Introduction

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This issue of Library Trends is devoted to an in-depth examination of technical standards that affect the library and information sciences and related publishing practices. Nine articles have been prepared for this issue by people who have extensive knowledge of and experience in the development, promotion and use of standards.

Standards may address any area of concern, and they may be either descriptive at the one extreme or prescriptive at the other. Standards are intended to make it possible for those who apply them to achieve a greater degree of compatibility among their practices, procedures, techniques, equipment, data, and so on. Such compatibility must, however, achieve a careful balance between competition (and invention and innovation) on the one hand, and collusion (and stagnation) on the other. And, of course, it is not easy to predict exactly the effect of any standard prior to actual employment in routine operational settings. Economic factors play a part at least as important as that of quality or consistency in determining the nature and use of standards.

Standards no doubt represent something of a mystery to many people, even to those whose work must follow particular standards. Where do standards come from? Who enforces standards? How do you and I become involved in standards development? These and many more related questions are addressed first by Henriette Avram, Sally McCallum and Mary Price (all of the Library of Congress). In this paper you will read not only about the American National Standards Committee (ANSC) Z39, but about other standards-making bodies, such as the

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International Organization for Standardization (ISO), International Council of Scientific Unions—Abstracting Board (ICSU-AB), Unesco, National Bureau of Standards (NBS), and many more. This excellent article considers both formal and informal standards and many of the organizations that are involved in their development, promulgation and use.

But knowing the organizations that are involved in standards development is insufficient to enable us to understand standards development. We also need to know how standards are actually developed. Robert Frase (formerly Executive Director of ANSC Z39, now retired) takes on the task of analyzing and reporting on the procedures for development and access to published standards. Both national and international procedures are examined. Frase presents a well-crafted view of the formal and informal strictures under which various bodies operate in developing standards. His article, together with that of Avram, McCallum and Price, presents a coherent, in-depth look at the who and how of standards development.

Standards development is a slow and costly process. For this reason, among others, I have attempted to construct a model to facilitate the development of an integrated set of standards. Up to now, standards development in the library and information sciences and in related publishing practices has followed a rather incoherent approach. The model I present is aimed at providing a framework within which standards development can take place, and which should prevent redundant and/or conflicting standards from being developed. The model should also facilitate the establishment of priorities for standards development.

The next four papers in this issue treat aspects of standards development and use within the context of the model I have proposed. Thomas Brown (Washington Library Network) first deals with communication standards. Any message in a communication system is structured in a more or less well-defined way that affect the successful interpretation and use of the message by the recipient. Brown considers in particular online communication involving two or more computer systems, and discusses those standards which have been or are being developed to facilitate communication of data. As Brown shows, the bulk of this standards development work has been done outside the library and information sciences.

Walter Crawford (RLG, Inc.) next considers the standards related to the structure of data contained within a message. His focus is on ANSI Z39.2-1979(R) (and the parallel international standard ISO 2709), since this is one of the most important standards yet developed for use by
the library field. Other standards are also treated by Crawford, but he shows that these are used in quite restricted circles and have not had the significant influence in the fields of library and information science and related publishing practices that Z39.2-1979 has had. All is not a bed of roses, however, as Crawford shows in exploring the costs of implementation and use of data structure standards.

One of the most thorough and thoughtful papers in this issue is that written by Robert Tannehill (Chemical Abstracts Service) and Charles Husbands (Harvard University), with the assistance of Linda Bartley (Library of Congress). Their subject is “data representation conventions and standards for bibliographic data elements.” In my opinion, librarians, information scientists and those involved in publishing seem to delight in perpetuating disparate conventions for representing the values of the vast assembly of data elements with which we deal every day. Date is just one example. “1982 July 4” can be (and is) represented in any of the following ways (among others):

- July 4, 1982
- 4 July 1982
- 19820704
- 820704
- 4/7/82
- 7/4/82
- 7.4.82
- 4.7.82
- 4.VII.82
- 82185

The confusion and error this richness of variety has caused is unjustifiable. The U.S. counterpart of the international standard for representation of dates is ANSI X3.30-1971. This standard prescribes a hierarchical structure beginning with the most generic part (millenium) and ending with the day of the month. A related standard for representing time (ANSI X3.51-1975) simply extends this hierarchical structure to hours, minutes, seconds, and so on. Despite the existence of these standards, there is little adherence to them.

Tannehill and Husbands consider a wide range of problems and developments in standardization of data element values, and conclude that: “Strengthening of the existing standardization process would appear to be in order if standards are to play the viable role that is needed in order to achieve consistency, accuracy, and efficiencies in bibliographic data transmission and use.”
The importance of standards in the foregoing categories notwithstanding, the manner in which data are displayed can easily negate the benefits of employing these standards. Hickey and Spies examine existing and proposed standards for presentation (display) of information in various forms. Although we usually think of display in visual terms (the mode emphasized by Hickey and Spies), audio and tactile displays are becoming important (primarily for those with impaired hearing or sight). The article by Hickey and Spies deals with a wide range of standards for information display, and one of its strengths lies in the identification and description of standards that fall within the category. Despite the number of standards identified, the authors note that little use is made of them by designers and developers, although users are becoming increasingly vocal in expressing their dissatisfaction with this state of affairs.

Speaking of use brings me to the penultimate paper in this issue. Sandra Paul (SKP Associates) and Johnnie Givens (Metrics Research Corporation) have taken on the very difficult task of writing about the application and use of standards in ordinary production operations or in routine daily use. While the literature seems to be rather extensive in regard to the need for and development of standards, there is very little literature dealing with the actual use of standards. The paper by Paul and Givens is thus an important contribution to the standards literature. These authors treat standards from the point of view of their importance to authors, publishers, librarians, abstracting and indexing services, and readers, and they discuss both the apparent benefits and the problems of standards use by these various groups. It is unfortunate that no one has carefully studied and reported on the effect of adoption of one or more standards on the cost and ease of use of information systems.

James Wood (Chemical Abstracts Service), who has been involved in standards work for many years (most recently as chairman of ANSC Z39), concludes this issue with a careful examination of the factors influencing the use of technical standards. He uses as a framework for his presentation the elusive nationwide library and information service network. Wood treats in an authoritative manner the activities that have taken place during the past decade or so, and the review rhetoric regarding the need for and value of standards in relation to the objective of a nationwide information transfer system. He points out that while much has been said or written about the need for and value of standards, the fact is that their adoption and use "has been spotty at best." Some people will view Wood's article as painting an overly bleak picture of the current state of affairs in standards adoption and use. The article is,
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rather, a well-reasoned examination of the political, economic and social factors that influence standards development and adoption, and it is a very important contribution to this issue.

Finally, let me say that no task worth doing is without some difficulty. I had planned one additional article for this issue dealing with standards for media and the housing of media. This subject area was intended to cover standards for paper, card stock, film, ink, and the like, as well as standards for temperature, humidity, light level, atmospheric content, and so on. Unfortunately, none of the people I contacted to write in this area were inclined to do so, hence the absence of an article in this subject area.

Despite this omission, I believe the papers in this issue of Library Trends represent one of the best, most comprehensive reviews of technical standards for the library and information sciences and related publishing practices ever published. I am pleased to have had the opportunity to work with all of the authors who contributed to this issue. Each and every one has devoted his or her considerable intellect, and has taken a great deal of time from an otherwise very full schedule, to prepare the articles in this issue, and I am grateful for their efforts.

I trust that you, the reader, will find the articles in this issue as informative as they are authoritative and comprehensive. But more than that, I hope that you will achieve a new appreciation for the importance of standards uniformly adopted and applied, as well as for the enormous effort required to develop them.