data, West Lafayette, IN: Laboratory for Applications of Remote Sensing, p. 188.

Malaret, E., L. Bartolucci, D. Lozano, P. Anuta, and C. McGillem, 1985, "Landsat-4 and Landsat-5 Thematic Mapper Data Quality Analysis", Photogrammetric Engineering and Remote Sensing, 51(9), pp. 1407-1416.

Marsden, L., 1960, "How the National Map Accuracy Standards Were Developed", Surveying and Mapping, 20(4), pp. 427-439.

Masry, S., J. Gauthier, and Y. Lee, 1980, "Accuracy and Time Comparisons of Digital Maps - An International Test", International Archives of Photogrammetry, XXIII(B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 493-539.

Masry, S., and R. McLaren, 1979, "Digital Map Revision", Photogrammetric Engineering and Remote Sensing, 45(2), pp. 193-200.

Mastin, C., 1982, "Error Induced by Coordinate Systems", Applied Mathematics and Computation, 10, pp. 31-40.

Maxim, L., and L. Harrington, 1985, "On Optimal Two-Stage Cluster Sampling for Aerial Surveys with Detection Surveys", Photogrammetric Engineering and Remote Sensing, 50(11), pp. 1613-1627.

Maynard, B., 1984, "A Summary of the ASCE Special Publication on Map Uses, Scales, and Accuracies for Engineering and Associated Purposes", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 206-213.

Mazaachi, R., 1986, "The New Adjustment of the North American Vertical Datum", ACSM Bulletin 100 (February 1986), pp. 31-32.

Mead, D., 1982, "Assessing Data Quality in Geographic Information Systems", in C. Johannsen and J. Sanders, eds., Remote Sensing for Resource Management, Ankeny, IA: Soil Conservation Society of America, pp. 51-59.

Mead, R., and J. Szajgin, 1982, "Landsat Classification Accuracy Assessment Procedures": An Account of a National Working Conference", Photogrammetric Engineering and Remote Sensing, 48(1), pp. 139-141.

Meiszer, N., 1978, "Technical Problems in the Implementation of a Multipurpose Land Data System/The Fiscal Data System", Land Data Systems Now, Proc. Second MOLDS Conference, Falls Church, VA: ACSM, pp. 43-51.

Merchant, D., 1982a, "Spatial Accuracy Standards for Large-Scale Line Maps", in H. Moellering, ed., Papers from the Joint ACSM/ASP Session on Digital Cartographic Data Standards at the 1982 Meetings of the ACSM, Denver, Issues in Digital Cartographic Data Standards, Report #1, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 27-36.

_____, 1982b, "Report on the Activities of Working Group II, Data Set Quality", in H. Moellering, ed., Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982, Issues in Digital Cartographic Data Standards, Report #2, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 11-12.

_____, 1983, "Engineering Map Accuracy Standards and Testing", Chapter 4 in American Society of Civil Engineers, 1983, Map Uses, Scales and Accuracies for Engineering and Associated Purposes, A report of the ASCA Surveying and Mapping Division Committee on Cartographic Surveying, New York, NY: American Society of Civil Engineers, pp. 63-91.

_____, 1987, "Spatial Accuracy Specification for Large Scale Topographic Maps", Technical Papers, 1987 ACSM-ASPRS Annual Convention, Baltimore, MD, March 29-April 3, 1986, Vol. 2, Surveying, Falls Church, VA: ACSM & ASPRS, pp. 200-207.

Merchant, J., 1982, "Employing Landsat MSS Data in Land Use Mapping: Observations and Considerations", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 71-91.

Merrell, R., 1984, "Practical Applications of GPS Surveying Techniques", Proc. ACSM/ASP Fall Meetings, San Antonio, Falls Church, VA: ACSM & ASP, pp. 77-86.

Milazzo, V., 1982, "The Role of Change Data in a Land Use and Land Cover Map Updating Program", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 189-200.

Milbert, D., 1983, "A Specification is Not a Classification Standard", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 121-127.

Morgan, J., L. Spradley, G. Worthington, and I. McClelland, 1983, "SEG Standard Exchange Formats for Positional Data", Geophysics, 48(4), pp. 488-490.

Morrow-Jones, H., and J. Watkins, 1984, "Remote Sensing Technology and the U.S. Census", Photogrammetric Engineering and Remote Sensing, 50(2), pp. 229-232.

Moses, R., and J. Passauer, 1979, "National Ocean Survey - Automated Information System", Proc. International Symposium on Computer-Assisted Cartography (AUTO-CARTO IV), Vol. 2, Falls Church, VA: ASP & ACSM, pp. 267-274.

Muller, J., 1977, "Map Gridding and Cartographic Errors/A Recurrent Argument", Canadian Cartographer, 14(2), pp. 152-167.

Munshi, M., and R. Ruram, 1984, "Specifications for Aerial Photography and Quality Control of First Generation Production", Proc. ASP Spring Meetings, Washington, DC, Vol. 1, Falls Church, VA: ASP, pp. 202-207.

Murphy, J., F. Ahern, P. Duff, and A. Fitzgerald, 1985, "Assessment of Radiometric Accuracy of Landsat-4 and Landsat-5 Thematic Mapper Data Products from Canadian Production Systems", Photogrammetric Engineering and Remote Sensing, 51(9), pp. 1359-1369.

Napton, D., and J. Luther, 1982, "Transferring Resource Interpretations: Limitations and Safeguards", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 175-186.

National Committe for Digital Cartographic Data Standards, 1987, "Part III - Digital Cartographic Data Quality", H. Moellering, ed., A Draft Proposed Standard for Digital Cartographic Data, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

Neumyvakin, Y., and A. Panfilovich, 1982, "Specific Features of Using Large-Scale Mapping Data in Planning Construction and Land Farming", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 733-738.

Newcomer, J., and J. Szajgin, 1984, "Accumulation of Thematic Map Errors in Digital Overlay Analysis", American Cartographer, 11(1), pp. 58-62.

European Organisation for Experimental Photogrammetric Research, Commission D, Photogrammetrie and Cartography, 1984, Test of Digitising Methods, OEEPE Official Publication No. 14, Frankfurt a. M., Germany: European Organisation for Experimental Photogrammetric Research.

Olson, C., 1981, "A Case for Standarized Test Sites", Seventh International Symposium - Machine Processing of Remotely Sensed Data, West Lafayette, IN: Laboratory for Applications of Remote Sensing, pp. 20-23.

Data Quality

Parsons, T., and R. Schultz, 1979, "Land Data Systems and County Survey Programs", _Proc. ACSM Spring Meetings, Washington_, Falls Church, VA: ACSM, pp. 433-448.

Petersohn, C., and A. Vonderohe, 1982, "Site-Specific Accuracy of Digitized Property Maps", _Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V)_, Falls Church, VA: ASP & ACSM, pp. 607-619.

Pope, A., 1983, "Statistical Considerations Underlying the Design and Use of Standards and Specifications", _Proc. ACSM Spring Meetings. Washington_, Falls Church, VA: ACSM, p. 652.

Proffitt, D., and D. Rosen, 1979, "Metrication Errors and Coding Efficiency of Chain-Encoding Schemes for the Representation of Lines and Edges", _Computer Graphics and Image Processing_, 10(4), pp. 318-332.

Pryce, J., 1984, "A New Measure of Relative Error for Vectors", _SIAM J. Numer. Anal._, 21(1), pp. 202-215.

Quirk, B., and F. Scarpace, 1980, "A Method of Assessing Accuracy of a Digital Classification", _Photogrammetric Engineering and Remote Sensing_, 46(11), pp. 1427-1431.

Ramapriyan, H., R. Boyd, F. Gunther, and Y. Lu, 1981, "Sensitivity of Geographic Information System Outputs to Errors in Remotely Sensed Data", _Seventh International Symposium - Machine Processing of Remotely Sensed Data_, West Lafayette, IN: Laboratory for Applications of Remote Sensing, pp. 555-566.

Ramey, D., and J. Smith, 1984, "Simulation of Errors in a Landsat Based Crop Estimation System", _Photogrammetric Engineering and Remote Sensing_, 50(12), pp. 1707-1712.

Rhind, D., N. Green, H. Mounsey, and J. Wiggins, 1984, "The Integration of Geographical Data", _Technical Papers of the Austra Carto One Seminar_, Perth, Australia: The 12th ICA Conference Committee, pp. 237-251.

Richards, J., D. Landgrebe, and P. Swain, 1982, "A Means for Utilizing Ancillary Information in Multispectral Classification", _Remote Sensing of Environment_, 12(6), pp. 463-477.

Romeyn, L., 1984, "Satellite Doppler Survey Within a Geodetic Reference System", _Proc. ACSM/ASP Fall Meetings. San Antonio_, Falls Church, VA: ACSM/ASP, pp. 56-62.

Rosenfield, G., 1968, "Automatic Data Verification", _Photogrammetric Engineering_, 34(12), pp. 1260-1268.

_____, 1980, "Comment on Landsat Wildland Mapping Accuracy, by W. J. Todd, D. G. Gehring, and J. F. Haman", _Photogrammetric Engineering and Remote Sensing_, 46(12), p. 1543.

_____, 1981a, "Comment on Effects of Interpretation Techniques on Land Use Mapping Accuracy, by F. M. Henderson", _Photogrammetric Engineering and Remote Sensing_, 47(6), pp. 798-800.

_____, 1981b, "Analysis of Variance of Thematic Mapping Experiment Data", _Photogrammetric Engineering and Remote Sensing_, 47(12), pp. 1685-1692.

_____, 1981c, "Comment on Imaging Radar Applications to Mapping and Charting, by F. Leberl", _Photogrammetria_, vol. 36, pp. 31-33.

_____, 1982a, "Sample Design for Estimating Change in Land Use and Land Cover", _Photogrammetric Engineering and Remote Sensing_, 48(5), pp. 793-801.

_____, 1982b, "The Analysis of Areal Data in Thematic Mapping Experiments", _Photogrammetric Engineering and Remote Sensing_, 48(9), pp. 1455-1462.

_____, 1982c, "Analyzing Thematic Maps and Mapping for Accuracy", _URISA 1982. Practical Applications of Computers in Government. Papers from the Annual Conference of the Urban and Regional Information Systems Association. August 22-25, 1982. Minneapolis. MN_, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 483-487.

_____, 1986, "Analysis of Thematic Map Classification Error Matrices", _Photogrammetric Engineering and Remote Sensing_, 52(5), pp. 681-686.

Rosenfield, G., and K. Fitzpatrick-Lins, 1985, "A Coefficient of Agreement as A Measure of Thematic Classification Accuracy", (abstract), _Proc. ACSM-ASPRS Fall Convention. Indianapolis_, Falls Church, VA: ACSM & ASPRS, pp. 790-791.

_____, 1986, "A Coefficient of Agreement as a Measure of Thematic Classification Accuracy", _Photogrammetric Engineering and Remote Sensing_, 52(2), pp. 223-227.

Rosenfield, G., K. Fitzpatrick-Lins, and H. Ling, 1982, "Sampling for Thematic Map Accuracy Testing", Photogrammetric Engineering and Remote Sensing, 48(1), pp. 131-137.

Rosenfield, G., and M. Melley, 1980, "Applications of Statistics to Thematic Mapping", Photogrammetric Engineering and Remote Sensing, 46(10), pp. 1287-1294.

Scarano, F., and G. Brumm, 1976, "A Digital Elevation Data Collection System", Photogrammetric Engineering and Remote Sensing, 42(4), pp. 489-496.

Schechter, B., 1978, "Data Preparation and Entry for Computer-Aided Mapping", No. 15 Design Automation Conference Proc., New York, NY: IEEE, pp. 48-52.

Selden, D., 1985, "An Approach to Evaluation and Benchmark Testing of Cartographic Data Production Systems", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 499-509.

Sewell, H., 1960, "Experience With the National Map Accuracy Standards at Army Map Service", Surveying and Mapping, 20(4), pp. 439-442.

Shine, J., 1985, "Bayesian, Evidence, Fuzzy: Which Theory Works Best When Reasoning with Uncertain Logic?", Technical Papers, 51st Annual Meeting - ASP, Vol. 2, Falls Church, VA: ASP, pp. 676-678.

Sinton, D., 1978, "The Inherent Structure of Information as a Constraint to Analysis: Mapped Thematic Data as a Case Study", in G. Dutton, ed., Spatial Semantics: Understanding and Interacting with Map Data, Vol. 7, Harvard Papers on Geographic Information Systems, Reading, MA: Addison-Wesley.

Slama, C., 1983, "Specifications and Standards for Photogrammetrically Derived Control", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 654.

Southard, R., and K. Anderson, 1982, "A National Program for Digital Cartography", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 41-49.

Story, M., and R. Congalton, 1986, "Accuracy Assessment: A User's Perspective", Photogrammetric Engineering and Remote Sensing, 52(3), pp. 397-399.

Stoughton, H., and R. Berry, 1985, "Simple Algorithms for Calculation of Scale Factors for Plane Coordinate Systems (1927 NAD and 1983 NAD)", Surveying and Mapping, 45(3), pp. 247-259.

Sturdevant, J., 1981, "Assessing Accuracy of Digital Land Use and Terrain Data", Proc. ASP Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ASP, pp. 101-112.

Tempfli, K., 1980, "Spectral Analysis of Terrain Relief for the Accuracy Estimation of Digital Terrain Models", ITC Journal, 1, pp. 478-510.

Thomas, I., and G. Allcock, 1984, "Determining the Confidence Level for a Classification", Photogrammetric Engineering and Remote Sensing, 50(10), pp. 1491-1496.

Thompson, C., 1986, "Some New Horizons for OEEPE", Mapping from Modern Imagery, Acquisition and Revision of Spatial Information, Proceedings of a Symposium held by Commission IV of the International Society for Photogrammetry and Remote Sensing and the Remote Sensing Society in Pollock Halls, Edinburgh, Scotland, 8-12 September 1986, International Archives of Photogrammetry and Remote Sensing, Vol. 26, Part 4, Nottingham, United Kingdom: International Society for Photogrammetry and Remote Sensing and the Remote Sensing Society, pp. 299-310.

Thompson, L., 1981, "Digitizing and Automated Output Mapping Errors", Photogrammetric Engineering and Remote Sensing, 47(10), pp. 1455-1457.

Thompson, M., 1960, "A Current View of the National Map Accuracy Standards", Surveying and Mapping, 20(4), pp. 449-457.

Tiwari, R., and B. De, 1984, "Error Behavior Studies in Analytical Aeriel Triangulation Procedures", Proc. ASP Spring Meetings, Washington, Vol. 2, Falls Church, VA: ASP, pp. 608-617.

Todd, W., D. Gehring, and J. Haman, 1980, "Landsat Wildland Mapping Accuracy", Photogrammetric Engineering and Remote Sensing, 46(4), pp. 509-520.

Toll, D., 1985, "Effect of Landsat Thematic Mapper Sensor Parameters on Land Cover Classification", Remote Sensing of Environment, 17(2), pp. 129-140.

Data Quality

Tom, C., and L. Miller, 1984, "An Automated Land-Use Mapping Comparison of the Bayesian Maximum Likelihood and Linear Discriminant Analysis Algorithms", *Photogrammetric Engineering and Remote Sensing*, 50(2), pp. 193-207.

Traylor, C., 1979, *The Evaluation of a Methodology to Measure Manual Digitizing Error in Cartographic Data Bases*, unpublished Ph. D. dissertation, Dept. of Geography and Meteorology, University of Kansas.

Troup, M., 1982, "Interactive Correction of Digital Elevation Models", *Proc. ASP Spring Meetings, Denver*, Falls Church, VA: ASP, pp. 305-316.

U.S. Bureau of the Budget, 1947, *National Map Accuracy Standards*, Washington, DC: U.S. Bureau of the Budget.

U.S. Department of Commerce, National Bureau of Standards, 1986, *Federal Information Processing Standards Publications (FIPS PUBS) Index*, NBS Publications List 58, Springfield, VA: U.S. Department of Commerce, National Bureau of Standards.

U.S. Department of Housing and Urban Development, Federal Urban Information Systems Inter-Agency Committee, 1970, *The Wichita Falls Consortium Phase II Report*, Vol. XII - Conceptualization Themes: Transferability, Data Standardization, Confidentiality, and Geographic Information Systems, PB-208 485-12, Springfield, VA: U.S. Department of Housing and Urban Development.

U.S. Department of the Interior, Geological Survey, 1983, *Land Use and Land Cover Digital Data*, by R. Fegeas, R. Claire, S. Guptill, K. Anderson, and C. Hallam, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-E, Reston, VA: USGS.

van Rensburg, P., 1980, "The Accuracy of Thematic Maps Generated from Landsat MSS Data using Computer-Aided Analysis Techniques: A Case Study", *South African Geographical Journal*, 62(1), pp. 44-61.

Vonderohe, A., and N. Chrisman, 1985, "Tests to Establish the Quality of Digital Cartographic Data: Some Examples from the Dane County Land Records Project", *Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7)*, Falls Church, VA: ASP & ACSM, pp. 552-559.

Vossepoel, A., and A. Smeulders, 1982, "Vector Code Probability and Metrication Error in the Representation of Straight Lines of Finite Length", *Computer Graphics and Image Processing*, 20(4), pp. 347-364.

Wehde, M., 1979, "Spatial Quantification of Maps or Images Cell Size or Pixel Size Implications", *Proc. ASP-ACSM Fall Meetings, Sioux Falls*, Falls Church, VA: ASP & ACSM, pp. 45-64.

_____, 1982, "Grid Cell Size in Relation to Errors in Maps and Inventories Produced by Computerized Map Processing", *Photogrammetric Engineering and Remote Sensing*, 48(8), pp. 1289-1298.

Welch, R., 1982, "Map Accuracy Requirements: The Cartographic Potential of Satellite Image Data", section 6.3 in N. Bryant, ed., *Proc. NASA Workshop on Registration and Rectification*, JPL Pub. No. 82-23, Pasadena, CA: Jet Propulsion Laboratory, pp. 215-223.

Welch, R., and Y. Hsu, 1981a, "Interactive Statistical Tests and Displays of Landsat Computer Classification Accuracies", *Proc. ASP Spring Meetings, Washington*, Falls Church, VA: ASP, p. 652.

_____, 1981b, "Statistical Tests and Interactive Displays of Landsat Classification Accuracies", *Seventh International Symposium - Machine Processing of Remotely Sensed Data*, West Lafayette, IN: Laboratory for Applications of Remote Sensing, pp. 91-92.

_____, 1983, "Computer Graphic Representation of Land Use/Cover Classification Accuracy", *Professional Geographer*, 35(2), pp. 202-206.

Welch, R., T. Jordan, and M. Ehlers, 1985a, "Comparative Evaluations of the Geodetic Accuracy and Cartographic Potential of Landsat-4 and Landsat-5 Thematic Mapper Image Data", *Photogrammetric Engineering and Remote Sensing*, 51(9), pp. 1249-1262. Corrected and republished with same title in Vol. 51(11), pp. 1799-1812.

Welch, R., and E. Usery, 1984, "Cartographic Accuracy of LANDSAT-4 MSS and TM Image Data", *IEEE Transactions on Geoscience and Remote Sensing*, 22(3), pp. 281-288.

White, M., 1978, "A Geometrical Model for Error Detection and Correction", *Proc. International Conference on Computer-Assisted Cartography (AUTO-CARTO III)*, Falls Church, VA: ASP & ACSM, pp. 439-456.

Wilcox, D., 1983, "Classification, Standards of Accuracy, and Specifications for Cadastral Surveying", *Proc. ACSM Spring Meetings, Washington*, Falls Church, VA: ACSM, pp. 277-286.

_____, 1984a, "Proposed Methods and Procedures for Building a Multipurpose Cadastre Base Map and Cadastral Boundary Overlay", URISA 1984. The Changing Role of Computers in Public Agencies. Papers from the annual conference of the Urban and Regional Information Systems Association. August 12-15, 1984, Seattle. WA, ed. R. Schmitt and H. Smolin, McLean, VA: Society and Association Services, Inc., pp. 223-232.

_____, 1984b, "Proposed Map Accuracy Standards for A Multipurpose Cadastre", Computers. Environment and Urban Systems, 9(23), pp. 203-207.

Wilson, P., 1981, "Comparing Sources of Terrain Data for a Geographical Information System", Proc. ACSM Spring Meetings. Washington, Falls Church, VA: ACSM, pp. 201-210.

Wong, C., 1982, "Refinement of Dense Digital Elevation Models", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 703-714.

Wong, K., and Y. Siyam, 1981, "Accuracy of Earthwork Calculations from Digital Elevation Data", Proc. ASP Fall Meetings. San Francisco & Honolulu, Falls Church, VA: ASP, pp. 399-408.

Woolnough, D., 1975, "Theoretical Accuracies of Space Mapping for Canada", Canadian Surveyor, 29(3), pp. 267-276.

Working Party to Produce National Standards for the Transfor of Digital Map Data, 1986, "The Assessment and Transfer of Data Qualify, Final Draft (Issue 1.1)", in Working Party to Produce National Standards for the Transfer of Digital Map Data, Final Draft Papers of the Working Party to Produce National Standards for the Transfer of Digital Map Data. National Transfer Standards. NTF User Manual, London, United Kingdom: Ordnance Survey.

_____, 1987, The Assessment and Transfer of Data Quality, Release 1.0, January 1987, London, United Kingdom: Ordnance Survey.

Zilkoski, D., 1983, "Justification of FGCC Vertical Control Specifications and Procedures", Proc. ACSM Spring Meetings. Washington, Falls Church, VA: ACSM, pp. 128-143.

Zilkoski, D., and E. Balazs, 1987, "Status of NAVD 88 Datum Definition", Technical Papers. 1987 ACSM-ASPRS Annual Convention. Baltimore. MD. March 29-April 3. 1986, Vol. 3, Surveying, Falls Church, VA: ACSM & ASPRS, pp. 66-78.

Zobrist, A., and N. Bryant, 1979, "Map Characteristics of Landsat Mosaics", Proc. ASP Spring Meetings. Washington, Vol. 1, Falls Church, VA: ASP, pp. 261-273.

page 67 follow

CARTOGRAPHIC ENTITIES

Adams, T., and D. Rhind, 1981, "The Projected Characteristics of a National Topographic Digital Databank", Geographical Journal, 147(1), pp. 38-53.

Aronoff, S., 1984, "An Approach to Optimized Labeling of Image Classes", Photogrammetric Engineering and Remote Sensing, 50(6), pp. 719-727.

Aronson, P., 1987, "Attribute handling for geographic information systems", Proc. Eighth International Symposium on Computer-Assisted Cartography (AUTO-CARTO 8), Falls Church, VA: ASP & ACSM, pp. 346-355.

Boekee, D., and J. van der Lubbe, 1979, "Some Aspects of Error Bounds in Feature Selection", Pattern Recognition, 11(5/6), pp. 353-360.

Bosman, M., and D. Hobson, 1983, "Feature Code System for Automated Data Recording", Australian Surveyor, 31(8), pp. 528-534.

Bryant, J., and L. Guseman, 1979, "Distance Preserving Linear Feature Selection", Pattern Recognition, 11(5/6), pp. 347-352.

Canada, Energy, Mines and Resources, 1982, Standards for the Classification of Topographic Features, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Technical Committee No. I, Draft, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch.

_____, 1984, Standards for the Classification of Topographic Features, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Second Draft Report, Vol. I, Part I, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch.

_____, 1984, Topographic Codes and Dictionary of Topographic Features, Canadian Council on Surveying and Mapping, National Standards for the Exchange of Digital Topographic Data, Second Draft Report, Vol. II, Ottawa, Canada: Topographical Survey Division, Surveys and Mapping Branch. Canada, Statistics, 1981, Standard Geographical Classification, Vol. 1, Ottawa, Canada: Statistics Canada, Standards Division.

Chang, K., 1976, "Data Differentiation and Cartographic Symbolization", Canadian Cartographer, 13(1), pp. 60-68.

Eichelberger, P., 1982, "Land Use and Space Use - Data Standardization Issues in Data Base Management", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 434-443.

Fegeas, R., 1982, "Modularization of Digital Cartographic Data Capture", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 297-306.

Feldman, A., 1981, "The National Ocean Survey's Aeronautical Radar Video Map: A Unique Cartographic Product", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 443-454.

Gibbons, J., 1982, "Digital Techniques for 1:50,000 Scale Mapping and Revision", Photogrammetric Record, 10(60), pp. 645-652.

Granlof, E., 1980, "Generation of Symbols in Computer-Aided Map Production", International Archives of Photogrammetry, XIII(B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 294-302.

Grzeda, S., and A. Feldman, 1982, "A Cinematographic Histo-Cartographic Approach on the National Ocean Survey Low Altitude Chart Series", Proc. ACSM Spring Meetings, Denver, Falls Church, VA: ACSM, pp. 92-99.

Guptill, S., 1983, "An Intermediate-Scale Digital Cartographic Data Base for National Needs", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 563-569.

Hagan, P., 1980, A Network Data Model for Cartographic Data, D.Sc. Dissertation, Sever Institute of Technology, Washington University, St. Louis, MO.

_____, 1981, "The Evaluation of a Network Data Structure for Cartographic Features", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 16-27.

Harron, W., 1986, "Development of Geographic and Attribute Data Bases for Utility Systems in Small Communities", URISA 1986, What's the Difference?, Papers from the annual conference of the Urban and Regional Information Systems Association, August 10-14, Denver, CO, Vol. IV, Public Administration, Public Works/Utilities, Facilities Management and Mapping, Regional Agencies, Transportation, Electronic Office Integration, Legal Issues, ed. M. Salling and R. Surridge, Washington, DC: URISA, pp. 124-133.

Holmes, G., 1982, "Computer Assisted Chart Symbolization at the Defense Mapping Agency Aerospace Center", Proc. Fifth International Symposium on Computer-Assisted Cartography (AUTO-CARTO V), Falls Church, VA: ASP & ACSM, pp. 387-396.

Hsu, M., 1979, "The Cartographer's Conceptual Process and Thematic Symbolization", American Cartographer, 6(2), pp. 117-127.

Hsu, S., 1979, "Automation in Cartography with Remote Sensing Methodologies and Technologies", Canadian Cartographer, 16(2), pp. 183-194.

Ingram, J., 1977, "Feature Analysis in Support of the Development of a Digital Data Base for Use in Landmass Simulation", Proc. ACSM Fall Meetings, Little Rock, Falls Church, VA: ACSM, pp. 454-471.

Jacober, R., 1979a, Standardization of Map Symbology for Large Scale Maps, Master's Thesis, Dept. of Geodetic Science, Ohio State Univ.

_____, 1979b, "Standardization and Computerization of Symbology for Engineering Scale Maps", Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, pp. 410-415.

_____, 1983, "Map Content and Symbols", in Map Uses, Scales and Accuracies for Engineering and Associated Purposes, ASCE Committee on Cartographic Surveying, New York, NY: American Society of Civil Engineers, pp. 92-127.

Jensen, J., 1979, "Computer Graphic Feature Analysis and Selection", Photogrammetric Engineering and Remote Sensing, 45(11), pp. 1507-1512.

Kainz, W., 1985, "A Data Structure for Interactive Attribute Assignment in Geographical Information Systems", Tech. Papers, ACSM 45th Annual Meeting, Falls Church, VA: ACSM, pp. 264-270.

Kleckner, R., 1982, "Classification Systems for Natural Resource Management", Proc. Pecora VII Symposium, Falls Church, VA: ASP, pp. 65-70.

Kulhavy, R., N. Schwartz, and S. Shaha, 1982, "Interpretative Framework and Memory for Map Features", American Cartographer, 9(2), pp. 141-147.

Leatherdale, J., 1980, "Specification for Mapping at Scales Between 1:1,000 and 1:10,000, First Edition", The Royal Institution of Chartered Surveyors, International Archives of Photogrammetry, XXIII(B4), Commission IV, Hamburg, Germany: International Society for Photogrammetry, pp. 415-441.

Leberl, F., and W. Kropatsch, 1980, "Experiments with Automatic Feature Analysis Using Maps and Images", International Archives of Photogrammetry, XXIII(B4), Commission III, Hamburg, Germany: International Society for Photogrammetry, pp. 451-457.

Lewis, E., 1981, "Geocodes in Commercial Applications", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 1-9.

Makarovic, B., 1984, "Procedures and Structures for Extraction and Sampling Geo-Information from Images", Proc. ISPRS Congress XV Commission IV, Rio de Janeiro, pp. 253-265.

Masry, S., 1981, "Digital Mapping Using Entities: A New Concept", Photogrammetric Engineering and Remote Sensing, 47(11), pp. 1561-1565.

Morrison, J., 1981, "National Atlas Map Symbolization Changes", Proc. ACSM Fall Meetings, San Francisco & Honolulu, Falls Church, VA: ACSM, pp. 72-81.

_____, 1982, "Report on the Activities of Working Group III, Cartographic Features", in H. Moellering, ed., Selected Papers from the Session on Digital Cartography - Planning and Standards at the Fifth International Symposium on Computer-Assisted Cartography, Crystal City, Virginia, August 23, 1982, Issues in Digital Cartographic Data Standards, Report #2, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 13-14.

National Committee for Digital Cartographic Data Standards, 1986, "Appendix II, Interim Proposed Standard Feature Definitions and Interim Proposed Standard Attribute Definitions", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 104-210.

_____, 1987, "Part IV - Cartographic Features", H. Moellering, ed., A Draft Proposed Standard for Digital Cartographic Data, Issues in Digital Cartographic Data Standards, Report #8, Columbus, OH: National Committee for Digital Cartographic Data Standards.

Palmer, B., 1984, "Symbolic Feature Analysis and Expert Systems", Proc. International Symposium on Spatial Data Handling, Vol. II, Zurich, Switzerland: Symposium Secretariat, Department of Geography, University of Zurich-Irchel, pp. 465-478.

Peters, C., 1979, "Feature Selection for Best Mean Square Approximation of Class Densities", Pattern Recognition, 11(5/6), pp. 361-364.

Przygocki, O., and R. Rugg, 1986, "Appendix I, Instructions for Testing Standard Features and Attributes", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 97-103.

Quattrochi, D., 1983, "Analysis of LANDSAT-4 Thematic Mapper Data for the Discrimination of Urban Features", URISA 1983, Decision Support Systems for Policy and Management, Papers from the annual conference of the Urban and Regional Information Systems Association, August 14-17, 1983, Atlanta, GA, ed. R. Schmitt and H. Smolin, Washington, DC: URISA, pp. 391-403.

Reneman, F., 1975, "A System for Digital Mapping", Commission III, Automation in Cartography, Enschede, Netherlands: International Cartographic Association, pp. 254-269.

Rugg, R., and W. Schmidt, eds., 1986a, "Testing the Interim Proposed Standard for Cartographic Features", in H. Moellering, ed., Digital Cartographic Data Standards: A Report on Evaluation and Empirical Testing, Issues in Digital Cartographic Data Standards, Report #7, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 89-96.

Rugg, R., and W. Schmidt, 1986b, "Digital Cartographic Data Feature Standards in the United States", Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 340-349.

Saltman, R., 1982, "Developing the Class Code Structure for an Extensive Geographic Data File", URISA 1982, Practical Applications of Computers in Government, Papers from the Annual Conference of the Urban and Regional Information Systems Association, August 22-25, 1982, Minneapolis, MN, ed. R. Schmitt and H. Smolin, Washington, DC: International Science and Technology Institute, Inc., pp. 214-225.

Schlichtmann, H., 1979, "Codes in Map Communication", Canadian Cartographer, 16(1), pp. 81-97.

Schmidt, W., 1983a, "Report of Working Group III: Cartographic Features", in H. Moellering, ed., Digital Cartographic Data Standards: Defining the Issues, Completion of the First Year of Work, Issues in Digital Cartographic Data Standards, Report #3, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 33-36.

_____, 1983b, "The Study of Digital Cartographic Data Features in Preparation for a National Standard", (abstract), Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. I, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, p. 427.

_____, 1984a, "Digital Cartographic Data Standards, Alternatives for Cartographic Features, A Progress Report - Working Group III", (abstract), Proc. ACSM Spring Meetings, Washington, Falls Church, VA: ACSM, p. 61.

_____, 1984b, "Digital Cartographic Data Standards, Alternatives for Cartographic Features, A Progress Report - Working Group III", in H. Moellering, ed., Digital Cartographic Data Standards: Examining the Alternatives, Issues in Digital Cartographic Data Standards, Report #4, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 33-42.

_____, 1984c, "The Study of Digital Cartographic Data Features in Preparation for an American National Standard", Canadian Surveyor, 38(2), pp. 91-97.

_____, 1985a, "An Interim Proposed Standard for Digital Cartographic Features", (abstract), _Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7)_, Falls Church, VA: ASP & ACSM, p. 498.

_____, 1985b, "An Interim Proposed Standard for Digital Cartographic Features", in H. Moellering, ed., _Digital Cartographic Data Standards: An Interim Proposed Standard_, Issues in Digital Cartographic Data Standards, Report #6, Columbus, OH: National Committee for Digital Cartographic Data Standards, pp. 23-36.

_____, 1986, "Testing the Interim Proposed Standards for Cartographic Features", _Technical Papers, 1986 ACSM-ASPRS Annual Convention, Washington, DC, March 16-21, 1986_, Vol. 1, Cartography and Education, Falls Church, VA: ACSM & ASPRS, p. 2.

Smith, R., 1980, "Improved Areal Symbols for Computer Line-Printed Maps", _American Cartographer_, 7(1), pp. 51-57.

_____, and M. Johnson, 1979, "Computer Generated Areal Symbols: Some Design Considerations", _Proc. ACSM Spring Meetings, Washington_, Falls Church, VA: ACSM, pp. 161-169.

Standards Association of Australia, 1981, _Interchange of Feature Coded Digital Mapping Data_, Australian Standard 2482-1981, North Sydney, Australia: Standards Association of Australia.

Stockman, G., 1978, _Toward Automatic Extraction of Cartographic Features_, Silver Spring, MD: L N K Corp., AD-A059 942.

Tom, H., 1981, "Geographic Codes: Federal Information Processing Standards", _Proc. ACSM Fall Meetings, San Francisco & Honolulu_, Falls Church, VA: ACSM, pp. 10-15.

Trainor, T., 1986, "Attribute Coding Scheme: Identification of Features in the U.S. Census Bureau's TIGER System", _Proc. Auto Carto London, International Conference on the acquisition, management and presentation of spatial data, 14-19 September 1986_, Vol. 1, Hardware, Data Capture and Management Techniques, ed. M. Blakemore, London, United Kingdom: Auto Carto London Ltd., pp. 117-126.

U.S. Department of Commerce, Coast and Geodetic Survey, 1963, _Nautical Chart Manual_, 6th edition, by W. Bruder, ed., pub 83-1, Washington, DC: U.S. Department of Commerce, Coast and Geodetic Survey.

U.S. Department of Commerce, National Bureau of Standards, 1970, _States and Outlying Areas of the United States_, Federal General Data Standard Representations and Codes, Federal Information Processing Standards Publication 5-1, Springfield, VA: U.S. Department of Commerce, National Bureau of Standards.

_____, 1974, _Standard Metropolitan Statistical Areas_, Federal General Data Standard Representations and Codes, Federal Information Processing Standards Publication 8-4, Washington, DC: U.S. Department of Commerce, National Bureau of Standards.

_____, 1979, _Counties and County Equivalents of the States of the United States and the District of Columbia_, Federal General Data Standard Representations and Codes, Federal Information Processing Standards Publication 6-3, Springfield, VA: U.S. Department of Commerce, National Bureau of Standards.

_____, 1986, _Federal Information Processing Standards Publications (FIPS PUBS) Index_, NBS Publications List 58, Springfield, VA: U.S. Department of Commerce, National Bureau of Standards.

U.S. Department of Commerce, National Ocean Survey, 1979, _Nautical Chart Manual_, NOS TM No. 1(NDM 75-01), 7th edition, Washington, DC: U.S. Department of Commerce, National Ocean Survey.

U.S. Department of Defense, Defense Mapping Agency, 1977, _Standard Cartographic Feature, Digital-Identification Catalog_, Washington, DC: U.S. Department of Defense, Defense Mapping Agency.

_____, 1979, _Product Specifications for a Prototype Data Base to Support High Resolution Sensor Simulation_, First Edition, Stock No. SPECXVDB, Washington, DC: U.S. Department of Defense, Defense Mapping Agency.

U.S. Department of Defense, Hydrographic/Topographic Center and U.S. Department of Commerce, National Ocean Survey, 1979, _Chart No. 1, United States of America, Nautical Chart Symbols and Abbreviations, 7th edition_, Washington, DC: U.S. Department of Defense, HTC and U.S. Department of Commerce, NOS.

U.S. Department of the Interior, Geological Survey, 1983a, Overview and USGS Activities, by R. McEwen, H. Calkins, and B. Ramey, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-A, Reston, VA: USGS.

_____, 1983b, Digital Line Graphs from 1:2,000,000-Scale Maps, by M. Domaratz, C. Hallam, W. Schmidt, and H. Calkins, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-D, Reston, VA: USGS.

_____, 1983c, Land Use and Land Cover Digital Data, by R. Fegeas, R. Claire, S. Guptill, K. Anderson, and C. Hallam, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-E, Reston, VA: USGS.

_____, 1983d, Geographic Names Information System, by R. Payne, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-F, Reston, VA: USGS.

_____, 1983e, Digital Line Graph Attribute Coding Standards, in R. McEwen, R. Witmer, and B. Ramey, eds., USGS Digital Cartographic Data Standards, Circular 895-G, Reston, VA: USGS.

U.S. Department of Transportation, 1974, A Survey of National Geocoding Systems, by P. Werner, Report No. DOT-TSC-OST-74-26, Washington, DC: U.S. Department of Transportation.

U.S. Naval Oceanographic Office, 1966, Glossary of Oceanographic Terms, SP-35, 2nd edition, by B. Baker, W. Deebel, and R. Geisenderfer, eds., Washington, DC: U.S. Naval Oceanographic Office.

_____, 1969, Navigation Dictionary, H.O. Pub. No. 220, 2nd edition, Washington, DC: U.S. Naval Oceanographic Office.

Werner, P., and H. Bruck, 1975, National Geocoding Systems: Design of a Converter, Cambridge, MA: Urban Systems Laboratory, MIT.

Wood, B., 1984, Topographic Feature Coding, unpublished Ph. D. dissertation, Dept. of Geography, University of Ottawa.

Wood, B., and D. Douglas, 1983, "Cartographic Feature Coding", Proc. 6th International Symposium on Automated Cartography (AUTO-CARTO Six), Vol. 2, Ottawa, Canada: Steering Committee for 6th International Symposium on Automated Cartography, pp. 616-626; reprinted in Cartographica, 21(2-3), pp. 62-72.

Working Party to Produce National Standards for the Transfer of Digital Map Data, 1986, "Data Classification", Release 1.2, in Working Party to Produce National Standards for the Transfer of Digital Map Data, Final Draft Papers of the Working Party to Produce National Standards for the Transfer of Digital Map Data, National Transfer Standards, NTF User Manual, London, United Kingdom: Ordnance Survey.

_____, 1987, Interim Standard for Data Classification, Release 1.0, January 1987, London, United Kingdom: Ordnance Survey.

Yan, J., R. Molnar and J. Parker, 1985, "An Interdepartmental Application of Spatial Data Bases - Building a Statistical Network File from a Topographic Feature File", Proc. Seventh International Symposium on Computer-Assisted Cartography (AUTO-CARTO 7), Falls Church, VA: ASP & ACSM, pp. 584-599.

Yoeli, P., 1978, "The Drawing of Topographical Maps with Basic Cartographic Subroutines", in J. Moneta, ed., Information Technology, Amsterdam, Netherlands: North Holland, pp. 697-703.