

# The American Archival Profession and Information Technology Standards

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**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 bibliographic 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. © 1992 John Wiley & Sons, Inc.**

Archivists, it seems, should be interested in standards because they can help to conserve limited resources, unite the profession, promote cooperative ventures with other related disciplines, and assist in attaining professional and institutional objectives. However, such a view of standards has not been commonplace, at least until very recent years, in the American archival profession.<sup>1</sup>

Because of the increasing recognition of the basic similarities inherent in any archival document, and because of the increasing utilization of electronic information technology (which is itself built on standards) for creating records with archival value, many archivists have turned their attention from a document's uniqueness to the common issues of information exchange about archival holdings, the preservation of recorded information, and the control of electronic archival records. Nevertheless, the American archivists' perspective toward standards (which affect all these common concerns) has been passive—utilizing de facto or consensus standards when beneficial or adhering to de jure

standards when necessary. Some of this perspective is probably due to the archivists' primary attention to records on paper readable by the human eye.

Most of the American archivist's attention to standards has occurred in the area of description of archival and historical manuscript holdings. Such description has been a long-term interest for the American archivist; in fact, judging by the archival literature and other activity, description has been the defining activity. Rules for describing archives and historical manuscripts date back to the late nineteenth century and continued to be refined through the first half of the twentieth century via the publication of institution-specific guides to archives and manuscripts.

In 1958, the newly formed staff of the *National Union Catalog of Manuscript Collections*—the first systematic national effort to describe archival records and manuscripts—began requiring the reporting of manuscripts and archival records that conformed to a certain set of data elements. In 1976, the Society of American Archivists' Committee on Finding Aids published *Inventories and Registers: A Handbook of Techniques and Examples*. That work became the starting point, if not a standard, for most archival and historical manuscript repositories, summarizing a generation of activity on the development of finding aids and demonstrating the relationship between finding aids designed for archival records and historical manuscripts. The work of the Society of American Archivists' National Information Systems Task Force (NISTF) led to the 1984 publication by the Library of Congress of the U.S. MARC AMC (Archives-Manuscript Control) format, based on the general MACHine Readable Catalog (MARC) standard, which is predicated on the ANSI Z39.2-1985 (Bibliographic Information Exchange) standard.

The use of this latter standard (the AMC format) has resulted in the preparation of interpretative manuals and, perhaps, revolutionized the archivist's attitude toward standards; archivists are now purposefully determined to work within the more established and well-supported library standards world, even though this involvement can still be seen as a passive process in the archivists'

<sup>1</sup>This article is based primarily on the author's experience as an American archivist. The article is also an outgrowth of the author's preparation of one of the plenary addresses ("Standardizing Archival Practices: A Tool for the Information Age") at the 1992 meeting of the International Council on Archives, and his dissertation (completed in 1992) on the topic of the American archival profession and the management of electronic records.

initial adoption and adaption of library standards. Now archivists are also concerned with the use of additional bibliographic standards such as *The Anglo-American Cataloguing Rules* (2nd ed.), and the *Library of Congress Subject Headings* (Hickerson, 1991; Weber, 1991). Steven Hensen, one of the architects of American archival descriptive standards, summarized some of these significant developments by noting that the "very existence of the AMC format owes much to a kind of sea change in archival thinking that occurred prior to its development" (Hensen, 1991, p. 242). The "sea change" has probably affected archivists' attitudes about other standards as well.

Another traditional area of standards interest by American archivists has been in the area of preservation. In the archival (and library) preservation community, the most recent major work has come in the defining of a nonalkaline paper standard and lobbying for the adoption of this standard's use by paper manufacturers and for the use of this standard in purchasing paper for the creation of government records and for the publication of books. Again, American archivists have followed the lead of their librarian counterparts, adapting their work and standards to suit their own needs. Such attention continues because of the evidence that paper will persevere in playing an important role even as the electronic information age continues its evolution (Paulapuro, 1991). Archivists have also adopted, adapted, or promoted standards in other preservation areas such as photography, microphotography, and other imaging media (Walch, 1990). The increasing use of electronic records has caused increased discussion about other kinds of preservation standards.

Frederick J. Stielow noted that

one must recognize that the financial concerns of the computer industry do not necessarily serve the preservation of records. The automation industry has vested interests in producing new and proprietary products with little continuity or thought of preservation—the reverse of an archival perspective . . . The results are technology-driven selections fraught with rapid obsolescence, compatibility problems, million dollar mistakes, and vaporware. (Stielow, 1991, p. 3)

These kinds of concerns challenge accepted archival theory, as well as cause the archivist to move "from a focus on an information-medium continuum . . . to an information independent model" (Stielow, 1991, p. 4). As Stielow pointed out, these matters bring the archivist face-to-face with the concern of technology standards.

American archivists have become increasingly attentive to standards because of the growing use and importance of electronic information technology; it is here that there seems to be some potential for a break with the archivist's more passive perspective toward standards. In the federal government, for example, it has recently been estimated that by the year 2000 at least

75% of all federal transactions will be done electronically; even by early 1991 one partial effort had already identified more than 9000 major electronic databases being used by the federal government. The National Archives and Records Administration has traditionally accepted transfers 30 years after the record's initial creation, a practice that is very difficult to accomplish effectively when the records are in electronic form.

Standards are becoming the object of attention as the main means by which to integrate archival codes so that the records can be maintained in a usable format (Rogers, 1991, pp. 49, 51); that is, archivists are now beginning to think of creating new standards, both de jure and consensus, to manage archival records in electronic form. Examinations of electronic records have also led archivists to admit that much of their systems and practices were oriented to the management of paper records. Two archivists knowledgeable about information technology standards noted the need for a "radically different approach." They stated "In a paper system, there is a one-to-one relationship between a paper form and the information on it. In an electronic database, information displayed on a form may be spread over different files, databases, or, in a truly distributed application, over several organizations and dispersed locations. Yet, to the viewer, the disparate information appears to be a single document" (Dollar & Weir, 1991, p. 193).

Standards, especially in the face of the increasing uses of electronic information technology, still require some careful strategic planning by archivists concerning use, creation, and evaluation. For example, archivists face a number of problems evaluating electronic records that predate currently accepted standards. Stephen Hannestad, of the National Archives, summed up this challenge when he stated in an interview the difference in problems between databases and text bases. Hannestad stated

For us, perhaps, the best answer to the text problem is printout on archival bond with carbon ribbon. We guarantee it will be readable in 500 years. There is no electronic media that we can say with any assurance will be readable in 100 years. The current certification on optical storage stops at about 30 years. (Menke, 1991)

On the other hand, a number of archivists have already identified existing information technology standards that must be adhered to in order to enable them to meet their mission in an increasingly electronic world (Dollar & Weir, 1991). In Canada, for example, the National Archives and the Canadian Workplace Automation Research Centre have joined together to consider how electronic office systems can best be managed to ensure their continuing effective use and to protect that portion of the records having continuing value through the definition of archival requirements. The foundational result of this effort was the development of FOREMOST (FORMal REcords Management and Of-

Office Systems Technology), a set of standards for office systems (Walch, 1990). The differences in approach to electronic records and their related standards by the two North American national archives suggest continuing debate, uncertainty, and confusion about such matters in the archival profession.

### **Considering Archivists and Standards: A Newly Emerging Proactive Perspective**

What are some of the information technology standards that archivists need to be attentive to in their work? The most obvious and potentially most important is the body of specific standards being developed for the Open System Environment (OSI) reference model, adopted in 1979 as an international standard (ISO 7498), in order to support the interoperability of computers. Specific OSI-related standards identified by archivists thus far are those for MHS (Message Handling System), FTAM (File Transfer, Access, Management), DFR (Document Filing and Retrieval), and DTAM (Document Transfer, Access, and Manipulation). Archivists have also expressed interest in the potential use of a variety of data-exchange standards, including SGML (Standard Generalized Markup Language), EDI (Electronic Data Interchange), IRDS (Information Resource Dictionary System), CGM (Computer Graphics Metafile), and ODA/ODIF (Office Document Architecture/Office Document Interchange Format).

The archivist's shift to standards for dealing with information technology represents, in its own right, a major shift in the way the profession has approached electronic records. Canadian archivist John McDonald has noted that the "standard practice for acquiring such data has been to convert the data to a simply structured rectangular format for storage on high-quality magnetic tapes" (McDonald, 1991, p. 232). This process was suitable, as McDonald suggested, for large statistical databases, but the increasingly dynamic nature of the electronic environment has shifted the archivist away from such practices to analyzing information standards governing interoperability and related matters as preferred strategies.

Considering such standards has led to considerable dialogue about the degree to which archivists should be involved in the standards-setting world. As mentioned earlier, archivists' role in advocating for standards about paper production and use, indicate that they can participate in the standards world. However, few archivists have been involved in or are even aware of the ways that standards are defined, agreed upon, and regulated. Canadian archivists seem to have adopted a more aggressive approach to stipulating what standards will be used, as well as promoting their own profiles of standards to be used. U.S. archivists have, in most cases, taken more of a "wait-and-see" attitude, letting the marketplace and

other factors sort out what information technology standards will be the most stable and prevalent.<sup>3</sup>

### **Defining Issues for American Archivists and Standards**

The questions associated with the American archival profession's use of information technology and IT standards are, nevertheless, many. Typical of the kind of challenges is the recent rejection by the Association for Image and Information Management (AIIM) of the word "archival," so as not to convey that microfilm and electronic media are permanent and to avoid some misapplied promotional efforts by vendors (Adelstein, 1991). This rejection implies that archival-like issues and questions (about such matters as information preservation and selection for preservation) are being addressed by information professionals other than archivists. In my opinion, the main problems for American archivists working with electronic records and standards are three: (1) overcoming the primary archival culture which has been primarily formed by the historical-humanities world; (2) developing mechanisms for improving the education of archivists about standards; and (3) improving archivists' involvement in the standards-setting world.

### **Overcoming the Traditional Historical-Humanities Ethos of the American Archival Profession**

The modern American archival profession originated as part of the professional historical community in the early twentieth century. One legacy of this historical development has been a continuing orientation to historical knowledge, methodology, and research use. The increasing use of library science standards and recognition of the importance of information science, given the prevalence of information technology, has created tension within the archival community. A debate has ensued on whether archivists are historians, to be educated as part of that world, or whether they belong to the information professions. One archival educator, teaching within a graduate history department, recently characterized the prospects of educating archivists in library and information science schools as being no more than producing "technocrats" or "programmers or data entry clerks" (Pettit, 1991). The real concern is how archivists are to cope with the complex and rapidly changing world of electronic information technology. Part of this coping

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<sup>3</sup>See, for example, the U.S. 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, DC: National Academy of Public Administration, 1989) and 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).

must come in the archivists' increasing involvement with information technology standards—not just monitoring them, but creating standards that guarantee that information of continuing and evidential value is identified and preserved. The previous historical-humanist ethos must be expanded to place archivists more firmly in the information professions so that the archivists naturally work with information technology standards.

### **Developing Mechanisms for Educating Archivists About Standards**

Following the Canadian lead, American archivists seem to be moving to the development of their own Masters of Archival Studies degrees. To date, however, this movement has not focused much on the importance of information technology standards in curricular expansion and reform. In 1990 and 1991, the SAA's Committee on Automated Records and Techniques has considered the curriculum in both these areas, but there are few graduate archival education programs that include enough courses in which training about standards could be anything but superficial. Margaret Hedstrom, one of the archival pioneers in working with electronic records, has written that

standards for encryption, compaction, storage, and data or document interchange are essential to enable future access to records stored on magnetic and optical media, to make their preservation affordable, and to permit migration of information between generations of storage and retrieval technologies. (Hedstrom, 1988, p. 53)

If such standards are "essential," then it is essential that archival students are introduced to their nature and importance and assigned practical work with them in fieldwork experiences. In the U.S., however, there are only a handful of archival programs working with electronic records and, in all of North America, there are only two full graduate courses on electronic records taught to future archivists. Continuing education has filled in some gaps, but a decade of such educational offerings has not yet had significant impact on archival practice. There is also the additional problem of what archivists can use to teach about such information technology standards. Some case-study literature on standards from the archival perspective is beginning to appear, but it is only a beginning; even research on the nature of such standards from other perspectives is mixed and much of it is certainly not applicable to archivists (Spring, 1991).

### **Improving Archivists' Involvement in Information Technology Standards Development**

Information technology standards development is complex, expensive, and time-consuming. It operates on national, regional, and international levels, and involves

many different standards organizations as well as technology vendors and users. Until the early 1980s, American archivists generally stayed away from this world. Both the Canadian and American national archives have developed experts in this realm and supported their work and participation, but there are few other archival programs with the resources or expertise to operate in this world.

Archivists are now well-represented on bodies involved with the National Information Standards Organization (NISO) bibliographic standards (Z39) because of their development and use of the U.S. MARC AMC format. The SAA has taken the most promising recent step when it created a standing committee in 1990 to focus on standards; but the recent origins of this body and its focus on all standards, not just information technology standards, makes its ultimate impact extremely uncertain. A number of state government archives have begun to make certain standards requirements for state agencies, building on their legacy of regulating other standards in such areas as microphotography and fire and environmental controls. Not only is this legacy uneven in success, but the active involvement of archivists in standards setting might be the greatest challenge of all. Archivists, it seems, must convince the information technology standards committees and other organizations that their questions and concerns of preservation, access, and use are relevant and essential to both the information technology vendors and users. This has happened, to some extent, with the Z39 bibliographic standards. In fact, the importance of the archivists' work and perspective is sufficient enough that many technical committees and other standards organizations should provide slots and support for archival representatives. The development and use of information technology standards seems, ultimately, to be for naught if the archival perspective on the preservation of evidence and other important information is absent.

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