Section IV.

Readings in Archives and Electronic Records

Annotated Bibliography and Analysis of the Literature

compiled by Richard J. Cox
# Bibliography on Archives and Electronic Records

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Readings in Archives and Electronic Records:
Annotated Bibliography and Analysis of the Literature
compiled by Richard J. Cox

Introduction

The following bibliography is a preliminary effort on the part of its compiler to provide a basic set of readings on archivists' efforts to administer electronic records. It is not a comprehensive bibliography, but it is focused on the major, seminal, or curious writings (in English) on this topic. I have not included writings on social science data archives (except as they appear in volumes on the archival management of electronic records), the historians' and other researchers' use of electronic records (again, except as they appear in volumes with a broader archival focus), information and library science literature, writings on records and information resources management, except for those essays that provide interesting summaries of such viewpoints or are crucial for archivists to know about. Although there are many valuable studies and writings that have circulated in unpublished form or that have remained as grey literature, I have included only a small portion of such materials, as the University of Pittsburgh research project continues, this bibliography will be updated to include these materials along with information on how to obtain copies. What is included in this bibliography includes the more accessible writings. Individuals desiring more comprehensive views of the literature should examine the 1983 Richard Kesner bibliography and follow its leads in searching for publications on related areas. The post-1983 essays, monographs, reports, and other publications will also provide leads to additional and more writings.

Annotations have been provided for nearly all of the following entries. If an acceptable abstract is provided in the original publication, it has been reproduced and its reproduction noted. The other annotations are my own effort to provide a description of the publication's content. These descriptions are usually brief, and they include efforts to assess the importance of the entry to archival theory, methodology, and practice. A few entries lack annotations; these entries were not available to me at the time of this publication, but they were promising enough to list.

Analysis of the Literature.

The bibliography is divided in a number of topical sections. Under each topical section I have provided an assessment of the nature of this aspect of the literature. However, it is relevant to provide a broader characterization of the literature.

In general, it is easy to see that the literature has been repetitive in topic and approach. Figure 1 reveals that the "basic" (introductory or general in content) and theoretical (usually
considering the issue of whether traditional archival principles are relevant for managing electronic records) constitute a significant (64%) portion of the total literature included in this bibliography. Research represents a very minor portion (13%) of the literature, and I have been very tolerant in what I define as research.

We can also see that the matter of electronic records has been of growing interest to the archival profession. Figure 2 shows a strong increase in the number of publications on electronic records over the past quarter of a century. While the number of publications is not indicative of the archival profession's success in dealing with electronic records, the increase reveals the sustained concern with such records.

The immaturity of the archival profession in working with electronic records can also be seen by noting that the literature has been dominated by a very small group of professionals. David Bearman, Thomas Brown, Charles Dollar, Meyer Fishbein, Sue Gravel, Margaret Hedstrom, Richard Kesner, and John McDonald account for nearly a third of the publications described in this bibliography. As a group they have dominated publishing since the late 1960s. This is reflective of the fact that the number of electronic records archivists remains very small.

Where to Start in the Archival Literature.

Although there is a growing quantity of writings on the archival administration of electronic records and these writings are repetitive or very basic, there is a small quantity of writings that archivists should be familiar with in their work as professionals. Important or essential writings have been marked with a asterisk (*).

Individuals using this bibliography will note that a large portion of the publications have appeared in the mainstream archival journals or as part of special volumes, usually the product of conferences. As the archival profession matures and its work with electronic records proceeds, it is likely that an increasing number of research articles and other essays will appear in information and library science journals and other professional outlets. Archivists will need to become more proficient in the use of bibliographic databases in order to keep abreast of developments in the field.

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Structure of This Bibliography.

I have divided the bibliography according to a number of logical and appropriate topics. The structure is as follows:

- Basic Manuals
- Archival Theory and Principles
- Education and Professional Issues
- Information Systems Analysis and Evaluation
- Records Management
- Basic Archival Functions: Inventories, Surveys, and Appraisal
- Basic Archival Functions: Description
- Basic Archival Functions: Preservation
- Basic Archival Functions: Legal Issues, Reference, and Access
- Information Technology Standards
- Case Studies: Federal Government
- Case Studies: State Government
- Case Studies: Local Government
- Case Studies: International
- Case Studies: Organizations
- Case Studies: Data Archives
THE BIBLIOGRAPHY

Basic Manuals and General Introductions

The archival profession needs an updated general introduction to electronic records management. At this point the United Nations' 1990 *Management of Electronic Records* is probably the best single volume archivists could use, but it is directed to that organization.


3. Cook, Michael, ed. *Computer Generated Records*, Approaches to Problems in Records Management, no. 2. (England: Society of Archivists, 1987). Specific citations to essays in this publication have been included elsewhere.


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8. Hedstrom, Margaret Archives & Manuscripts: Machine-Readable Records, Basic Manual Series (Chicago: Society of American Archivists, 1984). A landmark reference for archivists concerned with electronic records. Includes an introduction to computers and automated record keeping, the arrangement and storage of electronic records, their management and preservation, and a discussion of archives and the office of the future. This volume is still useful for working with large statistical databases, but it is not concerned with the impact of personal computers, electronic communications, expert systems, and other similar advances in electronic information technology.

9. Kandur, Hamza "Management of Electronic Records," Ph. D. dissertation, University College, London, March 1992. This is really a synopsis of procedures being used by archivists and records managers to manage such records. Discusses the nature of the computer, technical aspects of electronic records, legal and social implications of electronic records, the creation and identification of electronic records, appraisal and retention, control and use, disposition, and archival management. Extensive bibliography is included.

10. Kesner, Richard M. Information Systems: A Strategic Approach to Planning and Implementation (Chicago: American Library Association, 1988). Examination of how various information staff, including archivists and records managers, need to work together within organizations to utilize their information resources. Particularly useful for understanding the role of the archivist in an organization and its management of information.


12. Menne-Haritz, Angelika, ed. Information Handling in Offices and Archives (New York: K. G. Saur, 1993). The most current set of readings on changes in office automation. All the essays have been described elsewhere in the bibliography.

ences for archivists involved in the management of electronic records. This publication was
designed to build on the 1990 ACCIS publication on electronic records management
described below.

14. *U.N. Advisory Committee for the Co-ordination of Information Systems. Management of Electronic Records: Issues and Guidelines* (New York: United Nations, 1990). Of particular interest are chapters two and three. Chapter two describes records management framework, policy issues, implementation options, and implementation recommendations for an electronic records program; this chapter was prepared by David Bearman. Chapter three considers the role of standards in integrated systems management, and it was prepared by Charles Dollar. There is an excellent glossary and lengthy bibliography included in the publication. The *Management of Electronic Records* is one of the most useful recent publications on the subject, and it should be included in every archivist's basic library.

Archival Theory and Principles

Archivists have long debated whether traditional archival principles are relevant or not for the administration of electronic records. The 1992 volume by Charles Dollar is a landmark summation of these debates and issues. David Bearman's various writings have compared various archival traditions in a useful manner. The remainder of the essays will be of interest to archivists following ongoing debates.


17. Bearman, David "Archival Data Management to Achieve Organizational Accountability for Electronic Records." *Archives and Manuscripts* 21, no. 1 (1993): 14-28. Bearman discusses the major changes wrought by electronic information technology on the concept of the record and argues that archivists and records managers must develop new approaches and strategies. He advocates a re-definition of the record to emphasize evidence, a return to the role of records managers and archivists to assist their organizations in issues of accountability, a shift from cost-benefits analysis to risk management, and the use of tactics such as policy, design, implementation, and standards.

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18. *Bearman, David* Archival Methods, Technical Report, vol. 3, no. 1 (Pittsburgh: Archives and Museum Informatics, 1989). An important extended essay re-evaluating the basic premises of archival work. While not dealing specifically with electronic information technology, this publication provides a framework by which to measure and evaluate the effectiveness of archivists' work, including their efforts to manage electronic records. A reading of this publication will help archivists to see that they require new approaches for carrying out their traditional responsibilities.

19. *Bearman, David* "Archival Principles and the Electronic Office," in Information Handling in Offices and Archives, ed. Angelika Menne-Haritz (New York: K. G. Saur, 1993), pp. 177-93. Responsible corporate management of electronic records, whether for ongoing operational purposes or for long-term retention of corporate memory, depends upon an understanding of the fundamental archival principle of provenance. This principle is central to the concept of archives as evidence of activity and pertains with equal relevance to all forms of documentation. Two derivative archival methods, "respect des fonds" and "respect for original order" which are also often referred to as principles, are in fact only implementations of the principle of provenance which reflect the nature of record keeping in bureaucratic organizations during much of the era of paper records. Ironically, electronic records systems make it both possible to more fully capture provenance than paper records systems did and at the same time make it more likely that provenance will be lost and that archives, even if they are preserved, will therefore lack evidential value. This paper explores the relationship between provenance and evidence and its implications for management of paper or electronic information systems. (Abstract provided in this volume).

20. *Bearman, David* "Diplomatics, Weberian Bureaucracy, and the Management of Electronic Records in Europe and America," American Archivist 55 (Winter 1992): 168-80. After a comparison of different approaches in Europe and North America, the author concludes that "there are two fundamental strategies that can be employed to assure the maintenance and retention of adequate documentation of organizational activity: policy and technology." This is an important essay contrasting differences and similarities in approaches to electronic records management.

21. *Bearman, David* "Impact of Electronic Records on Archival Theory," Archives & Museum Informatics 5 (Summer 1991): 6-8. Summary of meeting held at the University of Macerata, Italy, in 1991. The focus of this meeting was a draft manuscript by Charles Dollar on this topic and ultimately published by the University's press in 1992 and described below.


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due to organizational, professional, economic, and societal reasons. Bearman suggests new tactics through regulation, auditing, training, and informing.

23. **Bearman, David** "New Models for Management of Electronic Records by Archives," *Cadernos De Biblioteconomia, Arquivistica E Documentacao* 2 (1992): 61-70. By new models, the author argues that archivists will have to intervene in the design of electronic systems, develop information policies which utilize standards and influence systems design, cease treating electronic records as special media, acquire staff with the requisite knowledge to manage information technology standards, and redefine records as transactions.

24. **Bell, Lionel** "The Archival Implications of Machine-Readable Records," *Archivum* 26 (1979): 85-92. This is an interesting historical piece, in the sense that it starts with the premise that "archivists... begin to look at the problems of machine-readable archives... in terms of those users who are now working with quantification methods in historical or social science fields." Reviews the way computers are being used in organizations and the issues involved in establishing a "machine-readable archives."

25. **Chapdelaine, Susan A.** "The Paperless Office: Hope for the Future or a Grand Illusion?" *Provenance* 6 (Fall 1988): 35-42. This is a general essay arguing for the transformation of the traditional roles of archivists and records managers. While arguing that the predictions of a paperless office have failed to materialize, Chapdelaine asserts that electronic information technology is transforming the workplace, leading to a "multi-media office environment." The author sees this as an opportunity for archivists and records managers "to prove to management the value and immediacy of the services provided." To do this, Chapdelaine argues the need to move from focus on records to information and that they must be more proactive in participating in the management of information. Archivists and records managers must study the manner in which information technology is being used, strive to understand the technology involved, stay current with changes in the technology, use systems approaches to analyze the use of the information, and to get involved in the planning of the implementation of the technology.

26. **Delmas, Bruno** "Archival Science and Information Technologies," in *Information Handling in Offices and Archives*, ed. Angelika Menne-Haritz (New York: K. G. Saur, 1993), pp. 168-76. Written from the viewpoint that archival science "is based on two complementary disciplines: diplomatics, the science of the archival document, and archive administration." Delmas, writing from his experience as a French archival educator, enunciates the various challenges that electronic information systems pose for the basic concept of a record.

27. **Dollar, Charles M.** *Archival Theory and Information Technologies: The Impact of Information Technologies on Archival Principles and Methods* (Macerata, Italy: University of Macerata, 1992). Major study reviewing information technology trends, technology imperatives, archival principles, archival methods, and recommendations for dealing with...
electronic information technology from an archival perspective. Upholds electronic media as records and the possibility of applying traditional archival principles to the management of such media. This is the publication archivists should begin with if they are interested in the issue of archival principles and their relevance in the management of electronic records. See also his earlier Electronic Records Management and Archives in International Organizations: A RAMP Study With Guidelines (Paris: General Information Program and UNISIST, UNESCO, 1986).


29. *Duranti, Luciana "Diplomatics: New Use for an Old Science (Part VI)," Archivaria 33 (Winter 1991-92): 6-24. In this concluding part of her series on diplomatics, the author discusses its validity in the study of document forms, formation, and relationships in the context of electronic information systems. A very different kind of approach to discusses about electronic records management, placing the management of such records in this centuries old archival framework.

30. Fisher, Barbara "Byproducts of Computer Processing," American Archivist 32 (July 1969): 215-23. An early effort to consider the impact and challenges of the computer to the basic aims and methods of archival work, suggesting that the archivist can utilize the computer to resolve many problems currently facing him or her. Fisher's essay is a response to Elizabeth B. Wood's 1967 American Archivist essay.

31. Granstrom, Claes "The Evolution of Tools and Techniques for the Management of Machine-Readable Data," in Management of Recorded Information: Converging Disciplines: Proceedings of the International Council on Archives' Symposium on Current Records, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 92-101. This paper considers a relatively new phenomenon, the requirement for the retention, conservation and disposal of machine-readable records for archival purposes. It discusses machine-readable records -- their present state, the difficulty of defining them precisely because of their differing types and uses, the various techniques for managing them, and their possible refinement in the future. The paper also speculates on developments, which it is hoped, will allow a more precise understanding and hence fuller exploitation of machine-readable data for archival uses. (Abstract provided).


34. Hedstrom, Margaret "Archives: To Be Or Not To Be: A Commentary," in David Bearman, ed., Archival Management of Electronic Records, Archives and Museum Informatics Technical Report no. 13 (Pittsburgh: AMI, 1991), pp. 25-30. Commentary on the essays by David Bearman and Kenneth Thibodeau published elsewhere in this volume. Hedstrom makes two important points. First, she argues that electronic records do not necessarily impede "archival objectives." She states: "This perspective ... reflects a failure to consider the advantages that electronic records could bring to archives through new services which exploit the superior retrieval and manipulation capabilities of electronic records, and new responsibilities which archivists could assume based on the growing recognition by organizations that records -- especially electronic records -- are corporate assets." Second, she argues that it is not important whether archives are centralized (Thibodeau) or decentralized (Bearman) but how archivists can meet the needs of their parent organization and researchers; both approaches might need to operate simultaneously -- the one being used which provides the most appropriate solution.


38. Kesner, Richard M. "Computers, Archival Administration, and the Challenges of the 1980s," Georgia Archive 9 (Fall 1981): 1-18. Optimistic article in which the author acknowledges the growth in programs managing electronic records and discusses the growing...
uses of automation by archivists for the administration of their programs. He then considers the need for additional education for producing archivists with the necessary knowledge and skills for working with computerized records.

39. Kesner, Richard M. "The Changing Face of Office Documentation: Electronic/Optical Information Technologies (IT); An Analytical Framework for the Review of Trends in Office Automation and Its Implications for Archives and Records Management," in Information Handling in Offices and Archives, ed. Angelika Menne-Haritz (New York: K.G. Saur, 1993), pp. 112-127. Advances in information technology are transforming the way people work, communicate, and document their activities. At the same time, the global nature of the modern organization has dictated the development of convenient and economical methods of electronic data exchange. This series of events has in turn necessitated changes in the way archivists and records managers deal with their own responsibilities. The purpose of this essay is to characterize the operational, organizational, and technological developments that are transforming the workplace; to discuss the advent of the "knowledge worker" and the "information utility"; and to consider how all of these factors provide new challenges for the archival and records management disciplines. (Abstract provided in this volume).

40. Ketelaar, Eric "Exploitation of New Archival Materials," Archivum 35 (1989): 189-99. Ketelaar examines implications of access to such new archival materials as sound, audio-visual, and electronic records. This Dutch archivist considers various means of providing access to such records as well as the implications of researchers becoming accustomed to using such records and potential changing roles of the archivist.

41. Lodolini, Elio "La Gestion Des Documents et L'Archivistique," in Management of Recorded Information: Converging Disciplines: Proceedings of the International Council on Archives' Symposium on Current Records, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 156-69. Archives relate to memory and life. In ancient times and in the Middle Ages, archives and records management were one discipline. They became separate in the modern age. Schools for archival studies were started in the eighteenth century, and archival studies began to be recognized as a science in the century. In the nineteenth and twentieth centuries, archives and their users changed. Classification by subject was prevalent in the eighteenth century although there had been changes in the original way of disposing of documents between the sixteenth and the eighteenth centuries. There was the new principle of classification: the reconstitution of the original order. With archives, records management, and library and information science now distinct entities, we see a return to convergence with emphasis on selection, preservation, and consultation. (Abstract provided). We must retain the memories of the past, for they will help us build the future. (In French).

administration of library collections, various technologies have as yet failed to address fully the requirements for the proper management of records in the workplace. Traditional techniques for managing records have been geared closely to the performance of individual tasks and have supported the interrelationship of these tasks in accomplishing the mission of the organization. New approaches must perpetuate this alliance. Therefore, while bringing acknowledged advantages, the technologies face the challenge of remaining faithful to the business they serve in the way they provide for the organization, retrieval, protection, retention and archival preservation of records.(Abstract provided).

43. Menne-Haritz, Angelika "Symposium on the Impact of Information Technologies on Information Handling in Offices and Archives Marburg, Oct. 17th-19th 1991," in Information Handling in Offices and Archives, ed. Angelika Menne-Haritz (New York: K. G. Saur, 1993), pp. 9-25. Summary of the papers presented and ensuing commentary and discussion at this conference, including participants from a variety of disciplines. Major themes include the recent development of information technology, the changing nature of work, the changing nature of documentation, the limits and future developments of archival principles and approaches, and the implications of all these trends for archives.


46. Peterson, Trudy Huskamp "Machine-Readable Records as Archival Materials." Archivum 35 (1989): 83-88. "This paper argues that basic archival principles do apply to records created by utilizing computer technologies. Archival practice, however, shifts substantially to accommodate the needs of the medium."


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49. **Southern, Edwin** "The Document and the Computer: The Historian's Sources and the Cultural Context of Automation," *Carolina Comments* 41 (March 1993): 53-57. General discussion about the emergence of virtual documents and the implication of these documents for archivists and historians. Southern basically argues that the role of the archivist as an intermediary between sources and researchers will not end, although it may change.

50. **Stielow, Frederick J.** "Archival Theory and the Preservation of Electronic Media: Opportunities and Standards Below the Cutting Edge," *American Archivist* 55 (Spring 1992): 332-43. The archival mission presupposes stewardship, which can provide the field with a mechanism to carve a distinctive niche within automated environments. The author warns against the untutored embrace of the "cutting edge" of new technology. Instead, he suggests the need for study and reliance on standards, as well as the adoption of a process-oriented view for preservation management to deal with rapid technological change. He discusses the effects of automation on archival theory, presents common sense guidelines, and includes a brief analysis of specific magnetic and optical storage media. He also proposes a new archival law: With each new storage medium, archivists must reexamine their theory and expect to meet new preservation challenges. (Abstract provided).

51. **Stuart-Stubbs, Basil** "Whither Information?" in *Management of Recorded Information: Converging Disciplines; Proceedings of the International Council on Archives' Symposium on Current Records*, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 15-26. The current concept of information as an entity independent of the media of recording and transmission can be traced to the work of lawyers, economists and computer scientists. The development of libraries and archives has been influenced by the nature of the media. Creators of new information choose the medium and thereby affect the institutions responsible for collecting, organizing and preserving information. The advent of the computer as a means of handling information is having an impact on these institutions, and is requiring them to adapt rapidly. (Abstract provided).

52. **Sturges, Paul** "Policies and Criteria for the Archiving of Electronic Publishing," *Journal of Librarianship* 19 (July 1987): 152-72. The impermanence of magnetic media has led to a concern in the library and information community with the fate of the fast-increasing amount of information which is electronically published. Different approaches from libraries, digital mapping, video archiving, archives and data archives, office management, and the world of commercial publishing offer insights into the kinds of policy which might be adopted to deal with this problem. Such policies are likely to need to involve publishers and other institutions, as well as national library and archive institutions. (Abstract provided).

54. Taylor, Hugh A. "Transformation in the Archives: Technological Adjustment or Paradigm Shift?" Archivaria 25 (Winter 1987-88): 12-28. Evaluating the changing nature of electronic information technology and its uses, Taylor discusses some of the potential impacts on archivists, leading to a questioning of certain basic assumptions such as the definition of an original record, the use of archival records, and the roles of the archivist.

55. Vernon, John A. "Technology's Effect on the Role of the Archivist," Provenance 3 (Spring 1985): 1-12. Another plea for the need for archivists to become conversant with electronic information technology or to run the risk of becoming irrelevant to organizations and to society.


57. Weissman, Ronald E.F. "Virtual Documents on an Electronic Desktop: Hypermedia, Emerging Computing Environments and the Future of Information Management," in Management of Recorded Information: Converging Disciplines: Proceedings of the International Council on Archives' Symposium on Current Records, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 37-60. Desktop computing technology is changing the fundamental nature of documents, document processing, and information management. This paper describes the re-definition of documents that is currently under way, brought about by hypermedia systems, compound documents, object-oriented computing systems and tagged markup architectures. Examining the implications of the trend to treat documents as data bases, the paper focuses on the brave new world of the vertical document and the electronic archive, and identifies key management issues that archivists and information managers will face in the early 1990s. (Abstract provided).

58. Wood, Elizabeth B. "From the Information Soapbox: Information Handling Dialectically Considered," American Archivist 30 (April 1967): 311-20. Although Wood is more concerned with automated techniques than the management of electronic records, many of the issues and concerns raised in this essay relate to the latter issue -- especially the archivist's knowledge base and its relationship to information and library science. See also Barber Fisher's 1969 reply to Wood.
Education and Professional Issues

There has been a steady stream of writings examining the impact of electronic records on the archival profession such as the need for education and the effectiveness of educational programs. There is a great need for additional research on such matters. The writings by Terry Cook, Margaret Hedstrom, and Frederick J. Stielow are good starting points for considering the impact, actual and potential, on the archival profession.


61. Brown, Thomas E. "The Society of American Archivists Confronts the Computer," American Archivist 47 (Fall 1984): 366-82. During the 1960s, the committee structure of the Society of American Archivists began to deal with the twin concerns resulting from automation: automated control techniques and machine-readable records. Until 1975, separate committees dealt with the two facets of computerization. Then the Committee on Automated Records and Techniques launched a broad program of publications, presentations, and concepts of previous committees. In addition, the Society of American Archivists addressed other facets of automation through the National Information Systems Task Force and its publications program. This progress, however, came in spite of problems resulting from ongoing questions about the proper organizational structure to deal with automation, from communication problems within the Society, and from new technological challenges. (Abstract provided)


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63. **Cook, Terry** "Easy To Byte, Harder To Chew: The Second Generation of Electronic Records Archives," *Archivaria* 33 (Winter 1991-92): 202-16. Reviewing eight reports released in 1990-91, Cook argues that archivists have moved from a first generation - "when electronic records archivists turned to others using computerized records for advice and inspiration" - to a second generation of experienced and competent electronic records archivists developing their own solutions and programs. This is a valuable summary of recent reports on electronic records management, but it's larger conclusions are on somewhat shakier ground.

64. **Cook, Terry** "From Information to Knowledge: An Intellectual Paradigm for Archives," *Archivaria* 19 (Winter 1984-85): 28-49. Probably the most important essay in the debate on the relationship of history and archives that graced the pages of *Archivaria* in the mid-1980s. While Cook is not focused on the archival administration of electronic records, he has described the importance of historical understanding and a knowledge of archival science for dealing with records, including those in electronic form. He stresses "three main areas" of work for archivists: "the study of records in the aggregate; the appraisal, description, and careful understanding of the informational value found in individual documents; and the development of archival theory within the broader humanities and social science."


66. **Cox, Richard J.** "Graduate Archival Education and Electronic Records: A Brief Report on the AERT Survey," *AERT Newsletter* 2 (February 1991): 4-5. A brief survey to determine how North American archival educators were teaching about electronic records in their programs and courses. This survey revealed that the educational superstructure was very weak, with educators either spending very limited amounts of time on the topic or using outdated curriculum materials.

67. **Cox, Richard J.** "The Roles of Graduate and Continuing Education Programs in Preparing Archivists in North America for the Information Age," *American Archivist*, forthcoming. This essay argues that the North American archival profession has not adequately dealt with educating archivists to manage automated techniques and, especially, electronic records because of a variety of structural problems in this field: there are few archival educators qualified to teach such topics, few satisfactory archival programs for handling such functions, and little research being done on these concerns. The essay presents five actions for the archival community to take to rectify the dilemma: 1) expand the concept of graduate archival education; 2) make such education interdisciplinary; 3) emphasize research; 4) develop higher visibility with archival employers and prospective
student recruits; and 5) build a foundation for effective continuing education programs.
(abstract provided)

68. DeWhitt, Ben "Archival Uses of Computers in the United States and Canada," American Archivist 42 (April 1979): 152-57. In hindsight, this is a remarkably optimistic article. Drawing on a survey, the author chronicles little activity in dealing with electronic records, but suggests that archivists, especially in state archives, are positioning themselves to begin work with these records. Reading this essay makes one ask, what happened in the subsequent fifteen years?

69. Evans, Frank B. "Records and Administrative Processes: Retrospect and Prospects," in Management of Recorded Information: Converging Disciplines: Proceedings of the International Council on Archives' Symposium on Current Records, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 27-35. Because the information professions do not share a common terminology, operational definitions based on archival usage are given for the terms "document" and "record" as they are used in this paper. The role of record keeping, with the emphasis upon recording medium and systems of control, is then examined from ancient civilizations to the present, with emphasis upon the records of government. The development and nature of modern filing systems intended chiefly for paper-based records is also summarized, in order to provide historical perspective and a framework within which to understand the changes resulting from the application of new technology to traditional record keeping. (Abstract provided).

70. Fishbein, Meyer H. "ADP and Archives: Selected Publications on Automatic Data Processing," American Archivist 38 (January 1975): 31-42. Brief bibliography of publications to that point, useful as an orientation to the thinking by archivists of that time.


73. Fishbein, Meyer, ed. The National Archives and Statistical Research (Athens: Ohio University Press, 1973). Essays based on a 1968 National Archives conference on such topics as the use of electronic records, their preservation, and the aspects of providing access to such records. This is a publication primarily useful as a historical document in the early work of archivists with electronic records.

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74. Fishbein, Meyer "Report of the Committee on Data Archives and Machine Readable Records -- Fiscal Year 1973," ADPA 1, no. 2 (1974): 5-10. Survey of the status of work with electronic records in state and provincial archives, business archives, and church and university archives in the United States and Canada. The article concludes that "it is evident that more than half of the archives in the United States and Canada do not consider ADP media records and certainly do not plan to accession such media. . . . Although electronic computers have been in use since World War II and, importantly, since 1965, only a minority of archivists have given much attention to the information revolution."

75. Gilliland-Swetland, Anne J. "From Education to Application and Back: Archival Literature and an Electronic Records Curriculum," American Archivist, forthcoming. Literature pertaining to the archival administration of electronic records is growing rapidly and becoming increasingly rich and diverse. With reference to key texts, the author examines some of the functions this literature needs to play in electronic records instruction, particularly at graduate level. She then discusses some of the current limitations of the literature and offers suggestions as to how these might be overcome, particularly through the use of electronic information systems technology. (Abstract provided)

76. Hedlin, Edie "Chinatown Revisited: The Status and Prospects of Government Records in America," Public Historian 8 (Summer 1986): 46-59. A discussion of the weaknesses of local, state, and federal archives and records management programs. This is an important background essay for understanding why electronic records programs have not fully developed in government records operations.

77. Hedstrom, Margaret "Teaching Archivists About Electronic Records and Automated Techniques: A Needs Assessment," American Archivist, forthcoming. This article assesses the knowledge and skills that archivists need to administer electronic records and apply automated techniques in archives. The author discusses how rapidly changing technology, ongoing debates about the relevance of archival theory, and evolving practices and methods present particular challenges for the development of a curriculum on automation. She outlines a curriculum organized into four broad areas: 1) archives and information technology; 2) basic concepts and terminology; 3) electronic records; and 4) automated techniques, ending with a discussion of the overall learning objectives for such a curriculum. (Abstract provided).

78. Hedstrom, Margaret "Understanding Electronic Incunabula: A Framework for Research on Electronic Records," American Archivist 54 (Summer 1991): 334-54. The most comprehensive statement of research needs in this area published in the archival literature. Hedstrom characterizes electronic records as the archivist's "greatest challenge in decades" and notes the distinct lack of programmatic development for administering such records. Hedstrom frames five broad questions needing to be researched, and she argues that interdisciplinary research efforts will be the most effective means of answering such questions.
79. **Henry, Linda J.** "An Archival Retread in Electronic Records: Acquiring Computer Literacy," *American Archivist*, forthcoming. Archivists may find acquiring computer literacy the most difficult aspect of becoming an electronic records archivist. The author explores five aspects related to learning about computers: gender, age, computer anxiety, ways of thinking, and extrinsic knowledge, in order to reassure archivists and urge them to become involved with this new media. (Abstract provided)

80. **Kesner, Richard M.** "Employing the Case Study Method in the Teaching of Automated Records and Techniques to Archivists," *American Archivist*, forthcoming. The purpose of this article is three-fold. First, the author briefly introduces the concept of case study methods in teaching and how these methods might be applied in the professional development of archivists. Second, this article explores case study writing and reports on what the Society of American Archivists (SAA) in particular is doing to promote the creation of case study materials. Third, this essay identifies areas where archival educators and practitioners might team up to produce case studies concerning the archival administration of electronic records and/or the use of information technologies in archives. Since the author has no intention of restating in the confines of this short paper the vast body of literature pertaining to case writing and teaching, he has also provided a select bibliography of useful texts and articles. (Abstract provided)

81. **Kesner, Richard M., comp.** *Information Management, Machine-Readable Records, and Administration: An Annotated Bibliography* (Chicago: Society of American Archivists, 1983). This is an update of his 1980 *Automation, Machine-Readable Records, and Archival Administration: An Annotated Bibliography*, also published by SAA. It is organized to include periodicals and reference tools, bibliographies, EDP applications in archives, machine-readable records and archives, records management and automation, library automation, information theory and systems, and future directions for archival automation. These bibliographies are quite useful for sources in the early management of electronic records. They also provide a view of writings on the historians' use of such records and archival automated techniques.

82. **Kesner, Richard M.** "Teaching Archivists About Information Technology Concepts: A Needs Assessment," *American Archivist*, forthcoming. With the growing use of information technologies in all aspects of work and leisure, automation and electronic records have become commonplace within most modern organizations. To address the varied and often complex user support requirements associated with these developments, we must educate a new breed of information services professional. The traditional role models of archivist, records manager, librarian, museum curator, and the like will not suffice. The accompanying essay briefly describes the emerging information services environment, the special demands that it places on archivists, the types of skills required in response to these articulated needs, and a strategy and criteria for a programmatic response. (Abstract provided).

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85. *Stielow, Frederick J.* "The Impact of Information Technology on Archival Theory: A Discourse on an Automation Pedagogy," *Journal of Education for Library and Information Science* 34 (Winter 1993): 48-65. Based on historical research, personal files, and survey data, this article begins with a pragmatic description of the present state of archival education for automation. The author acknowledges the propriety of technical instruction but argues for such training within the broader context of graduate education. Basic confusion exists in defining continuing education and differences between workshops and formal course work for archivists. The Society of American Archivists has played a pivotal but often contradictory role and is now being complemented by a new cadre of full-time archival educators. Given the immensity and confusing terminology of the ongoing computer revolution, the author argues that archivists need to take a step back to develop a clear pedagogical vision on automation and graduate archival education. That base fosters a crucial recognition of the longitudinal focus and holistic methodology of archivists, which is necessary to synthesize their place in the Information Age. (Abstract provided)


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The publications below are concerned with the analysis of a particular kind of information system. There is a tremendous need for additional research and case studies in this area.


89. Bearman, David "Electronic Office Records," Archives & Museum Informatics 4 (Spring 1990): 12-15. Report of a meeting held at the Brookings Institution in early 1990 to discuss issues regarding the management of electronic office records. "Participants agreed that an adequate policy framework, even if it established who within an organization has what authority and responsibility for electronic records management, is not sufficient. Solutions to the short and intermediate term issues facing archivists and records managers with electronic office records require an implementation framework which pays equal attention to administrative remedies and technology-supported solutions. Meeting participants agreed that records management guidelines had to be based on the missions of agencies and on their day-to-day operational requirements for records, and therefore policies and their implementation would be application specific as well as organization specific. They further agreed that solutions would need to be defined in terms of outcomes, would be format independent, and would have to be sensitive to the life-cycle of records."

90. Bearman, David "Multisensory Data and Its Management," in Management of Recorded Information: Converging Disciplines: Proceedings of the International Council on Archives' Symposium on Current Records, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 111-19. The past decade has brought two dramatic changes to the world of information management professionals: the dissolution of document boundaries and the integration of multi-sensory data. Document management has been the premise of the disciplines of librarianship, archives and records management. The assumption that documents of any given medium contain information in one sensory modality has likewise been central to the control of documents, as the exception of motion pictures with sound best illustrates. Both these stable frameworks of information management disciplines have now dissolved, with digital data and electronic information networks dedicated to data retrieval rather than document exchange. This paper examines the implications of the impending disappearance of the unisensory document and the emergence of non-document-based information exchange. It suggests that archival approaches to documents based on form and function continue to be useful frameworks for developing strategies for the management of multisensory documents and non-document information. (Abstract provided).

92. Bui, Dominic Nghiep Cong. "The Videodisk: Technology, Applications, and Some Implications for Archives." American Archivist 47 (Fall 1984): 418-27. As a medium of information storage and retrieval, the video or optical disk affords certain advantages such as high-density storage capabilities, image stability, and speed of recall. This article reviews current videodisk technology and discusses some of its strengths, advantages, and problems as well as its potential as a medium of recording, storage, and retrieval for archival materials, both textual and pictorial. Also considered are the experimental and exploratory uses of the videodisk for archival purposes as conducted in pilot programs by the Public Archives of Canada and by the Library of Congress. Although the videodisk is relatively new and as yet has not been adopted as a permanent medium on a large scale, its technical potential is such that its use in archives should not be overlooked. (American Archivist abstract)

93. Burke, Frank G. "Chaos Through Communications: Archivists, Records Managers, and the Communications Phenomenon," in The Archival Imagination: Essays in Honour of Hugh A. Taylor, ed. Barbara L. Craig (Ottawa: Association of Canadian Archivists, 1992), pp. 154-77. The century from 1870 to 1970 was one of consolidation of business, corporate, and government activities in a structured office environment. The partitioning of worker activities and stratification of authority led to a structure amenable to the imposition of records management. Records flowed through the system in predictable and controllable communication patterns and were funneled into organized and retrievable caches called files. Controlling this flow were secretarial, records, and files staff. The recent shift from hierarchical communications to broad interconnectivity has led to idiosyncratic information flow, person-to-person or broadcast over electronic media, controlled directly by the manager or individual staff member rather than the secretarial/clerical staff. This paper investigates the implications of personalized communication technology and its impact on the future of records and records management. (Abstract provided) This essay is representative of the kind of work more archivists need to undertake, that is, placing electronic records into their broader context of societal record keeping and communications development.

94. Cook, Michael. "E-Mail Systems, Office Communication and Records Management," in Information Handling in Offices and Archives, ed. Angelika Menne-Haritz (New York: K. G. Saur, 1993), pp. 152-58. Examines records management practices in the context of the development of IT in administration. E-mail is considered in the light of information systems, internal to the organization and external to it. Records management is essentially a structure of linked databases. The development of electronic communication in an organization offers the possibility of building these into the common services provided by the system; details of these are given. Internal communications are matched by external ones, in the form of databases and systems for data exchange. Progress in adopting these.
methods has been slow, but has occurred everywhere. Citations are chosen from British sources on records management practice. (Abstract provided in this volume).

95. Dollar, Charles M. "Trends in New Computer Technology," ADPA 5 (1986): 25-36. Review of developments in microelectronics, storage, software, architecture, data transmission, data conversion, and technology obsolescence. Dollar sees the new technologies as offering "an extraordinary opportunity for archivists to achieve both intellectual and physical control of archival documentation not hitherto possible; to facilitate public access to archival documentation in ways not hitherto possible; and to execute these and other professional activities with increased efficiency and cost-effectiveness."

96. Hedstrom, Margaret "Optical Disks: Are Archivists Repeating the Mistakes of the Past?" Archival Informatics Newsletter 2 (Fall 1988): 52-53. Hedstrom argues that the "short life span of storage media . . . is not the most challenging aspect of preserving records of modern information systems." She then looks at issues such as "system dependency" and the use of information technology standards.


99. Marks, Gregory A. "Implications for Archives of Computer Hardware Advances," in Archivists and Machine-Readable Records: Proceedings of the Conference on Archival Management of Machine-Readable Records February 7-10, 1979, Ann Arbor, Michigan (Chicago: Society of American Archivists, 1980), pp. 149-57. Review of trends in technology (it would be interesting to examine older predictions such as these to determine their veracity and usefulness to information professionals such as archivists).

100. Markus, M. Lynne, Tora K. Bikson, Maha El-Shinnawy, Louise L. Soe. "Fragments of Your Communication: Email, Vmail, and Fax," Information Society 8 (1992): 207-26. How are new media, such as electronic mail, voice mail, and fax, used when people have access to several of them simultaneously? This paper reports findings from a field study of media use in four sizable subunits within two large organizations where most employees had access to email, vmail, and fax. Respondents tended to use multiple electronic media rather than relying on one. However, they also showed a tendency to prefer one medium for asynchronous communication and to use the others for occasional,

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specialized purposes. Further, there were considerable differences across subunits in typical media use patterns. Although respondents expressed strong desires for multimedia integration, this study suggests that technological integration may not necessarily result in seamless, collaborative work. (Abstract provided)


102. Michelson, Avra and Jeff Rothenberg "Scholarly Communication and Information Technology: Exploring the Impact of Changes in the Research Process on Archives," *American Archivist* 55 (Spring 1992): 236-315. A comprehensive description of trends in information technology and trends in research practices. The authors, based on their review of the trends, recommend that the archival profession: 1) establish a presence on the Internet/NREN; 2) make source materials available for research use over the Internet; 3) create documentation strategies to document network-mediated scholarship and the development of research and education networks; 4) develop archival methods suitable for operation with NREN; 5) take user methods and future computational capacity into account in establishing policies on the management of software-dependent records; and 6) recognize and reward initiatives that a) advance archival management of electronic records, b) respond to scholarly use of information technology, or c) promote a network-mediated archival practice. (from executive summary of the report)

103. Nolte, William "High-Speed Text Search Systems and Their Archival Implications," *American Archivist* 50 (Fall 1987): 580-84. After a brief definition of what such systems constitute, Nolte considers their potential meaning for the archival profession. He notes that the combination of cheap storage and retrieval might threaten elimination of the archivist. However, he argues that the existing technological capabilities of such systems do not necessarily include overcoming "serious problems of intellectual control of masses of data." Nolte stresses the need for archivists to work in developing processes for the "automatic indexing of key record fields" and the "standardization of record formats within an organization." The author also speculates that the cheap storage and effective retrieval might lead to the abandonment of the traditional notion of archival appraisal.

104. Nowicke, Carol Elizabeth "Managing Tomorrow's Records Today: An Experiment in Archival Preservation of Electronic Mail," *Midwestern Archivist* 13, no. 2 (1988): 67-75. Encouraged by the speed of transmission and ease of use, many organizations are relying heavily on electronic mail for internal and external communications. What are the implications of electronic mail for the archivist? An experiment was undertaken by the Navy Laboratories History Program to examine use of electronic mail within the Navy Laboratory community and attempt to preserve and archivally manage this evanescent form of communication. (Abstract provided)

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105. Paulapuro, Hannu "The Future of Paper in the Information Society," *Electronic Library* 9 (June 1991): 135-43. The role of paper within the information society, in connection with the growth of electronic media, is discussed. The development of electronic media over the last 10-15 years is briefly reviewed, and trends and developments in paper use in relation to electronic media and other technological developments are explained. Comparisons are drawn between electronic media and paper for information transmission and human use, and the environmental pressures on the paper industry are discussed. The author concludes that paper will be augmented and complemented by electronic media, but not replaced. (Abstract provided). An interesting perspective worth considering.

106. Smith, Ralph A. "Management of Digital Geographic and Computer-Aided Design and Drafting Records," in *Management of Recorded Information: Converging Disciplines: Proceedings of the International Council on Archives' Symposium on Current Records*, comp. Cynthia J. Durance (New York: K.G. Saur, 1990), pp. 84-91. Facilities are being established to store and exchange geographical information. As the technology has evolved, the number and variety of applications have increased and new records management problems have emerged. These problems include establishing standards, maintaining current and non-current records, and maintaining spatial-relationship and related data bases and processes. Geographic information systems also provide a tool for managing data indexed by subject, location and time. They are encouraging the development of electronic information highways. Technology is transforming the role of the archivist into that of a manager of an information network that connects current and non-current data records. (Abstract provided).


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Records Management

This is a sampling of writings from the records management perspective on the impact of electronic information technology on this discipline. Records management literature has typically had a weak view of archives, and it would be interesting to determine the differences in viewpoint of the records managers and archivists regarding electronic records.

110. Aitchison, Wallace G. "The Role of a Records Manager in an Integrated Data Processing System," Records Management Quarterly 1 (October 1967): 15-17, 20-21. The records manager must keep abreast of developments in data processing if he is to maintain his position in the growing field of information management systems. This article reviews some of the problems facing the records manager and suggests how they can be met. (Abstract provided)


112. Fruscione, James J. "A Managerial Framework for Machine-Readable Data Management," Records Management Quarterly 20 (July 1986): 3ff. Management of automated systems is a complex task. Lack of standardization and centralized planning has frequently brought about misunderstanding and confusion regarding the appropriate direction for implementing controls over automated applications. Consequently, organizations must now strive to develop managerial frameworks within which the requisite policies and procedures for machine-readable data management can be instituted. This article explores the key issues involved. (Abstract provided)

113. Katz, Richard N. and Victoria A. Davis "The Impact of Automation on Our Corporate Memory," Records Management Quarterly 20 (January 1986): 10ff. Futurists' predictions about the emergence of an "information economy" have already gained widespread acceptance. This article addresses some of the major technologies driving this change and assessing the impact of these technologies on our ability to preserve and protect vital and historical information in an electronic context. (Abstract provided)


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Basic Archival Functions: Inventories, Surveys, and Appraisal

There is an increasing number of publications on the appraisal of electronic records. The Alan Kowlowitz study is an excellent example of the kind of studies needed, and the Australians' Keeping Data collection of essays is a good place to start.


117. Bearman, David. Collecting Software: A New Challenge for Archives & Museums (Pittsburgh: Archives & Museum Informatics, Summer 1987). Originally prepared for the Computer Museum in Boston. This report examines the history of software and its influences on our society and it addresses the barriers to collecting software as a cultural record. It identifies essential policy distinctions which administrators will need to consider between software collections and other collections of archives and museums. It examines the ways in which software can best be described, made available to researchers, and exhibited and it proposes a framework for a descriptive vocabulary. Further, it identifies the physical requirements and management issues associated with the retention and storage, retrieval and use, of software in cultural repositories. (From the executive summary).


120. Cameron, Ross J. "Appraisal Strategies for Machine-Readable Case Files," Provenance 1 (Spring 1983): 49-55. The author draws on his experience in the Machine-Readable Archives Branch of the National Archives and Records Service and presents general advice about the appraisal of statistical databases. Mostly valuable now as a brief description of what procedures were being used to analyze such records at this time.


125. **Fishbein, Meyer H.** "Appraising Information in Machine Language Form," *American Archivist* 35 (January 1972): 35-43. Chronicles some of the then changing attitudes of the National Archives toward such machine readable records, transforming from a view of such materials as non-record to full-fledged record. Fishbein’s focus is on the large statistical databases and the potential use of these records by subsequent researchers. He identifies nine approaches to be used in such archival appraisal.


127. **Fishbein, Meyer** "A Viewpoint on Appraisal of National Records," *American Archivist* 33 (April 1970): 175-87. After a review of the changing concepts of archival appraisal, Fishbein considers how the growing use of computers in Federal agencies and the increasing interest by historians in quantitative approaches challenges some basic assumptions about appraisal. Along with Dollar’s 1978 article on appraisal of such records, this
essay is an early glimpse into how archivists were approaching the selection of statistical databases in machine-readable form.


129. Hedstrom, Margaret "Is Data Redundancy the Price Archivists Will Pay for Adequate Documentation?" JASSIS Quarterly 13 (Spring 1989): 24-30. Examines implications of large, administrative databases which share data among Federal, State and Local jurisdictions for data acquisition, access, presentation and dissemination. Written for data archivists, the article analyzes differences between traditional archives and social science data archives.

130. Holland, Michael E. "Adding Electronic Records to the Archival Menagerie: Appraisal Concerns and Cautions," Provenance 8 (Spring 1990): 27-44. Assessment of the appraisal of electronic records based on the assumption that the repository is accessioning the electronic records into the repository. Holland focuses on five matters: whether a particular form of the record constitutes the most complete version of the records series; whether the records series is the most stable form of the record available; whether the electronic records series is the most accessible form of the records; whether the electronic records series current format is the most likely use of the information contained in the records series; and, finally, if the format constitutes the most effective and efficient form of the series available.


137. *Reed, Barbara and David Roberts, eds., Keeping Data: Papers from a Workshop on Appraising Computer-Based Records (Sydney: Australian Council of Archives and the Australian Society of Archivists Inc., 1991). Series of papers on the nature of computers and information systems, gathering information about computer systems, case studies of appraising electronic records, and some statements of the relevancy of traditional archival principles to electronic records. This is an extremely important set of readings for any archivist.

138 Roberts, David "The Disposal and Appraisal of Machine-Readable Records -- From the Literature," Archives and Manuscripts 13 (May 1985): 30-38. This is substantially the text of a paper given at a seminar on machine-readable archives, held by the Sydney Branch of the Australian Society of Archivists on 19 November 1983. The paper consists of a survey of literature relating to the disposal and appraisal of machine-readable records, followed by some conclusions about procedures and the identification and discussion of four categories of appraisal criteria, as then drawn from the literature. (Abstract provided)

139. Robbin, Alice "The Pre-Acquisition Process: A Strategy for Locating and Acquiring Machine-Readable Data," Drexel Library Quarterly 13, no. 1 (1977): 21-42. This article describes procedures used to acquire machine-readable data. It is part of a special issue
edited by Howard D. White on "Machine-Readable Social Sciences Data," with other essays on acquisition, cataloguing, reference, and education.


Basic Archival Functions: Description

Little has been done in this area. The Gilliland-Swetland and Hughes study is an interesting new publication, and more such investigation is required.


143. Byrum, John D., Jr. and Judith S. Rowe "An Integrated, User-Oriented System for the Documentation and Control of Machine-Readable Data Files," Library Resources and Technical Services 16 (1972): 338-46. The purpose of this paper is to offer a solution to the problems of documentation and bibliographic control of machine-readable data files. It is a solution which attempts to meet both the needs of the data user and the data librarian. It is designed to make readily feasible the conversion completely or in part to a computer-based operation and to tie in directly to an information retrieval system in the future. The four elements of this documentation and control system are: standard catalogue entries, data abstract or data description forms, content documentation codebooks, and records of physical and logical characteristics of the data set. (Abstract provided)


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145. Gilliland-Swetland, Anne J. and Carol Hughes "Enhancing Archival Description for Public Computer Conferences of Historical Value: An Exploratory Study", American Archivist 55 (Spring 1992): 316-30. This paper reports on a pilot study that explored new approaches to the description of computer conferences. The authors tested methodologies for making archival description for public computer conferences of historical value more rigorous and accurate than would be possible using traditional archival approaches. In their study of the Wing:Span public conference at the University of Michigan, the authors found that a considerable amount of additional and more precise descriptive information could be generated by using unobtrusive observation and statistical techniques to gather and analyze data. They recommend replication of the most productive and cost-beneficial of these methods in the study of other public conferences to assess their potential value as tools to enhance existing archival descriptive methodology. (American Archivist abstract)

Basic Archival Functions: Preservation

There has been ongoing debate about how electronic records should be preserved. The writings below reflect some of this debate. The writings only touch on the growing technical literature about the durability of electronic media. What is truly lacking are case studies on the preservation of such records utilizing creative approaches.

146. Alldredge, Everett O. "Preservation of Documentation for Conventional and Automated Systems," Computer Studies in the Humanities and Verbal Behavior 2 (1969): 39-44. Most computer organizations are the sole users of the magnetic tapes they produce. They are therefore free to make any shortcuts in documentation for which they are prepared to run the risk. When tapes are being used by an organization other than the creating one, however, the using organization requires certain minimal documentation. It cannot exist simply in some "employee's head." "Preservation of Documentation for Conventional and Automated Systems" attempts to describe the documentation necessary for the outside user, using the archival principles for documenting non-machine readable records as the standard for machine readable records. (Abstract provided). This essay basically compares the "preliminary inventory" of the National Archives to the description of electronic records.

147. Anderson, Michael "The Preservation of Machine-Readable Data for Secondary Analysis," Archives 17 (October 1985): 79-93. Straightforward report of a 1984 meeting held at the University of Essex with the "objective . . . [being] to establish the kinds of material now being generated or likely to be generated in the near future, the likely needs and priorities of potential users of machine-readable records, the extent to which current archival policy and activity met these needs, and possible new technical developments which might offer at least partial solutions to the problems." Useful for showing what British archivists were doing with these records in the mid-1980s.

for an organization is electronic data processing (EDP). Failure to have a disaster plan for electronic records may lead to bankruptcy. This article deals with the four major areas of a disaster plan including cost benefit analysis, a review of the options for alternate site locations, an action plan, and testing and maintenance. The article outlines the advantages and disadvantages of disaster recovery sites and the teams needed to bring the data centre back to operation. (Abstract provided)

149. Gavrel, Sue "Preserving Machine-Readable Archival Records: A Reply to John Mallinson," Archivaria 22 (Summer 1986): 153-55. Argues that archivists have been dealing with the challenges of electronic records, stressing the manner in which they have been appraising such records.


152. Kenney, Anne R. and Lynne K. Personius Joint Study in Digital Preservation: Report: Phase I (January 1990-December 1991); Digital Capture, Paper Facsimiles, and Network Access ([Washington, DC]: Cornell/Xerox/Commission on Preservation and Access, 1992). Study concluding that "digital preservation presents a cost effective alternative to photocopying, and -- subject to the resolution of certain remaining problems -- a potential adjunct or alternative to microfilm preservation." This study begins to raise a number of questions about how archival documents in digital form can be provided with the integrity of archival features. See also Anne Kenney with Michael A. Friedman and Sue A. Poucher, Preserving Archival Material Through Digital Technology: A Cooperative Demonstration Project (Ithaca: Cornell University, 1993).


154. Mallinson, John C. "Preserving Machine-Readable Archival Records for the Mil lenia," Archivaria 22 (Summer 1986): 147-52. The author sees that the "problem with machine-readable records is the long-term availability of the machines rather than the physical decay of the recording medium." He recommends microfilming as an approach. His article is a summation of Subcommittee C of the Committee on Preservation of the National Archives and Records Administration. See also Sue Gavrel, "Preserving Machine-Readable Archival Records: A Reply to John Mallinson," Archivaria 22 (Summer 1986): 153-55, which argues that electronic records can be preserved in their original form.

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155. Podio, Fernando L. Development of a Testing Methodology to Predict Optical Disk Life Expectancy Values, NIST Special Publication 500-200 (Washington, D.C.: National Institute of Standards and Technology, December 1991). An example of technical research being done on the durability of electronic storage media. "The most important conclusion of this work is that extrapolated life expectancy values may vary greatly because they depend, among other factors, on the test method used for calculating the quality parameter . . . , the measurement approach including data model used, criteria for data analysis . . . , and the stress conditions. Therefore, prospective users should be aware that claims of a life expectancy specification should be accompanied by specification of the above factors." This work was sponsored by the National Archives and Records Administration.

Basic Archival Functions: Legal Issues, Reference, and Access

Not unexpectedly there is a growing body of essays about legal issues of access to electronic records. There is little, however, on the nature of reference in electronic records. Thus far, there is no user study on electronic records in the print literature.

156. Barrese, Edward F. "Adequacy of Documentation in the Federal Government: Accountability Through the Record," Information Management Review 5 (Spring 1990): 53-58. Brief article considering the problem that the increasing uses of information technology are making it difficult to provide adequate access to certain kinds of information. The author contends that the federal government's requirement to create records documenting its activities is firmly established in federal law." The author then describes the National Archives' four "documentation standards." The essay summarizes a number of recent reports on federal information policy and archives.


158. Brown, Thomas E. "Archives Law and Machine-Readable Data Files: A Look at the United States," ADPA 5, no. 2 (1986): 37-42. "This paper reviews the provisions of the laws relating to archives in the United States, relates them to machine-readable data files in the Federal Government, and then illustrates them with regard to records of the U.S. Bureau of the Census." Brown describes the definition of records, how the Federal laws stipulates that agencies determine what electronic records are created and managed, and the fact that "once the agency has created a machine-readable file it cannot be destroyed without the approval of the Archivist of the United States." The remainder of the article describes issues such as access and uses the Census records as a case study. This is a very interesting article in light of subsequent developments in the PROFNOTES case.

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159. **Chasse, Kenneth L.** "The Legal Issues Concerning the Admissibility in Court of Computer Printouts and Microfilm," *Archivaria* 18 (Summer 1984): 166-201. Written from the Canadian perspective, the author argues that the "law at present does not provide adequately for the admissibility of computer printouts and microfilm documentation." Chasse also emphasizes the need for archivists and records managers to become more active in arguing for necessary revisions to Canadian law. He states that the "basic principles essential or inherent to the reliability of any computerized record-keeping system" should be "set into" the Canadian Evidence Acts. See also his "A Reply to A.F. Sheppard's Commentary On the Admissibility in Court of Computer Printouts," *Archivaria* 20 (Summer 1985): 158-61.

160. "Computer Printouts and the New Microfilm Standard," *Criminal Lawyers' Association Newsletter* 9 (October 1988): 31-33. Written for lawyers, this brief essay notes that because "most of the component parts of such systems come from outside of the organizations that use them, and often their quality control is the responsibility of some external head office or data-processing service bureau" that the "internal accountability" that the Evidence Act assumed is not in effect. This article provides a list of features of computerized record keeping systems that lawyers need to be prepared to examine in terms of the submission of evidence.


162. **Fishbein, Meyer H.** "The Evidential Value of Non-textual Records: An Early Precedent," *American Archivist* 45 (Spring 1982): 189-90. Description of an 1838 Delaware lawsuit "that established an important precedent for the evidential value of nonconventional records." This lawsuit allowed the admission of a notched stick as a record. The author briefly relates this to the management of electronic records and the legal issues of administering such records.


167. Guthrie, Chester L. "New Data to Shape History," American Archivist 30 (1967): 323-31. Very interesting, early essay striving to place the use of computers in organizations into the organization’s decision-making process. Suggests that the creation of better information systems will improve data available to historians and other researchers.

168. Hedstrom, Margaret L. "Computers, Privacy, and Research Access to Confidential Information," Midwestern Archivist 6, no. 1 (1981): 5-18. General statement of the problems to privacy and research access posed by electronic information systems and the need for archivists to begin to resolve such barriers and to develop new policies and procedures.


171. Report of the First National Conference on Issues Concerning Computerized Public Records, 2 vols. (Boston: Public Records Division, Office of the Massachusetts Secretary of State, [1987]). Wide-ranging set of viewpoints regarding the "treatment of commercial requests for public records," fees, direct access, and ownership. The second volume includes survey data on these issues. Generally this is raw data, but it is interesting and useful.

173. Skupsky, Donald S. "Legality of Computer and Computer-Output Microfilm Records," *Records Management Quarterly* 19 (April 1985): 44, 46, 48. The widespread use and availability of computers in the last twenty years has forced the legal system to develop new principles of law to handle this technology. Prevailing legal attitudes toward these records are reflected in both statutes and case law. This article summarizes existing federal requirements for computer records." (Abstract provided)

174. Skupsky, Donald S. "The Legal Status of Optical Disk and Electronic Imaging Systems," *Records Management Quarterly* 20 (January 1986): 56, 58, 60-61. Skupsky notes that at the time of this article, there were no legal guidelines for such systems. Skupsky deals with this by noting similarities to other computerized records and their legal aspects. He suggests that the "key to admissibility in evidence of images and optical disk...will relate to the trustworthiness of the information."

175. Sprehe, J. Timothy "The Significance of 'Admissibility of Electronically Filed Federal Records as Evidence,'" *Government Information Quarterly* 9 no. 2 (1992): 153-67. The first two pages of this article were written by Sprehe about the Department of Justice's Systems Policy Staff paper in 1991 on this topic. The paper, published in full in the remainder of this article, is an argument that the Federal Rules of Evidence apply to electronic and paper records.


**Information Technology Standards**

The potential use of standards to preserve and manage electronic records emerged as an important topic in the mid-1980s. Both the Canadian and United States National Archives have issued reports on these standards, but it is obvious that the archival profession has a long way to go in determining how they can use such standards.


182. **Canada, Bureau of Management Consulting, Supply and Services** *Data and Document Interchange Standards and the National Archives* (Ottawa: Canada Bureau of Management Consulting, Supply and Services, June 1987). The purpose of this document is to provide the National Archives of Canada (ARC) with a landscape document which describes the status and current activities in the information technology standards forum, the key standards bodies which effect the development of international and national (i.e., Canada and the U.S.) standards, and the status and process regarding federal information policy (i.e., Canada and the U.S.) with respect to information technology standards. This document also provides recommendations for action which are designed to maximize the effectiveness of ARC in its role regarding the formation of guidelines for the implementation of information technology standards.

183. **Cox, Richard J.** "The Archival Profession and Information Technology Standards," *Journal of the American Society for Information Science* 43 (September 1992): 571-75. American archivists have long had an interest in standards, although their interest has led to more intensive activity in the past decade. New standards have been developed for arrangement and description of archival records and historical manuscripts, the adaptive use of bib-
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liographic standards, preservation of archival records and historical manuscripts, and the use of information technology standards for the management of archival records in electronic form. Many challenges still remain, however. Most important of such questions is how archivists can play a greater role in the information standards-setting world.

(Abstract provided)

184. Data and Document Interchange Standards and the National Archives (Ottawa: Bureau of Management Consulting, Supply and Services, June 1987). Analysis of information technology standards and the identification of those important to the efforts of the National Archives of Canada to manage electronic records.


186. Protocols Standards and Communication, Inc. The Application of ODA/ODIF Standards Prepared for the National Archives of Canada (Ottawa, Canada: Protocols Standards and Communication, Inc., March 1988). This report provides an introduction to the Office Document Architecture (ODA) and Interchange Format (ODIF), ISO 8613, with a focus on the potential for this standard to resolve a number of National Archives problems related to the acquisition, storage and management of electronic documents. It is argued that ODA/ODIF would be one member of a suite of national and international standards on which a National Archives program to acquire store and manage information electronically is based. Comparison reports dealing with products and conformance support the practicability and long term usability of this standard. Although the report demonstrates a general way how the ODA/ODIF standard can address the NA requirements, it recommends a detailed mapping be developed of ODA features and a document profile attributes to National Archives requirements regarding electronic documents. (Abstract provided)

187. Protocols Standards and Communication, Inc. Application Portability: Prepared for National Archives of Canada (Ottawa, Canada: Protocols Standards and Communication, Inc., February 1989). This report addresses a requirement for information regarding the nature, benefits, and relevance of application portability to the information management policies of the National Archives, and, potentially, of the federal government as a whole. The specific objectives of this report are: to provide an introduction to the concepts, terminology, and benefits of application portability; to describe the status and direction of related standardization activities; to describe the nature of industry support; and to assess the implications for the information management policies of the National Archives and the federal government. (Abstract provided)

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188. Protocols Standards and Communication, Inc. *Situation Report on the Information Resource Directory System (IRDS) Prepared for National Archives of Canada* (Ottawa, Canada: Protocols Standards and Communication, Inc., March 1989). This report addresses a requirement to investigate the concepts, standards and relevancy of the Information Resource Dictionary System (IRDS) to the information management policies of the National Archives and, potentially, of the federal government as a whole. The specific objectives of this report are: to describe the concepts and importance of an IRDS to information management; to describe the status and foreseeable evolution of the IRDS standards within both the American National Standards Institute (ANSI) and the International Organization for Standardization (ISO); to forecast the availability of IRDS-conformance products; and to evaluate the implications of a standardized IRDS for the information management program of the National Archives, and the federal government as a whole. (Abstract provided)


191. Walch, Victoria Irons "The Role of Standards in the Archival Management of Electronic Records," *American Archivist* 53 (Winter 1990): 30-43. Technical standards developed by national and international standards-setting organizations to facilitate the exchange of data among computer systems could provide archivists with mechanisms for ensuring long-term access and use of information stored in electronic form. Staff at the Canadian and United States national archives and the United Nations have conducted several valuable studies in this area as well as contracting for additional investigations by outside experts. The author digests the findings of several of these studies, describing the organization of and processes followed by the principal national and international standards developers and summarizing the elements of thirteen standards identified as having the greatest potential for archival use. (Abstract)

ing proprietary systems that impede access to valuable information. Standards can help organizations preserve their corporate investment by facilitating the portability of software, data, and skills, and the interoperability of computer-based systems. This paper considers major standardization activities in information technology and the underlying principles that influence the success or failure of the standards produced. Finally, to illustrate the critical role of these standards in the management of data, the paper examines current activities in Earth system science. (Abstract provided). Note: Articles in this volume have been filed under Cynthia J. Durance and the volume maintained intact.

Case Studies: Federal Government

*This is the area generating a considerable amount of writing, study, and debate, provoked because of controversies surrounding the manner in which the National Archives has approached the management of electronic records.*

193. Aronsson, Patricia and Thomas Elton Brown "Government Archives and Government Automation: The Odd Couple," Government Publications Review 13 (1986): 561-70. Automated information no longer is simply an appendage to the main body of an organization's records. Two new automated applications have significantly changed the character of organizational records. First of all, organizations have introduced database management systems (dbms). And secondly they have begun using automated systems which can process full textual information. As an organization's use of automation changes, so must the archivist’s approach. This article evaluates the archival impact of a number of the new automated applications, identifies some initiatives underway to solve the problems archivists will face, and highlights some solutions already proposed. (Abstract provided)

194. Committee on the Records of Government: Report (Washington, D.C.: The Committee, March 1985). A landmark study by a blue ribbon committee on the condition of government records, especially their transformation into electronic forms. This is the study that issued a call to the National Archives, the federal government, and the American people to deal with the dangers to the integrity of the documentary heritage raised by the growing use of electronic information systems. Every subsequent federal report has started with this study, and it has been often cited by archivists and researchers. For a summary see Anna Kasten Nelson, "The 1985 Report of the Committee on the Records of Government: An Assessment," Government Information Quarterly 4, no. 2 (1987): 143-50.

195. Cunliffe, Willa and Michael Miller "Writing a General Records Schedule for Electronic Records," American Archivist 52 (Summer 1989): 350-56. The National Archives and Records Administration confronted the difficult question of how burgeoning electronic records should be scheduled and appraised when, in 1986-88, it revised the existing General Records Schedules as they pertained to the disposition of machine-readable records. The committee of custodial and appraisal archivists substantially revised GRS 20, the existing nontextual schedule for machine-readable records, and created new provisions in GRS 23, which, for the first time, addressed the issue of electronic records created on
personal computers or in office automation systems. The authors discuss the fundamental archival questions raised in the revision process, describe how the issues were resolved, and evaluate the results. (Abstract provided)


198. Harrison, Donald Fisher "An Archivist's Challenges: Adapting to Changing Technology and Management Techniques," IASSIST 10 (Spring 1986): 8-13. Focuses on the "National Archives" acquisition process as a form of access." "This paper addresses three threats to the acquisition of machine-readable records: the threat of an onslaught of hardware and software incompatibility, the threat of discontinuity within textual records series brought about by end-users with microcomputers and the threat brought about by new management techniques from the Paperwork Reduction Act of 1980."


201. Herschler, David H. and William Z. Slany "The 'Paperless Office': A Case Study of the State Department's Foreign Affairs Information System," American Archivist 45 (Spring 1982): 142-54. A straightforward description of a full text retrieval system, warts and all, with a brief discussion of its implications for archival work. Despite its publication in this journal, the discussion of implications for archivists is brief and too general.

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202. National Academy of Public Administration. *The Archives of the Future: Archival Strategies for the Treatment of Electronic Databases: A Study of Major Automated Databases Maintained by Agencies of the U.S. Government* (Washington, D.C.: NAPA, 1991). This study was prepared for the National Archives. Its examination of over 9,000 databases led to the identification of 789 as having potential long-term historical value and a series of recommendations to improve the National Archives' work with electronic records. Among these recommendations were that the National Archives should participate in the development of a Federal government locator system, become more aggressive in the identification of electronic databases, work to ensure that archival concerns be addressed in the development and use of electronic databases, establish a position on electronic mail and bulletin board systems, and consider the development of a policy framework for agencies to maintain electronic databases. Also see J. Timothy Sprehe's article about this report.

203. National Academy of Public Administration. *The Effects of Electronic Recordkeeping on the Historical Record of the U.S. Government: A Report for the National Archives and Records Administration* (Washington, D.C.: National Academy of Public Administration, 1989). A report commissioned by the National Archives in 1987 to determine the "impact of electronic technology on the historical record of the federal government" and, more specifically, "to determine the extent to which electronic technology has pervaded the government, and whether or not decision-making or policy documents were being lost." The report concluded that policy records are maintained in hard copy, but that the electronic information technology posed increasing problems for the National Archives. The report made a large number of recommendations, including that the National Archives should develop a long-range plan for dealing with the technology, work on developing appropriate procedures for the management of electronic records, create mechanisms for working in the information technology standards setting community, support research in electronic records, and assess its own capability for working with such technology. This is an important report for understanding and evaluating the National Archives' performance in the administration of electronic records.

204. Nelson, Anna Kasten. "Challenge of Documenting the Federal Government in the Latter 20th Century," *Prologue* 14 (Summer 1982): 89-92. In describing the challenges, Nelson asks some very fundamental questions with implications for electronic records management: "why can't agencies manage their own records?"; "why do all archivists in the federal government have to work in NARS, so far away from the record-making process?"; and "why must every government archive come under one roof?"


ministration report, *The Archives of the Future: Archival Strategies for the Treatment of Electronic Databases*. Sprehe notes that "NAPA reinforced a message that is becoming a consistent theme in federal information resources management circles: archival concerns must be represented when agencies design databases."


208. U.S. National Archives and Records Administration, Center for Electronic Records "Strategic Analysis: The Implications of Electronic Records on the Programs, Activities and Responsibilities of the National Archives and Records Administration." Unpublished paper, May 1989. Unpublished report on future plans for the Center for Electronic Records and its responsibility to manage Federal government electronic records. It notes its lack of resources, primarily because of the National Archives' efforts to plan for and move to its new facility, and its perception of legal authority to deal with the problem. The report makes a number of recommendations in the areas of cooperation with other Federal agencies, taking leadership in this area, improving reference service, and in planning for the Center's work. Illuminating report for understanding the difficulties faced by the National Archives in working with electronic records.


210. *U.S., House Committee on Government Operations Taking a Byte Out of History: The Archival Preservation of Federal Computer Records* (Washington, DC: U.S. Government Printing Office, 1990). This report questions the long-held assumption that Federal agencies maintained their important policy records on paper. This report documents the increasing use of electronic information technology, questions whether electronic records can be physically preserved, notes that information technology standards cannot solve all the preservation problems, and, most importantly, notes that "NARA's current policies are inadequate to assure the long-term preservation of electronic records." The report recommends that NARA needs to reevaluate its efforts in this area and some broader Federal government information policies.

records, with information on definitions, disposition, inventoring, the use of records retention schedules, appraisal, and the maintenance and use of electronic records. Forms and a glossary are included. This publication is mostly useful for understanding how NARA has been working with electronic records in recent years.

Case Studies: State Government

Despite considerable discussion by state archivists about the ways to handle electronic records, the publications reflect significant activity in only a few states. There is also a need for new efforts to evaluate the effectiveness of various approaches to managing electronic records.

212. Belding, Richard N. and Larry G. Fortson "Kentucky's Machine-Readable Challenge," Provenance 3 (Spring 1985): 58-69. This is the only readily available on Kentucky’s efforts to establish an electronic records program, initially assisted by an National Historical Publications and Records Commission grant. Kentucky has gone on to be one of a few states to make a sustained effort to care for electronic records and to be involved in state information policy.

213. Caudle, Sharon L. and Donald A. Marchand Managing Information Resources: New Directions in State Government (Syracuse: Syracuse University, School of Information Studies, Center for Science and Technology, August 1989). This is an important effort to determine the nature and extent of information resources management in state government. Included in this study is a useful effort to analyze the nature of state records management and archives, providing a context for recent discussions by archivists about state records, the increasing use of electronic information systems, and information policy. Archivists should be aware that the knowledge by the authors of archives is limited.

214. Fletcher, Patricia T. "Electronic Records Management in State Government: Planning for the Information Age," Records Management Quarterly 24 (October 1990): 26-32. A national study of information resources management in the fifty state governments revealed that the management of electronic records is fast becoming a top priority item for records managers. Most states do not have schedules for electronic records, nor do they actively plan for their management. The proliferation of personal computers at the state level and the overall increase in the amount of information generated by government makes this oversight a critical one. Pockets of innovation are identified by the national and examples of their programs are presented. (Abstract provided).

215. Florida, Joint Committee on Information Technology Resources Florida's Information Policy: Problems and Issues in the Information Age (Tallahassee: Florida Joint Committee on Information Technology Resources, April 1989). Includes a chapter on archives and records management, basically concluding that the state government’s growing use of information technology has outstripped the state’s ability to ensure the preservation of electronic records.

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216. Fox, Michael J. "The Wisconsin Machine-Readable Records Project," American Archivist 47 (Fall 1984): 429-31. Brief description of the project conducted by the State Historical Society of Wisconsin in 1981-83. The purpose of the project was to assess the "impact of computer technology on record keeping by state government agencies" and its implications for the "archival preservation of public records." The SHSW was the pioneer state archives in work with electronic records.

217. Hedstrom, Margaret and Alan Kowlowitz. "Meeting the Challenge of Machine-Readable Records: A State Archives Perspective," Reference Services Review 16, no. 1-2 (1988): 31-40. This is a case study of the early development of an electronic records program at the New York State Archives; it is, in fact, one of the few such case studies available on this topic. The authors especially consider the problems in developing such a program when there is a lack of serious effort to work with such records for several decades.


220. New York, State Archives and Records Administration. A Strategic Plan for Managing and Preserving Electronic Records in New York State Government: Final Report of the Special Media Project (Albany: New York State Archives and Records Administration, August 1988). Final report of a project initiated in 1985 "to assess the adequacy of State government policies and procedures for the management of computer-generated, machine-readable records, and to develop a program for the long-term preservation of selected, valuable machine-readable records at the State Archives." The report looks at the "impact of key trends in information technology on the capacity of State agencies and SARA to manage and selectively preserve records to meet legal, fiscal, administrative, and research needs": "seven broad objectives for records management and archival programs which will help SARA and State agencies respond to the challenges posed by new record keeping technology"; and "27 activities that State agencies and SARA must undertake to accomplish better management of machine-readable records during the next five years.”

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223. Trego, Lori A., comp. *National Information Management Survey of Automation and Machine Readable Records* (Columbus: Ohio Department of Administrative Services, Information Management, 1987). Results of a telephone survey to determine the use by state governments of automated information systems and the effects by state archives and records management programs to administer these records. Concluded that "machine-readable records management . . . is very much in the planning stage . . . ."

**Case Studies: Local Government**

*A complete lack of writing on this topic.*


**Case Studies: International**

*The work of the National Archives of Canada and the United Nations make this area worth following.*

225. Barry, Richard E. "Getting It Right: Managing Organizations in a Runaway Electronic Age," in *Information Handling in Offices and Archives*, ed. Angelika Menne-Haritz (New York: K. G. Saur, 1993), pp. 27-55. Focusing on the experience of United Nations organizations, Barry sees that the solutions to managing modern information systems are less technology-oriented than a factor of policy, organization, and management. In this essay the author considers the variety of approaches (such as the use of technology standards) and the changing roles of archivists and records managers.

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227. Bikson, T. K., and S. A. Law "Electronic Information Media and Records Management Methods: A Survey of Practices in UN Organizations." Information Society 9, no. 2 (1993): 125-44. This is a 1991 update of a 1988 survey of the use of electronic information technology in United Nations organizations. It examines the role of telex, facsimile, and electronic mail. The primary value of this study is an analysis of the changing use of information technology in a brief period of time. The article argues that the use of the technology continues to outstrip traditional records management and archival approaches to the management of records. The changes in this brief time period are interesting to note; the survey revealed there was "a much greater awareness of records management problems stemming from the proliferation of electronic information and communication media" (p. 141); an increase in the use of the technology; a "new tension between centralization and decentralization" of records and information systems (p. 142); a greater amount of activity in trying to provide "near-term technological solutions to electronic records management problems" (p. 142); a continuing lack of high-level policy decisions about the records problems; and the lack of development of procedures for the "identification, capture, and subsequent management of electronic records in electronic form" (p. 142).


230. Carroll, M.E. "A Perspective of Machine-Readable Archives and Public Service," ADPA 2, no. 1 (1976): 7-10. Writing from the Canadian perspective, this essay reviews the kinds of services available for the use of electronic records, such as tape copying and data analysis and the requirements for providing such services.

232. Danilenko, I.I. and V.V. Tsaplin "Archival Storage of Machine-Readable Documents: Soviet Experience", ADPA 4, no. 3 (1984): 33-40. In 1982 the Central State Archive of the National Economy of the USSR established a program for the "archive-storage of machine-readable documentation." This essay describes the development of a statute and its provisions for such records and contends that "machine-readable documentation, whatever its specifics, is covered by the main organizational and scientific principles of Soviet archival science."


239. **Parer, Dagmar, Steve Stuckey, and Andrew Wilson** "Electronic Records: Issues Facing the Australian Archives." *Informa Quarterly* 7, no. 3 (August 1991): 31-34. A brief description of the Australian national archives efforts to manage electronic records, increasing uses of this country's governments of electronic information technology, and comparisons with approaches being used by other national archives.


Case Studies: Organizations

*This is another area needing serious research and study. Archivists have not drawn on the considerable body of research about the organizational impact of electronic information technology to determine its meaning for electronic records management, corporate memory, and institutional archives.*

241. **Finholt, Tom** "The Erosion of Time, Geography and Hierarchy: Sharing Information Through an Electronic Archive," in *Information Handling in Offices and Archives*, ed. Angelika Menne-Haritz (New York: K. G. Saur, 1993), pp. 67-90. This study examined the use of two electronic archives of help information by employees of Tandem, Inc. One archive consisted mostly of working expertise, or informal knowledge, while the other archive consisted mostly of canonical expertise, or formal knowledge. The location of sites, level of experience of employees at sites, and the size of sites within Tandem were predicted to influence both the selection of archives and the amount of use of archives by help-seekers. Remote, inexperienced, and small sites were expected to use both archives more heavily than near, experienced, and big sites -- and to use the archive with working expertise more than the archive with canonical expertise. Results showed that remote sites used the electronic archives more than non-remote sites. Further, sites with inexperienced employees used the electronic archives more than sites with experienced employees. Finally, these patterns were more pronounced for use of the archive consisting of working expertise than for the archive consisting of canonical expertise. (Abstract, p. 67)


244. **Stout, Leon J. and Donald A. Baird** "Automation in North American College and University Archives: A Survey," *American Archivist* 47 (Fall 1984): 394-404. Includes discussion of the academic archives work with electronic records, concluding that while there were such activities they were restricted to such aspects as storage and related areas. A good benchmark study for work in the early 1980s.

245. **Thexton, J. E.** "Archival Potential of Machine-Readable Records in Business," *American Archivist* 37 (January 1974): 37-42. General description of the use of computers by businesses, with particular emphasis on the author’s corporation, Ontario Hydro. Argues that since much of the use of the computer is for statistical analysis, there is little reason to maintain such data once it has been used and summarized in some other form.

**Case Studies: Data Archives**

*A study is still needed to determine the impact of social science data archives on the development of approaches to electronic records management.*


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247. Geda, Carolyn L. "Social Science Data Archives," American Archivist 42 (April 1979): 158-66. Brief overview of the efforts to develop programs for the "collection, processing, documentation, preservation, and dissemination of computer-readable research data." Valuable mostly as background of activities never completely connected to the mainstream archival community, although a rich source for the small group of archivists responsible for electronic records.


249. Heim, Kathleen M. "Social Science Information Needs for Numeric Data: The Evolution of the International Data Archive Infrastructure," Collection Management 9 (Spring 1987): 1-53. Collection development for specific disciplines requires a comprehensive recognition of the idiosyncratic needs of each discipline. Ideally this recognition would be grounded in a well-developed model of information-seeking behavior that would take into account formal and informal channels of communication regardless of format. In an effort to extend understanding of social scientific collection development requirements beyond traditional printed sources, this paper will discuss the evolution of data use in the social sciences to 1975. Although this will illuminate but one direction for collection development considerations, it is the author's intention that this presentation will emphasize the complexity of social scientific information needs that lie outside a print orientation. (Abstract provided)


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Figure 1

Writings on Electronic Records by Type, 1970-93

- Basic (40%)
- Theory (24%)
- Research (13%)
- Case Study (23%)
Figure 2

Writings on Electronic Records by Period, 1970-93

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