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Advances in Librarianship

Volume 30



Volume 30



**Advances in
Librarianship**

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Volume 30



Advances in Librarianship

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Preface

The honor of editing the 30th volume of *Advances in Librarianship* posed a challenge of how to acknowledge changes in the profession over three and a half decades, while continuing a tradition of identifying new trends and innovations. The series aims to present a variety of aspects of the field of librarianship through the publication of critical articles and surveys, based on the published literature, research in progress, and current developments, relating to all segments of the profession and related topics. Contributing authors are encouraged to address provocative and stimulating topics that will ensure that trends are identified and research results of interest are made available quickly in a rapidly changing profession. Though authors in the past have been encouraged to add an historical perspective, those contributing to this volume were invited especially to celebrate the history of the past 36 years by reflecting, as appropriate, on advances made in their topic since the first volume of the series was published in 1970.

As editors of this volume (and members of the profession since nearly the series' inception), we each reviewed the table of contents of past volumes and identified several topics that have remained in the forefront of development in librarianship. Guided by these topics and with the suggestions of our Editorial Board members, we sought to identify current experts to explore what advances have been made and what are current conditions that are forming future directions. Sixteen authors have contributed 12 chapters that can be loosely grouped into four sections reflecting basic themes in librarianship: tracing issues in communication: relevance and freedom of expression; focusing on library services and resources; tailoring services to different user groups; and educating the profession for the future. Together these offer a milestone in the retrospective view of advances in librarianship. Chapters are arranged to suggest these themes, though overlaps among them preclude a clean division and readers are invited to peruse them in any order of preference.

The first two chapters touch on different aspects relating to issues of communication. Tefko Saracevic opens the volume with what becomes Part II of his thorough and seminal examination of thinking about relevance in information retrieval, continuing his earlier review first published in

Advances in Librarianship, volume 6, 1976. The second chapter focuses on another issue of communication, that of legal restrictions to access to information, as Henry Cohen and Mary Minow discuss the status of intellectual freedom in libraries both now and in the 1970s.

Library services and resources have been addressed throughout the years in *Advances in Librarianship* from a variety of perspectives such as the service or resource (e.g. reference, instruction, sound recordings) as well as from the vantage point of the user group served (e.g. children, disadvantaged persons, or Native Americans). In this volume, four specific services are retrospectively reviewed for a snapshot of the past 30 or so years. James Rettig begins his thoughtful review of reference service with the centennial anniversary of formal reference services in libraries which dates 30 years ago in 1976, and draws attention to the challenges of reference services in its second century with changes in technology, user behaviors and expectations, and the emergence of powerful competing ways of finding information. Reviewing services provided by health sciences librarians between 1970 and 2005, Keith W. Cogdill highlights two historic influential developments—of electronic bibliographic resources and the regional medical library program—as well as new information services involving medical informatics, clinical information interventions, and community outreach. Another theme found in earlier volumes that remains an important resource is the tradition of oral history and this is retrospectively reviewed by James E. Fogerty in his chapter. The physical setting in which these services and resources are offered, have been the focus of several chapters in past volumes of *Advances in Librarianship*. William Jones considers changes in library facilities in his chapter, “Library Buildings at the Threshold of Change.”

The emphasis on services and resources continues in the next three chapters, but now with a focus on the users of those services and resources. Another repeat author to the series is Brenda Dervin, who opens this section together with Carrie Lynn Reinhard and Zack Y. Kerr, to present their chapter about designing services to serve “special” needs and users. Services to children frequently appear in chapters of *Advances in Librarianship*, and Cheryl Ann McCarthy addresses this library user group in her informative review of the development and future of school library media programs. Considering slightly older students, Kari Lucas stimulates thinking in her chapter about the transformation of the undergraduate library as it responds to changes in serving college students in large research universities.

Advances in the past influences how we prepare for the future. In the volume’s final three chapters, contributing authors provide differing perspectives on issues relating to education of librarians and other information professionals. Diane Barlow and Elizabeth Aversa begin their examination of

education for academic librarians with the framework Lester Ashein offered in 1975, but their research of at least two major factors (ethnic diversity and changes in higher education) illustrate that the speed of change has increased and directions have shifted in the profession requiring new consideration for its education. Daphnee Rentfrow, one of the first participants completing the Council on Library and Information Resources Postdoctoral Fellowships in Scholarly Information Resources, offers a personal and researched reflection on the program and its attempt to educate new scholars about the challenges of contemporary scholarly research and information resources to support them. From an international perspective, Anna Maria Tammaro considers major trends in quality assurance in library and information science schools and reports early findings of a worldwide survey conducted by the International Federation of Library Associations (IFLA) to understand ways to measure education program performance and outcomes.

Credit and praise that might be offered for continuing in this 30th volume the traditions of presenting well written and researched chapters in *Advances in Librarianship* go to the contributing authors. We thank each of them for their contribution and the quick responses they gave to editorial suggestions we and the publisher sent them to finalize their chapters. We also appreciate the helpful feedback members of the Editorial Board gave us to prepare these suggestions after reading several of the chapter drafts. Special thanks are extended to these supportive Editorial Board members: Cheryl McCarthy, professor, Graduate School of Library and Information Studies, University of Rhode Island; Mary Jean Pavelsek, International Business Librarian, New York University Libraries; Nancy Roderer, director of Welch Medical Library, Johns Hopkins University; and Robert A. Seal, dean of Libraries, Loyola University Chicago. In the midst of preparing this volume, reassignments were made at Elsevier. We appreciate the early support Chris Pringle gave us for the idea of developing a special commemorative 30th volume, and thank Julie Walker for becoming our primary contact with our publisher and guiding us through the reorganized production routines. As we complete our work mid-year, we salute the many editorial and production staff whom we never meet but who transform our submitted manuscript into the published volume.

Since we aimed to commemorate the longevity of *Advances in Librarianship* itself in this volume, we end with special recognition to those who came before us and those who worked with us to create the first 30 volumes of the series. First, a round of applause goes to the 305 authors who contributed 255 chapters; we note that some of these colleagues are no longer with us, while others are enjoying retirement from active professional duty. Of these, we wish to acknowledge 19 authors who wrote two articles: Nancy

H. Allen, Shelia Creth, Brenda Dervin, Joan C. Durrance, Judith Elkin, Michael H. Harris, C. D. Hurt, Terrence K. Huwe, Michael Gordon Jackson, Diane Kresh, Andrew McDonald, Margaret E. Monroe, Robert Seal, Norman D. Stevens, Brian A. Reynolds, Tefko Saracevic, Elizabeth L. Tate, Helen Welch Tuttle, and Thomas J. Waldhart. A standing ovation is extended to Richard D. Johnson and Gordon Stevenson for each authoring three chapters for contributions to volumes 5, 12, and 14, and 5, 7, and 11, respectively. Second, we extend our empathy and sincere appreciation to our six fellow editors who individually or in partnership prepared volumes 1 through 27: Melvin J. Voigt (volumes 1–7), Michael H. Harris (Volumes 6–11), Wesley Simonton (volumes 12–14), Irene P. Godden (volumes 15–21), Elizabeth A. Chapman (volumes 22–24), Frederick C. Lynden (volumes 22–27). (Danuta A. Nitecki assumed the editorship with volume 28 and was joined by Eileen G. Abels to co-edit volumes 29 and 30.) We were unable to identify everyone who served on Editorial Boards for the series, but note that in addition to this membership, at least 10 were authors and six were also editors. Third, as the most constant contributor to this series, the publisher deserves particular thanks for sustaining the publication. *Advances in Librarianship* began as a release from Academic Press in 1970, which became an imprint of Elsevier Science by 2001 for the publication of volume 26, and to the delight of serial catalogers, it has retained its title without change for its 30th volume history. We are honored to be among those who have contributed to this legacy.

Danuta A. Nitecki
Eileen G. Abels
Co-editors
May 1, 2006

**Tracing Issues in Communication:
Relevance and Freedom of Expression**

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Relevance: A Review of the Literature and a Framework for Thinking on the Notion in Information Science. Part II ☆

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“*Relevant*: having significant and demonstrable bearing on the matter at hand.”

“*Relevance*: the ability (as of an information retrieval system) to retrieve material that satisfies the needs of the user.”

Merriam Webster (2005)

“All is flux.”

Plato on Knowledge in the *Theaetetus* (about 369 BC)

I. Prologue: How Parts I and II Are Connected Across Time and What This Work Is All About

In vol. 6, 1976, of *Advances in Librarianship*, I published a review about relevance under the same title, without, of course, “Part I” in the title (Saracevic, 1976). [A substantively similar article was published in the *Journal of the American Society for Information Science* (Saracevic, 1975)]. I did not plan then to have another related review 30 years later—but things happen. The 1976 work “attempted to trace the evolution of thinking on relevance, a key notion in information science, [and] to provide a framework

☆ A version of this review is to appear as an article subdivided in two parts in the *Journal of the American Society for Information Science and Technology*.

within which the widely dissonant ideas on relevance might be interpreted and related to one another” (ibid.: 338).

Building on the examination of relevance in the preceding (1976) review, this (2006) work updates the travails of relevance in information science for the past 30 years or so. Relevance still remains a basic notion in information science, and particularly in information retrieval (IR). The aim of this work is still substantially the same: it is an attempt to trace the evolution of thinking on relevance in information science for the past three decades and to provide an updated, contemporary framework within which the still widely dissonant ideas on relevance might be interpreted and related to one another.

II. Introduction: How Information Technology Made the Study of Relevance Ever More Relevant

In human history, relevance has been around forever, or as long as humans tried to communicate and use information effectively. Computers have been around for the last 50 years or so, the Internet for some 25, the Web for about 15. In this short time, the contemporary information technology (IT), including information systems based on IT, changed or transformed a great many things in society—from education to health care, from earning a living to leisure, from physics to classics, from government to being governed, from being young to being old, ... IT changed information activities dramatically, namely the way we acquire, organize, store, preserve, search, retrieve, communicate, interact with, and use information. In all of those information activities relevance plays a most significant, underlying and yet elusive role. Similarly, relevance plays a significant, underlying role when these activities are performed by information systems as well; for these systems are designed primarily to respond with information that is potentially relevant to people.

IT is not elusive; relevance is. IT is tangible; relevance is intangible. IT is relatively well understood formally; relevance is understood intuitively. IT has to be learned; relevance is tacit. IT has to be explained to people; relevance does not.

In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations* Adam Smith, regarded as the father of economics, set out the mechanism by which he believed economic society operated; among others, he explained market decisions as often being governed by an “invisible hand.” In the same spirit, while the hand of relevance is invisible, it is governing. Somewhere, somehow, the invisible hand of relevance, under its own or other names, enters the picture in all information activities and all information

systems. As far as people are concerned, relevance is tacitly present and inescapable. Relevance is the reason people use IT in their information activities. Conversely, information systems are primarily designed to provide potentially relevant information or information objects to people. In this lies the significance of relevance.

Positioning people and IT together in this discussion is deliberate to point out basic premises, distinctions, problems, and conflicts. Information systems, through a complex set of operations based on ever-changing and improving algorithms, retrieve and offer their versions of what may be relevant. People go about their ways and assess their own version of relevance. Both treat relevance as a relation. But each may have different premises for what is involved in the relation and in assessing that relation. There are two interacting worlds: the IT world and the human world; and two basic categories of relevance: systems' and humans'. The two worlds interact with various degrees of problems and conflict, from none to a lot. Our concern here is primarily with the human world of relevance. Relevance is treated here as a human condition, which it is. While we can never get far from systems, this review does *not* cover how systems deal with relevance. Treatments of relevance in IR—in algorithms, measures, evaluation—are beyond the scope of this review.

In information science, as well as other related fields, the emergence and proliferation of IT provided an impetus for study of the notion of relevance, aimed at a better and more formal understanding of it. Lexical definitions are very important, but do not suffice; besides, we are not really able to resolve issues of relevance through definition alone (Froelich, 1994). Thus, as in all other scientific and scholarly endeavors, when faced with a basic phenomenon or notion, scholarly inquiry does not ask the naïve question: *What is relevance?* Instead, the basic question was and still is: What is the *nature* of relevance? Following are more precise questions:

- What are the manifestations of relevance?
- What is the behavior of relevance?
- What are the effects of relevance?

The organization of the present review follows this reasoning. It sets the stage with an *Introduction* and a *Historical Footnote*. Next are three sections addressing the nature of relevance: a general one synthesizing its meanings, following with more specific sections on theories and models of relevance. The review then continues with a section about various manifestations of relevance, and concludes with sections that deal with experimental and observational findings on behavior and effects of relevance. Each section ends with a summary that in effect provides an interpretation and synthesis of contemporary

thinking on the topic treated or suggests hypotheses for future research. Analyses of some of the major trends that shape relevance scholarship, together with suggestions for research agendas, are offered in the epilogue.

While knowledge for knowledge's sake in investigations of the notion of relevance is sufficient impetus, there is also pragmatic potential. The history of science and technology is full of instances where a better understanding of the basic notions or phenomena underlying a technology led to development of more effective and successful technologies and systems. A fruitful, though sometimes convoluted and arduous, translation was realized. Hopefully, a better understanding of relevance may lead to better information systems. This clearly illustrates the significance of relevance research. Considering and understanding relevance as a notion is still relevant, if not even more so, to building and operating information systems—now ever more complex in the Web environment—that effectively provide information to users pertaining to their problems at hand.

III. Historical Footnote: A Reminder of How Relevance Came into Being in IR and Affected a Lot of Things

The term “information retrieval” (IR) was coined by mathematician and physicist Calvin N. Mooers (1919–1994), a computing and IR pioneer, just as the activity started to expand from its beginnings after World War II. He posited that IR:

embraces the intellectual aspects of the description of information and its specification for search, and also whatever systems, technique, or machines that are employed to carry out the operation (Mooers, 1951, p. 25).

Over the next half century, IR evolved and expanded, but basically, it continues to concentrate on the topics Mooers described.

The key difference between IR and related methods and systems that long preceded it, such as those developed in librarianship for bibliographic description and classification, is that IR specifically included “specification for search.” The others did not. From Charles Ammi Cutter (1837–1903), who postulated bibliographic requirements at the end of the 19th century to the contemporary International Federation of Library Association and Institutions' (IFLA) report on *Functional Requirements for Bibliographic Records* (FRBR), the goal was to “provide a clearly defined, structured framework for relating the data that are recorded in bibliographic records to the needs of the users of those records” (IFLA, 1998: 2.1). User needs are defined in relation

to the following generic tasks that are performed by users when searching and making use of national bibliographies and library catalogues:

- using the data to **find** materials that correspond to the user's stated search criteria
- using the data retrieved to **identify** an entity
- using the data to **select** an entity that is appropriate to the user's needs
- using the data in order to acquire or **obtain** access to the entity described (emphasis in the original) (ibid.: 2.2).

In FRBR (and all the way back to Cutter), the process of search is not specified, it is assumed that it would happen. User needs, which should be fulfilled, were specified, but how the search should be performed was not. Data in bibliographic records were then organized to fulfill the specified needs. In IR, the user's needs are assumed as well, but the search process is specified in algorithmic details and data is organized to enable the search.

The fundamental notion used in bibliographic description and in all types of classifications, ontologies, or categorizations, including those used in contemporary databases, is *aboutness*. The fundamental notion used in IR is *relevance*. It is not about any kind of information but about *relevant* information. Fundamentally, bibliographic description and classification concentrate on describing and categorizing information objects; IR is also about that *but, and this is a very important "but,"* in addition IR is about searching as well, and searching is about relevance. In the realm of computer science, differences between databases and IR were often discussed in terms of differences between structured and unstructured data, which is OK, but this fails to define the fundamental difference in the basic notion used: *aboutness* in the former and *relevance* in the latter. Therein lie both similarity and difference. Relevance entered as a basic notion through the specific concentration on searching. Budd (2004, p. 449) lamented that "the preponderance of writing on relevance comes from information science" and little or none can be found in librarianship. The explanation is simple: librarianship was concerned with aboutness and thus, it produced a considerable literature about aboutness and little or none about relevance. Conversely, information science was concerned about relevance and thus, it produced a considerable literature about relevance and little or none about aboutness.

In a sense, aboutness may be considered as topical relevance, which is one manifestation of relevance discussed later. However, topical relevance in IR is construed through indexing (or some other form of representation) to be directly searchable in specified ways—and, as pointed out, searching is about relevance.

By choosing relevance as a basic, underlying notion of IR, related information systems, services and activities—and with it, the whole field of information science—went in a direction that differed from approaches taken

in librarianship, documentation, and related information services, as well as expert systems and contemporary databases in computer science. Of course, this generalization, as all generalizations, simplifies the situation, but illustrates the effect of choices.

A number of suggestions were made to use uncertainty, instead of relevance, in IR but they never took hold. If they had, we would have very different IR systems today. For example: the basis of expert systems is uncertainty (or rather reduction of uncertainty based on if-then rules). As a result, expert systems are very different from IR ones. In comparison to IR, expert systems are not as widely adopted and used. The reason may be due to the choice of the underlying notion. Relevance is a human notion, widely understood in similar ways from one end of the globe to the other. Uncertainty is not. Besides, the assumption that information decreases uncertainty does not hold universally; information may also increase uncertainty.

Historically, relevance crept in unannounced. At the start of IR, more than a half century ago, nobody made a big point about it. IR systems were constructed to do relevance, but nobody talked about it. Still, principles posited then are valid today. It was, and still is, accepted that the main objective of IR systems is to retrieve information or information objects relevant to user queries, and possibly needs. Actually, the first discussions of relevance in the early 1950s were not about relevance, but about non-relevance or “false drops”—unwanted information retrieved by IR systems. The first full recognition of relevance as an underlying notion came in 1955 with a proposal to use “recall” and “relevance” (later, because of confusion, renamed “precision”) as measures of retrieval effectiveness in which relevance was the underlying criterion for these measures (Kent *et al.*, 1955). Over time, many other measures were suggested, but did not take. Precision and recall remain standard measures of effectiveness to this day, with some variations on the theme. They measure the probability of agreement between what the system did or failed to retrieve or construct as relevant (systems relevance), and what the user assessed or derived as relevant (user relevance). Relevance became and remained the underlying criterion for measuring the effectiveness of IR.

There were, still are, and always will be many problems with relevance. This is not surprising. Relevance is a human—not a system—notation and human notions are messy. Oh well, they are human. Problems led to investigations on the nature of relevance in information science. Exposition of many views and a number of experiments followed. Those before 1975 were synthesized in Part I (Saracevic, 1976), those since are in this review. However, a few of the pre-1975 works are included in this review as well in order to provide a historical context where appropriate.

IV. Meaning of Relevance: How Relevance Is Universally Well Understood, How It Is Understood in Information Science and, Nevertheless, How Problems with Relevance Are in Its Understandings

A. Intuitive Understanding

I already stressed this in Part I: Relevance does not have to be explained; it is universally understood. It is an intuitive, primitive, “y’know” notion (Saracevic, 1976, p. 90). People understand and understand relevance similarly over time, space, cultures, and domains:

Nobody has to explain to users of IR systems what relevance is, even if they struggle (sometimes in vain) to find relevant stuff. People understand relevance intuitively (Saracevic, 1996, p. 215).

Intuitively, we understand relevance to encompass a relation—relevance always involves some version of “to” either stated explicitly or referred implicitly. This was always so. To illustrate the point: Following the etymology for “Relevant” the *Oxford English Dictionary* (2nd ed.) has this quote from awhile ago: “1646 CHAS. I *Lett. to A. Henderson* (1649) 55 “To determine our differences, or, at least, to make our Probations and Arguments Relevant.” Jumping forward a few centuries to illustrate the same point, the title of an article in the *Chronicle of Higher Education* (September 30, 2005: B1) enthused: “Thoughtful Design Keeps New Libraries Relevant.” In both cases “to,” while implicit, was clearly there. The “to” is the context for relevance. For relevance context is *it*.

What is actually relevant may not be understood similarly, but what is relevance is. Relevance is a thoroughly human notion; this is its great strength and great weakness. As all human notions, relevance is messy and not necessarily perfectly rational. The role of research is to make relevance less messy.

B. Beyond Intuitive

On a fundamental level, relevance is understood as a relation; relevance is a tuple—a notion consisting of a number of parts that have a relation based on some property or criteria. In other words, relevance has a number of dimensions along which the parts may be related, connected, and interpreted. None of these are necessarily fixed; they may change as circumstances change.

Relevance always involves a relation between a P (or a number of Ps) and a Q (or a number of Qs) along some property R (or a number of Rs). Parts

P and Q could be intangible objects (such as ideas, concepts, information) or tangible objects (such as documents, machines, processes) or a combination of both intangible and tangible objects (such as tasks, situations, responsibilities). Properties R (such as topicality, utility) provide a base and context for establishing a relation, that is relation between Ps and Qs are considered as to relevance along properties R. These properties may be explicit or implicit, well formulated or visceral, rational or not entirely so—on a continuum.

Relevance is also considered as a measure of relatedness. If we consider communication, then our intuitive understanding is that relevance has also something to do with effectiveness of communication. Thus, the relation between objects Ps and Qs along properties Rs may also be ascertained as to some measure S (or a number of Ss), where S may be expressed along different magnitudes, such as strength, degree, or some other quantity or quality. Measures S may be explicit or implicit, well formulated or visceral, rational or not entirely—on a continuum.

Thus, relevance is considered as a *property* along which parts are related and may also be considered as a *measure* of the strength of the related connection.

C. Understanding in Information Science

Understanding of relevance in information science evolved over time and was adapted to specific circumstances. In information science, we consider relevance as a relation between information or information objects (the Ps) on the one hand and contexts, which include cognitive and affective states and situations (information need, intent, topic, problem, task) (the Qs) on the other hand, based on some property reflecting a desired manifestation of relevance (topicality, utility, cognitive match) (the Rs). As mentioned, the Ps and Qs could be tangible or intangible. In addition, we also measure the intensity of the relation on some scale (degree of relevance, or utility, or pertinence) (the Ss). Thus, in information science, relevance is a relation and a measure. If Ps are considered as external and Qs as internal then relevance reflects a relation between external and internal objects along internal and external contexts, including measure(s) that reflects strength or effectiveness of the relation. It is worth stressing that the context is formulated through a dynamic interaction between a number of external and internal aspects, from a physical situation to cognitive and affective states, to motivations and beliefs, to situations, and back to feedback and resolution. Context is complex.

This generalization corresponds with the general pattern for numerous definitions of relevance that were offered in information science as specified

in Part I (Saracevic, 1976, p. 99). The pattern is: “*Relevance is the A of a B existing between a C and a D as determined by an E,*” where A may be “*measure, degree, estimate, relation ...;*” B may be “*correspondence, utility, fit ...;*” C may be “*document, information provided, fact ...;*” D may be “*query, request, information requirement ...;*” and E may be “*user, judge, information specialist.*” Almost every definition offered still fits this pattern. In Part I, relevance was also considered “as a measure of the effectiveness of contact between a source and a destination in a communication process” (ibid.: 91).

D. The Big Question and Challenge

We also understand that relevance is not given, it is established. This leads to the next question and the big challenge for information science: *How does relevance happen?* The obvious sub-questions are: *Who does it, under what circumstances, and how?* Some of the relevance theories and models, reviewed in next two sections, tried to answer these questions.

In information science, we consider relevance as an inference: it is *created* by inference, but also it is *derived* by inference. This is not an either–or proposition; rather there is a continuum from creating to deriving relevance. A simplified explanation: systems or automatons create relevance and users derive relevance. However, situations could be more complex, because people can act as automatons (fully or to some degree) to create relevance as systems do, and systems can be somewhat “intelligent” to derive some aspect of relevance. Thus, to account for such circumstances there is a need for a continuum, rather than a binary distinction between creation and derivation. It is a matter of degree. Still creation–derivation is a useful distinction, adding to our understanding of relevance in information science. The inference—creation or derivation—follows some intent. In other words, intentionality is involved along the general conception of intentional mental states discussed by Searle (1984). His concluding statement holds for relevance as well:

Because it is just a plain fact about human beings that they do have desires, goals, intentions, purposes, aims, and plans, and these play a causal role in the production of their behavior (ibid.: 15).

IR systems create relevance—they take a query, process it by following some algorithms, and provide what they consider relevant. People derive relevance from obtained information or information objects. They relate and interpret the information or information objects to the problem at hand, their cognitive state, and other factors. IR systems match queries to objects in their belly to construct those that are relevant to the query, possibly rank order them, and regurgitate the results. Users take the results and derive what may

be relevant to them. But users can read into results a lot more than correspondence between noun phrases or some such in queries and objects, used primarily by systems for matching. Moreover, users can and do find other information objects or other information relevant to their problem that is not retrieved by a system for a variety of reasons, for example not reflected in the query to start with. Several excellent examples of how relevance is derived above and beyond that which is topically retrieved are given by Harter (1992: 607ff). Specifically, Harter provides examples of topics that interest him and then analyzes a number of articles that are not directly related to the topics as stated, but are relevant. He demonstrates through examples how relevance is derived from articles as related to the cognitive state of an individual (“psychological relevance”) that is very different than topical relevance as considered by a system. “Topical relevance concerns itself only with a restricted form of language. It ignores the user” (ibid.: 613).

A similar argument about non-matching topicality was provided by Green (1995); Green and Bean (1995) present extensive examples of derived relevance using the topics of a religious thematic guide and the referred passages derived in that guide. More dramatic examples are provided by Swanson and Smalheiser (1997, 1999). In these articles they summarize a decade-long effort in which they took several areas of medicine and showed causal connections between previously unrelated phenomena to derive relevance relations where none existed before; these relations were derived from literature and later confirmed in clinical testing.

The situation is actually more complex than presented. Yes, people may and do derive relevance from ideas and clues in articles that no system could readily recognize, at least as yet. But, that depends also on domain expertise (Vakkari and Hakala, 2000). Greater expertise on a topic leads to more potent derivative powers for relevance. Lesser expertise leads to lesser powers for deriving relevance. With little expertise, one constructs relevance as an automaton. White (in press, a, b) discusses these hypotheses at great length, with examples throughout both articles, and provides essentially the same distinction between created and derived relevance.

Since information science deals with creation and derivation, systems and users, we understood early on that there is not only one kind of relevance, but also several. They were even labeled differently, like “topical relevance,” “user relevance,” and so on, as reviewed later in the section *Manifestations of Relevance*. Of course, information science is not the only field to recognize that relevance has a number of manifestations. In information science, however, this is a very pronounced understanding, because we match various kinds of relevance and evaluate performance on that basis. Among other things, this also leads to intellectual disputes as to the primacy of one kind of relevance over others.

Here are two final points about understanding relevance in information science. First, either derived or constructed relevance usually involves a process of selection. Information or information objects are selected as relevant (or expressed on some continuum of relevance) from a number of available existing, or even competing, information objects or information. The selection is geared toward maximization of results, minimization of effort in using the results, or both. Second, the selection process involves a series of interactions of various kinds. Thus, an understanding of relevance also recognizes that a selection and interaction process is involved.

E. Summary: Attributes of Relevance in Information Science

We consider relevance as having a number of dimensions or attributes:

- Relevance is a relation.*
- Relevance is a property.*
- Relevance is a measure.*
- Relevance has a context, external, and internal.*
- Relevance may change.*
- Relevance has a number of manifestations or kinds.*
- Relevance is not given.*
- Relevance is inferred.*
- Relevance is created or derived.*
- Relevance involves selection.*
- Relevance involves interaction.*
- Relevance follows some intentionality.*

These attributes of relevance can be summarized as follows (Cosijn and Ingwersen, 2000; Saracevic, 1996):

- *Relation:* Relevance arises when expressing a relation along certain properties, frequently in communicative exchanges that involve people as well as information objects.
- *Intention:* The relation in expression of relevance involves intention(s)—objectives, roles, and expectations. Motivation is involved.
- *Context:* The intention in expression of relevance always comes from a context and is directed toward that context. Relevance cannot be considered without a context:
 - *Internal context:* Relevance involves cognitive and affective states.
 - *External context:* Relevance is directed toward a situation, tasks, problem-at-hand. Social and cultural components may be involved as well.
- *Inference:* Relevance involves assessment about a relation, and on that basis is created or derived.
- *Selection:* Inference may also involve a selection from competing sources geared toward maximization of results and/or minimization of effort in dealing with results.
- *Interaction:* Inference is accomplished as a dynamic, interacting process, in which an interpretation of other attributes may change, as context changes.
- *Measurement:* Relevance involves a graduated assessment of the effectiveness or degree of maximization of a given relation, such as assessment of some information sought, for an intention geared toward a context.

These conceptualizations reflect a general understanding of the meaning of relevance in information science. But as always, the devil is in the details. When these general understandings are translated into theories, models and practices; into systems and users; into inputs and outputs; then the general understanding, as enumerated, does not serve or guide us well—translation from a general understanding to pragmatic application is very difficult. How to actually construct or derive relevance, how to measure it, who does it, and with what effect is an entirely different matter; at times even wrought with controversy. In the same category belongs the question: *How much relevance is enough?* Still, we understand relevance better than we did 30 years ago.

V. Theories of Relevance: What Theoretical Constructs Were Borrowed From Elsewhere and How We Still Don't Have an Applicable Theory of Relevance

After all, relevance is a universal human notion and thus of scholarly interest in fields other than information science. Extensive theories on relevance appear in several fields, among them logic, philosophy, and communication. Relevance theories in logic were not used in information science, and thus are only briefly characterized here to illustrate a possible connection. Those in philosophy were used to some extent and were extensively reviewed in Part I, thus only a synthesis is provided. Finally, a theory of relevance in communication, formulated in the 1980s and 1990s, had some impact on thinking about relevance in information science, thus it is reviewed here in some detail as theory-on-loan, that is as a theory that is used and interpreted within the context of information science.

A. Relevance in Logic

For some 2000 years, logicians have been struggling with the notion of relevance, particularly in deduction of inferences. To avoid fallacies, a necessary condition for an inference from A to B is that A is relevant to B. In that sense, confirmation of conclusions from premises is based on relevance. Relevance logic is an attempt to construct logics that reject theses and arguments that commit fallacies of relevance. Several systems of relevance were developed in semantics and proof theory (Mares, 1998). The widely cited seminal work by Anderson and Belnap (1975) and Anderson *et al.* (1992) is a standard for contemporary treatment and critiques of relevance logic.

Several attempts were made to apply a formal system of logic to IR that involved consideration of relevance (e.g., starting with Cooper, 1971 and continuing with van Rijsbergen, 1986; Nie *et al.*, 1995 and others as summarized by Lalmas, 1998 and Sebastiani, 1998) but they are outside the scope of this review. However, all are based on the underlying notion that there is a connection between relevance and logical consequences. No attempt has been made, so far, to apply relevance logic to the study of relevance as a notion in information science. The mentioned work by Anderson and Belnap may be a plausible borrowed theory for such an extension.

However, logic was used in the explication of relevance in artificial intelligence (AI). A special issue on relevance in the journal *Artificial Intelligence* deals with the treatment of relevance in the domain of AI (Subramanian *et al.*, 1997). In two articles, logic, together with the concept of belief, was used as a basis for a formal treatment of relevance and its properties. Lakemeyer (1997) formalized relevance relations in the context of propositional logical theories from an agent's point of view and relative to his/her deductive capabilities and beliefs. Beliefs were also used in developing a set of formal axioms of casual irrelevance (Galles and Pearl, 1997). Overall, interest in relevance in AI was fleeting and faded away. However, involving beliefs with relevance makes the approach interesting, even though logic formalities, as applied in cited works, may be highly restrictive in any pragmatic sense. The notion of belief has not yet penetrated relevance theorizing in information science, even though on the face of it the idea may be of interest. Beliefs are a murky concept, but they may affect relevance.

B. Relevance in Philosophy

A number of philosophers, particularly in the area of phenomenology, were interested in relevance. Of particular interest to information science are the works by Schutz (1970) and Schutz and Luckman (1973). The latter is a summary of Alfred Schutz's lifelong ideas, posthumously completed by his collaborator Thomas Luckman. Schutz's concepts related to relevance were already summarized in Part I (Saracevic, 1976, p. 84–85), but are mentioned here again since they continue to have implication for theoretical thinking on relevance in information science; it is knowledge worth borrowing. Briefly, Schutz characterized structure and functioning of the "life-world"—situations that people face in the reality of everyday life. These situations form layers—life-world is stratified. Relevance is the principle for stratification and dynamic interplay among strata. But there is not a single relevance, but rather an interdependent system of relevances (plural). He proposed a typology of relevances with three main categories: thematic

(in the 1970 work called “topical”), interpretational, and motivational. These concepts are echoed in many later works on relevance in information science, even without reference to Schutz.

1. Application in Information Science

Schutz is cited a number of times as an appropriate framework in information science; his viewpoint is very much reflected in works on manifestations of relevance. The two following philosophical perspectives, which emanated from information science, are very different than Schutz’s.

In the first, Hjørland (2002) suggests an epistemological perspective for considering relevance and other fundamental concepts at play in IR, such as interpretation of texts and information needs. In supporting this position, Hjørland demonstrates relevance criteria in four epistemological schools: empiricism, rationalism, historicism, and pragmatism. Each provides a different criterion for considering relevance. In essence, as stated in his conclusions, he rejects “the cognitive view [which] tends to psychologize the epistemological issues (to study knowledge by studying the individual),” and advocates “the socio-cognitive view, which tends to epistemologize psychological issues (to see individual knowledge in a historical, cultural, and social perspective)” (ibid.: 268). Epistemology is suggested as the proper way to approach relevance. In a similar vein, Froelich (1994) previously had suggested applying hermeneutics (study of how context makes and shapes interpretation) to the study of relevance, because relevance is an act of interpretation.

In the second perspective, taking a philosophy stance (but not Schutz’s or Hjørland’s), Budd (2004) reviews treatment of relevance in information science (with a lament that it is not treated in librarianship), and invokes ideas from a number of philosophers, including Wittgenstein and Habermas, as possible explanations. While Budd’s review does not offer a theoretical synthesis, but only a selective enumeration, it provides a juxtaposition of a wide range of different views and concepts related to relevance, involving philosophy as well.

Relevance is also philosophical. The works reviewed, however, were not much more than proposals for what to do rather than philosophical treatises on relevance in information science.

C. Relevance in Communication

Information and communication are related, but there is also a distinction. Information is a *phenomenon*. Communication is a *process*. A process in which

information is dispersed or exchanged. The process of communication encompasses a vast array of human activities and has many facets and manifestations. Similarly, the phenomenon of information encompasses many manifestations—there are many kinds of information—and is interpreted in many senses. Concept of “communication” could be understood and used, similarly as “information,” in numerous ways. Not surprisingly then, the field of communication is also broad and expansive. The study of communication intersects with a number of other fields, including, linguistics, semantics, psychology, cognitive science, philosophy, and related areas. The study of relevance in communication also comes from an interdisciplinary tradition. Since one of the theories about relevance that emerged in the study of communication was prominently treated in information science, it is described here in some detail.

The most comprehensive and ambitious contribution to theorizing on relevance in a communication framework was made by Sperber and Wilson (1986, 1995) (abbreviated here as S&W), with the latest synthesis by Wilson and Sperber (2004) (abbreviated here as W&S). Their “Relevance Theory” has an overarching goal of explaining what must be relevant and why to an individual with a single cognitive intention of a conceptual nature. It is based on an inferential model of communication that views communication in terms of intentions, as opposed to the more traditional and widely accepted source–message–destination model (also called the classical code model since messages are coded and decoded). The inferential model considers that the critical feature of most human communication—verbal or non-verbal—is an expression and recognition of intentions. “Relevant information is information worth having” (S&W, 1995, p. 264).

Relevance Theory was originally associated with everyday speech or verbal communication, but later was extended to cover wider cognitive processes. Authors consider it a cognitive psychological theory. It has a high goal of being a theory of cognition and of communication, tying them together on the basis of relevance. However, the basic problem addressed in the theory is how relevance is created in dialogs between persons. It explains “what makes an input worth picking up from the mass of competing stimuli” (W&S, 2004, Section 1). In somewhat awkward language, they argue about ostensive behavior or “ostension,” manifestations, and presumptions of relevance. Simply put, out of many stimuli, we pay attention only to information which seems relevant to us; furthermore, to communicate is to claim someone’s attention, and hence to imply that the information communicated is relevant. They firmly anchor relevance in a given context and talk about contextual effects—relevance is contextual. They also consider relevance assessment as comparative, not quantitative—relevance is comparative.

At the center of their theory they postulate two principles, claiming to reflect universal tendencies:

1. *Cognitive Principle of Relevance*: The claim that human cognition tends to be geared to maximization of relevance.
2. *Communicative Principle of Relevance*: The claim that every ostensive stimulus conveys a presumption of its own relevance.

In other words, human cognition is relevance oriented, and so is human communication. The two principles lead to the specification of how relevance may be assessed in terms of two components: *cognitive effects* and *processing effort*:

Relevance to an individual:

1. Other things being equal, the greater the positive cognitive effects achieved by processing an input, the greater the relevance of input to the individual at that time.
2. Other things being equal, the greater the processing effort expended, the lower the relevance of the input to the individual at that time (W&S, 2004, Section 2(1)).

This serves as an explanation as to what makes us “pick out the most relevant stimuli in [our] environment and process them so as to maximise their relevance” (W&S, 2004, Section 3). The two Principles of Relevance and the two components of assessment are at the heart of the theory, with the first being explanatory and the second predictive.

The proposition of maximization in the Cognitive Principle of Relevance evokes a similar, if not identical, explanation postulated by Zipf (1949) in the Principle of Least Effort. Furthermore, treating relevance as an underlying principle in both cognition and communication evokes the explanation of what makes the life-world tick by Schutz (1970), as mentioned above. Neither was considered in S&W’s Relevance Theory.

Needless to say, Relevance Theory, as a major, comprehensive attempt to provide explanations and principles about cognition and communication anchored in relevance, attracted followers and critics. Critics voiced a number of themes, among them restriction in scope, contradictions in arguments, and the total absence of any connection to human motivations—in other words, in the theory they treated humans as perfect rational beings. Gorayska and Lindsay (1993) summarized these critiques, pointing out the theory’s shortcomings from the point-of-view of the pragmatic use of the notion in everyday language—it does not fit—but also recognized the value of the theory and proposed future directions for research.

The strength of the theory lies in proposing a number of explanations and operational, predictive principles about cognition and communication in terms of relevance. A Relevance Theory at last! Two weaknesses are mentioned here, beside the ones mentioned by critics as cited above. The first

weakness concerns the nature of their proofs and grounds for generalization. They use hypothetical conversations between two protagonists, Peter and Mary, to provide both examples and proof (Peter/Mary dialogs get tiring fast). But more seriously, proof by example is no proof. The second weakness is that in the two decades since its first appearance, the theory was not tested empirically or experimentally. A theory is scientific if it is refutable (i.e., testable). While the authors proposed a number of possible tests and talked about forthcoming experiments (W&S, 2004, Section 6), such tests and experiments have not come forth as yet. Moreover, none are in sight. Relevance Theory is appealing, but it is also untested. It awaits verification and possible modification as a result. Of course, the fact that a theory is not tested is not grounds for rejection. However, an untested theory may also be untestable. In that case, it is not a scientific theory. The question is still open whether Relevance Theory is testable to start with. Nevertheless, it does provide a number of insights about relevance and its behavior.

1. Applications in Information Science

In information science, Harter (1992) provided the first attempt to apply S&W's Relevance Theory to information science in general and IR in particular. He starts with an emphatic rejection of topical relevance, that is, the notion and practice in IR where relevance is treated as to its topicality only. As a solution, he embraced the notion of relevance as being exclusively related to cognitive states that change dynamically, calling this "psychological relevance." Relevance is what causes cognitive changes in a given context. This will be further discussed in the section on *Manifestations of Relevance*, because the essence of Harter's proposal is to consider a given type or manifestation of relevance as the primary or even exclusive property.

Harter deduced a number of excellent insights into relevance behavior. The strength of Harter's notion of psychological relevance is that he has attempted to base the concept on a broader and elaborate theoretical basis, namely S&W's Relevance Theory. The weakness is that actually he has not done that, beyond borrowing some concepts and terminology. Besides, as with S&W's Relevance Theory, Harter's construct was not tested. He discussed, however, the difficulty of testing and applying it in practice. Still, the value of his attempt to gain some theoretical footing for relevance in information science is in itself groundbreaking. Unfortunately, he did not get there but he pointed the way and opened a wide-ranging and raging discussion.

A second and much more comprehensive attempt to transfer S&W's Relevance Theory into an information science framework was done recently

by White (in press a, b). In this massive work, White confines S&W's Relevance Theory to the application of the *cognitive effects* and *processing effort*; he did not use the two relevance principles. In an effort to integrate Relevance Theory, IR and bibliometrics, he proposed that cognitive effects and processing effort are also components in relevance assessments in the context of IR and can be used as predictive mechanisms for the operational assessment of relevance. Briefly, White translated the widely applied approach in IT based on terms called *tf*idf* (term frequencies, inverse document frequencies) into bibliometric retrieval based on citations; used this to create a new two-dimensional visual display of retrieved bibliometric results called a pennant diagram (because it looks like one); interpreted the dimensions of the diagram in terms of cognitive effects and processing effort; derived a number of practical examples; and engaged in extensive interpretation of results and discussion of reasoning behind them, in a similar vein as S&W. (Even Peter and Mary made a prominent appearance.) White has significantly extended the interpretation of S&W Relevance Theory to information science circumstances and interests, with both the strength and the weaknesses of the theory present. Its strength is that he actually put his constructs to practical work. While the proposed bibliometric retrieval and associated pennant diagram may have been done without recourse to Relevance Theory, the borrowed constructs (cognitive effects and processing effort) provided grounds for extensive abstract explanations of both processes and results. They offer insight about retrieval above and beyond the statistical nature of the process and rank listing of results. However, the weakness of the nature of proof present in S&W's work is also present here. Besides, White's work is not a test of Relevance Theory as claimed; it is structures, concepts, and terminology on loan.

Both works—Harter's and White's—are worthwhile in their efforts to adapt a theory—the field should be stimulated to think about such adaptations and think about theory, but the question remains whether the theory being adapted is worthwhile to start with.

D. Summary: Still in Search of a Theory

As yet, authors on relevance in information science have not developed any indigenous theory cum theory about the notion, nor have they successfully adapted theories from other fields, despite a few attempts. Where theories were borrowed for use, they were merely described, interpreted, and declared appropriate. They were not tested. However, and to their credit, they were conceptual and terminological borrowings used for extending our collective insight about relevance. They made us think.

We are still in search of a theory of relevance applicable to the context of information science and particularly IR. In other words, we are still in search of a conceptual basis, a set of testable principles and propositions, to explain the notion of relevance applicable to information science practice, to explain its manifestation, and to predict its behavior and effects. Of course, practice can be successfully pursued in absence of a theory. The history of technology has a great many examples, IR being just one of them. But, a great many substantial advances have been achieved based on a theory; the history of modern technology has even more such examples. As the adage says: there is nothing more practical than a good theory.

A number of authors have suggested outlines of an applicable theory of relevance. For instance, Park (1994), echoing Harter, suggested a possible framework for “a theory of user-based relevance” (title) to emerge from qualitative research using a naturalistic approach and paradigm. The attempt was interesting, but the proposal lead nowhere. Several other proposals of the same genre are not treated here for the same reason.

These attempts to borrow and adapt theories have a positive effect on clarifying empirical knowledge and understanding about relevance in information science. Schutz’s reference to systems of relevances (plural) suggests a number of manifestations of relevance that are already recognized, and his reference to “horizon” suggests the inclusion of contexts as inevitable. S&W’s cognitive effects and processing efforts suggest dimensions used in assessing relevance, including its dynamic nature, are also well recognized.

While we were not successful in developing or adapting a “good” theory of relevance for information science, we were certainly rich in proposing a number of models depicting elements or variables involved in relevance, as summarized in the next section. Yet, there are differences between theories and models in scientific endeavors. Theories explain and predict; models enumerate. Theories are about why and how; models are about what is involved or occurring. Theories guide; models provide structure. So, on to models.

VI. Models of Relevance: How Relevance Was Reviewed and Reviewed, and How a Few Models Came Out of Reviews

For whatever reason, relevance is an eminently suitable subject for review. Interestingly, there was a 15-year gap in relevance reviews between the one by Saracevic (1975) and those that began appearing on an almost regular basis since after 1990.

In addition to reviewing the progress in relevance research or challenging a prevalent paradigm or line of thought, these reviews also provided a synthesis on the basis of which relevance models were projected. We concentrate here on several models proposed in major reviews. Models are abstractions forming general ideas from specific examples. Their importance is great because they are a basis for given standpoints that predicate given types of actions and exclude other types. Indeed, different relevance models suggest different actions.

A. Dynamic Model

For a fleeting decade, relevance had its Camelot. It was in Syracuse. From about the mid-1980s until about the mid-1990s, a series of doctoral dissertations at the School of Information Studies, Syracuse University, addressed various aspects of relevance, reflecting a vigorous research environment under the guiding spirit of Robert Taylor and Jeffrey Katzer. These dissertations resulted in a number of articles (Carol Barry, Michael Eisenberg, Myke Gluck, Joseph Janes, Linda Schamber) reviewed later in this work. The Syracuse relevance school also produced a notable and widely cited review that had an extensive impact and changed the view of what is important in relevance. When well done, critical reviews can do that.

Schamber *et al.* (1990) re-examined thinking about relevance in information science, addressed the role of relevance in human information behavior and in systems evaluation, summarized major ideas and experiments, and came to a forceful conclusion that relevance should be modeled as being dynamic and situational. The idea was echoed in Schamber (1994), in which she connected the wider area of human information behavior studies with relevance, organized along the issues of relevance behavior, measurement, and terminology. Of course, dynamic properties of relevance had been discussed in previous decades and demonstrated in experiments as readily acknowledged by the authors, but it was their insistence on the primacy of the dynamic and situational nature of relevance—all is flux—that struck a chord.

They went further and proposed a rich research agenda for the investigation of users and relevance. Research questions were asked about: criteria that users employ in assessing relevance and consistency of their application; the characteristics of documents that are included in these criteria; indicators or clues in documents reflecting these characteristics; recognition of document-based clues by users; and recognition of document-based clues by systems.

The strength of the review was that it suggested a model of relevance in terms of the dynamics of human information behavior and situations in

which this behavior occurs. Moreover, it directed attention to a connection between aspects of documents (documentary relevance clues) and human relevance assessment. It modeled document clues as to relevance. As a result, a clues-oriented research developed, as synthesized in the section *Behavior of Relevance*.

The weakness was twofold. First, stating by itself that relevance is dynamic and situation dependent is not much more than a truism recognized in one way or another since Plato when he contemplated the nature of knowledge. It falls under the category “What else is new?” or “Can it be any other way?” Second, the concept of situation really was not elaborated on, even though promised in the title. Other investigations, reviewed later, specifically addressed both the dynamic and the situational behavior of relevance. Still, this conceptual contribution attracted wide attention and set the stage for further research.

B. Dual Model

Another review with high resonance was produced by [Mizzaro \(1997\)](#) as a “whole history of relevance” (title). The review was a comprehensive classification of 157 studies divided over three periods: Before 1958, 1959–1976, and 1977–1997. Within each period, he classified papers as dealing with one or more of seven different aspects:

1. methodological foundations,
2. different kinds of relevance,
3. beyond-topical criteria adopted by users,
4. modes for expression of the relevance judgment,
5. dynamic nature of relevance,
6. types of document representation,
7. agreement among different judges.

In effect, the seven aspects provide a convenient model along which works, conceptualizations, and findings about relevance may be categorized and compared.

In conclusions, Mizzaro posits the orientation of works in different periods:

The “1959–1976” period is more oriented toward relevance inherent in documents and query. In the “1977-present” period ... the researchers try to understand, formalize, and measure a more subjective, dynamic, and multidimensional relevance (*ibid.*: 827).

This duality reflects approaches to modeling relevance to this day.

C. Split between System and User Models

Relevance is a participant in a wider battle royal that started in the 1980s and is still going on. It involves two opposing views or models of IR: systems and users. The user side vehemently criticized the system side. The systems side barely noticed that it was attacked. A few reconciliatory authors tried to resolve the differences. In effect the invisible hand of relevance is behind the battle—how to deal with relevance is really what the battle is all about. The arguments resemble those presented in the late 1950s in C. P. Snow's memorable, though dated book *The Two Cultures*, in which he discusses the failure of communication between the sciences and the humanities (the “two cultures” of the title) (Snow, reprinted 1993).

In a massive study of co-citation patterns in information science for the period 1972–1995, White and McCain (1998), among others, mapped the structure of the field showing two broad clusters calling them “domain analysis” and “information retrieval.” Their conclusion: “Two subdisciplines of information science are not yet well integrated” (ibid.: 337) and, “as things turn out, information science looks rather like Australia: heavily coastal in its development, with a sparsely settled interior” (ibid.: 342). This holds for relevance—it indeed has two cultures, each with its own model; they are not integrated, and they map like Australia. Despite attempts at bridging, as reviewed below, the two cultures are mostly foreign to each other.

The systems viewpoint, obviously, considers IR from the systems' side ignoring the user. It is based on a model of IR, called traditional or laboratory IR model, in which the emphasis is on systems processing information objects and matching them with queries. The processing and matching is algorithmic; the goal of the algorithms is to create and maximize retrieval of relevant information or information objects. In the purest form of this model, the user is represented by a query and not considered in any other respect; also, interaction is not a consideration. The model has been in continuous and unchanged use since the Cranfield experiments (Cleverdon, 1967) to experiments conducted under the fold of Text REtrieval Conference (TREC) (Voorhees and Harman, 2005) (TREC, started in 1992, is a long-term effort at the [US] National Institute for Standards and Technology (NIST), that brings various IR teams together annually to compare results from different IR approaches under laboratory conditions).

The user viewpoint considers IR from the user's rather than the systems' side, taking the system as a given. The user is considered way beyond the query by seeking to incorporate a host of cognitive and social dimensions, and interaction into the model. The user viewpoint does not have a single

model that has been agreed upon, although quite a few have been proposed reflecting different perspectives (e.g., Ingwersen, 1996).

While there were rumblings long before, the frontal attack championing the user side came in a critical review by Dervin and Nilan (1986). While reviewing alternative approaches to the assessment of information needs, they issued a call for a significant paradigm shift in information needs and uses research from systems orientation to user orientation, underscoring that the systems approach is inadequate. The review, considered a turning point in user studies, was much cited, often as a sort of a manifesto. The Dervin and Nilan review did not consider relevance per se, but nevertheless relevance was predominant. Of course, studies of human information behavior (which include information seeking and user studies) can investigate aspects that do not involve relevance. However, when considering any aspect of retrieval, relevance is present either explicitly or as an invisible hand.

User studies became a burgeoning area of research with the following justification:

By looking at all kinds of criteria users employ in evaluating information, not only can we attain a more concrete understanding of relevance, but we can also inform system design (Schamber *et al.*, 1990, p. 773).

“Informing systems design” became a mantra not only for relevance studies, but also for all studies of human information behavior and information seeking in particular; it even concludes the introduction in this review. Seems logical. But it is not really happening. Why? The question was analyzed and lamented upon by a number of researchers and commentators about the state of affairs in information science. Researchers representing the systems viewpoint simply took a stance: *“Tell us what to do and we will do it.”* But the user side was not *“telling”* beyond the mantra. Unfortunately, *“telling”* is not that simple. Relevance is a factor of human intelligence. Human intelligence is as elusive to *“algorithm-ize”* for IR as it was for AI.

As it turns out, both sides in the battle are wrong. Dervin and Nilan and followers were wrong in insisting on the primacy or exclusivity of the user approach. Systems people were wrong in ignoring the user side and making the traditional IR model an exclusive foundation of their research for decades on end. Neither side got out of their box. Deep down the issue is really not a system vs. user approach. It is not system relevance *against* user relevance. The central issue and problem is: *How can we make the user and system side work together for the benefit of both?* When IR systems fail, the main reason is a failure in relevance; thus, that is the best reason for advocating the resolution of the system–user problem in an integrative manner.

A number of works have tried to reconcile the two viewpoints, suggesting integrative relevance models as a solution to the problem. Starting from the user viewpoint, Ingwersen and Järvelin (2005) produced a massive volume outlining the integration of approaches in information seeking and IR in context. The goal of the effort:

It is time to look back and to look forward to develop a new integrated view of information seeking and retrieval: the field should turn off its separate narrow paths of research and construct a new avenue (*ibid.*: vii).

This they did, with relevance playing a major and explicit role. They reviewed any and all models used in IR and in information seeking research, and produced an extensive model integrating cognitive and systems aspects of IR. The Ingwersen-Järvelin integrative model, anchored in cognition, is complex, reflecting the complexity of the process and situation. The model has five central components:

each consisting of data structures representing the cognitive structures of the actors involved in their generation, maintenance, and modification in time: 1) the IT setting; 2) the information space holding objects of potential information value to 3) information seekers via 4) interface mechanism—all set in 5) socio-organizational context (*ibid.*: 306).

The model is also an integrated relevance model. In addition, they defined several manifestations or kinds of relevance as discussed in the next section.

In a similar vein, Ruthven (2005) reviews various approaches to relevance, from systems to situational to cognitive, and advocates an approach that integrates IR and information seeking research. While he starts from a systems viewpoint, he also fully recognizes the limited nature of the ensuing relevance definition in that model. Among others, he reviews different kinds of relevance assessments (non-binary, consensus, completeness) and suggests that “allowing users of IR systems to make differentiated relevance assessments would seem a simple extension to the standard IR interface” (*ibid.*: 71). (Well, is it really “simple”?). He also deals with relevance dynamics—the issue of changing user assessments of relevance over time and comments how IR systems have responded poorly to this phenomenon. Ruthven rightly concludes:

How we use relevance in the design of IR systems—what evidence of relevance we see as important, how we believe this evidence should be handled, what inference we draw from this evidence—define what we see as the task of retrieval systems (*ibid.*: 77).

D. Stratified Model

Relevance is a tangled affair involving interaction between and among a host of factors and variables. In philosophy, Schutz (as reviewed in section *Theories of Relevance*) considered people in their everyday social world (“life-world”), which is not a homogeneous affair (and is really tangled!); he suggested that the life-world is stratified into different realities, with relevance being at the root of the stratification of the life-world. Models that view a complex, intertwined object (process, structure, system, phenomenon, notion) in a stratified way were suggested in a number of fields from linguistics to medicine to meteorology to statistics and more. “*Stratified*” means that the object modeled is considered in terms of a set of interdependent, interacting layers or levels; it is decomposed and composed back in terms of layers or strata.

After reviewing and reconsidering various relevance models, I proposed a stratified model for relevance (Saracevic, 1996). It is another integrative model. I further extended the stratified model to include IR interactions in general, encompassing a number of specific processes or notions that play a crucial role in IR interaction: relevance, user modeling, selection of search terms, and feedback (Saracevic, 1997). Various elements in and derivations from the model were also elaborated on and extended by Cosijn and Ingwersen (2000). Relevance is placed within a framework of IR interaction. In the stratified model, IR interactions are depicted as involving a number of layers or strata; inferences about relevance are created or derived in interaction and interplay among these strata. Generally, the stratified model is aimed at decomposing the complex interaction between people, information, and technology on the one hand, and showing the interdependence between the elements involved on the other hand.

The stratified model starts with assumptions that: (i) users interact with IR systems in order to use information and (ii) that the use of information is connected with cognition and then situational application, that is, it is connected with relevance (Saracevic and Kantor, 1997). These assumptions also follow from relevance attributes as summarized in the section *Meaning of Relevance*. The major elements in the stratified model are user and computer, each with a host of variables of their own, having a discourse through an interface, as depicted in Fig. 1.

The user side has a number of levels. I suggest three to start with: *Cognitive*, *Affective*, and *Situational*. The suggested computer levels are *Engineering* (hardware), *Processing* (software, algorithms), and *Content* (information resources). It should be recognized that each level can be further

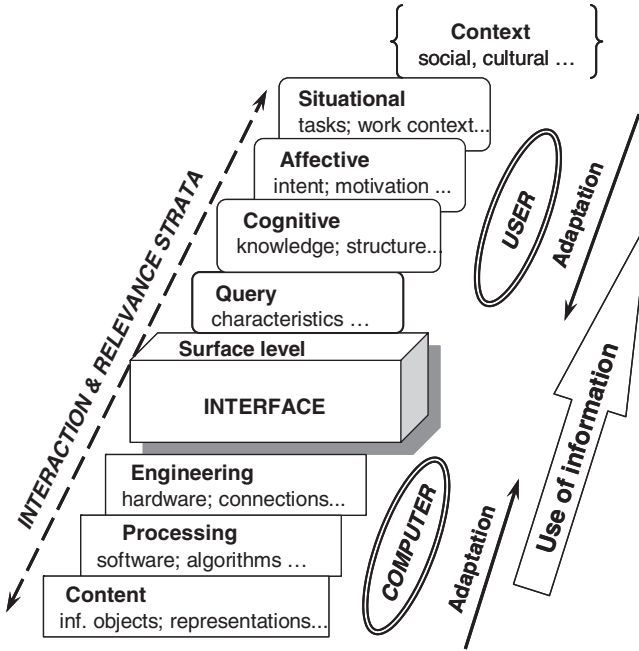


Fig. 1 Stratified model of relevance interactions.

delineated, or that others may be added, depending on the given set of conditions or emphasis in analysis.

A variety of interactions are instantiated on the interface or surface level, but the interface is not the focus of interactions despite the fact that it can in its own right effectively support or frustrate other interactions. We can think of interaction as a sequence of processes occurring in several connected levels or strata. *The IR interaction is then a dialog between the participants—elements associated with the user and with the computer—through an interface, with the main purpose being to affect the cognitive state of the user for effective use of relevant information in connection with an application at hand, including a context.* The dialog can be reiterative, incorporating among other things, various feedback types, and can exhibit a number of patterns—all of which are topics for study.

Each strata/level involves different elements and/or specific processes. On the human side, processes may be physiological, psychological, affective, and cognitive. On the computer side, they may be physical and symbolic. The

interface provides for an interaction on the *surface* level in which:

1. Users carry out a dialog by making utterances (e.g., commands) and receiving responses (computer utterances) through an interface with a computer to not only do searching and matching (as depicted in the traditional IR model), but also engage in a number of other processes or “things,” beyond searching and matching, such as: understanding and eliciting the attributes of a given computer component, or information resource; browsing; navigating within and among information resources, even distributed ones; determining the state of a given process; visualizing displays and results; obtaining and providing various types of feedback; making judgments; and so on.
2. Computers interact with users with given processes and “understandings” of their own, and provide given responses in this dialog; they also may provide elicitations or requests for responses from the user in turn.

Let me elaborate on the nature of relevance from the stratified model point of view. We assume that the primary (but not the only) intent on both the user and the computer side of IR interaction deals with relevance. Given that we have a number of strata in interaction, and that in each of them may be considerations or inferences as to relevance, then relevance can also be considered in strata. In other words, in IR we have a dynamic, interdependent *system of relevances* (note plural). Similarly, this plurality was depicted by Schutz, from whom I took the term “system of relevances,” and by Sperber and Wilson, who talked about principles of relevance. In IR, relevance manifests itself in different strata. While often there may be differences in relevance inferences at different strata, these inferences are still interdependent. The whole point of IR evaluation, as practiced, is to compare relevance inferences from different levels. We can typify relevance as it manifests itself at different levels, and we can then study its behavior and effects within and between strata—as treated in relevant sections.

E. Summary

All IR and information seeking models have relevance at their base either explicitly or as an invisible hand—in effect they are relevance models. A variety of integrative relevance models, above and beyond the simple traditional IR model, have been proposed. Basically, the models sought a framework within which the complexity of relevance may be analyzed, and the widely dissonant ideas on the notion may be interpreted and related to one another.

Among them, the stratified model has been suggested not only for modeling relevance but also for modeling interaction in IR, and more broadly in human–computer interaction (Saracevic, 1997). As examples, Rieh and Xie (2006) adapted it for a study of patterns of interactive

reformulation of queries posed on the Web, and Spink and Cole (2005b) for deriving a multitasking framework for cognitive IR. At its base, relevance involves interaction. Interaction is interplay between numbers of elements—so is relevance. Interaction is a tangled affair—so is relevance. The stratified model is suggested as one way to untangle them.

Proposing more complex models was an advance in relevance scholarship. However, suggesting models and applying them are two different things. Time will tell if the integrative models and approaches to IR will be successful in furthering research and practice.

IR systems chose to deal with a (if not even THE) most simplified model and manifestation of relevance (later called weak relevance). Within that model, IR is a proven success. Now that much more complex models and manifestations of relevance have been identified, together with suggestions to be incorporated in IR, the challenge to translate them into IR research and practice has increased a lot. *A LOT!*

VII. Manifestations of Relevance: How Relevance Is Not One Thing But Many And How They Are Interpreted

“*How many relevances in information retrieval?*” is a title of an article by Mizzaro (1998). Indeed, how many? Manifestation is a realization, a display of existence, nature, qualities, or presence of some thing. Like many other notions or phenomena, relevance has a number of manifestations. Think of energy: potential energy and kinetic energy are some of its manifestations. For some phenomena or notions, it is not that easy to identify the variety of manifestations and to distinguish among them. Think of manifestations of love. Or information. Or relevance.

As already pointed out, in information science, relevance was early on distinguished as comprising various kinds. It was an explicit realization that relevance has different manifestations. With time and recognition of a number of problems with relevance, a cottage industry has developed in identifying and naming different kinds or manifestations of relevance, or presenting arguments about various manifestations. Manifestations of relevance also became argumentative.

As noted, relevance, among other things, indicates a relation. Efforts to specify manifestations of relevance have concentrated on identifying what given objects are related by a given kind of relevance—the Ps and Qs discussed in the section *Meaning of Relevance*. Different manifestations are manifested by different objects being related and/or by different properties used

for a relation. Sometimes, the efforts also involved naming different manifestations—such as adding a qualifier in the form of {*adjective*} relevance, for example “*topical* relevance” or using a distinct name to denote a distinct manifestation, for example “pertinence.” Relevance gained adjectives. Relevance gained names. But that which we call relevance by any other word would still be relevance. Relevance is relevance is relevance is relevance. The arguments about manifestations concentrated more on the primacy of given manifestation rather than their nature. Here is an attempt to interpret the proposed manifestations and replay the manifestation arguments.

A. Starting from Duality

In 1959, Brian Vickery was first to recognize that relevance has different manifestations (Vickery, 1959a, b). Inadvertently, the way in which he did it also precipitated a pattern of discussion about relevance manifestations that continues to this day. In a paper in the *Proceedings of the International Conference on Scientific Information* (a highly influential conference and publication), Vickery defined: the “controlling [criterion] in deciding on the optimum level of discrimination, we may call *user relevance*” (italics his; 1959a, p. 863). In another paper about terminology and retrieval, he discussed what is meant by “relevant to a particular sought subject” (1959b, p. 1227). He identified a duality of relevance manifestations *and* he treated each separately.

User relevance on the one hand and *subject (topic, system) relevance* on the other. These represent the basic relevance manifestations. Each involves different relations. Each can and was further refined and interpreted; each can be thought as a broad class with subclasses. In retrieval they dance together, sometimes in intricate patterns and with various levels of success. This is the nature of any and all retrievals of information. This is why we consider relevance as interaction. The interplay between the two manifestations cannot be avoided; however, the effectiveness may differ greatly depending on how the interplay is accomplished. The two should be complementary, but at times they are in conflict. The duality was explicit in reviews discussed in the preceding section.

In a paper with the shortest title in the history of relevance writings, Bookstein (1979) pursues the formalization of an operational interpretation of relevance for IR “[to help] the reader disentangle at least part of the web of notions surrounding one of the most basic concepts of our discipline” (ibid.: 272). In discussing what people intend when they use the term “relevant” (quotes his) and what the basic functions of an IR system are, Bookstein explicitly recognizes a “duality of viewpoints,” and concludes that it “accounts for much of the confusion surrounding the notion of relevance” (ibid.: 269).

Relevance is confusing. Yes it is, but the duality cannot be avoided despite the confusion such duality creates. It can only be made less confusing.

In a different way, the tension within the relevance duality was expressed as “objective versus subjective relevance” (Swanson, 1986: title). As to the two types of relevance, Swanson equates them to Popper’s “Worlds” and opines:

Whatever the requester says is relevant is taken to be relevant; the requester is the final arbiter ... Relevance so defined is subjective; it is a mental experience.” “A possibility exists that such a request is logically related to some document. ... That relationship is then the basis that the document is objectively related to the request (Ibid.: 391, 392).

Swanson’s argument about objective relevance is based on logical relations between requests and documents, and a possible degree of confirmation. Pessimistically, Swanson concludes: “[For the purpose of an IR search] I believe that the problem of accounting for or describing subjective relevance is essentially intractable” (ibid.: 395). This pessimism is in stark contrast to the optimistic mantra of user studies, described in the preceding section, stating that such studies have a potential of contributing to better designs. Thus, we have another duality: optimistic and pessimistic relevance. To date, the pessimistic kind is pragmatically ahead.

In a similar vein, Ingwersen and Järvelin (2005) considered algorithmic relevance as an “objective assessment made by a retrieval algorithm,” and topical relevance, pertinence, situational relevance, and socio-cognitive relevance as being “of higher order due to their subjectivity” (ibid.: 381, 385).

While it is hard to think about anything in relevance as fully objective, considering relevance in these terms follows ideas of Karl Popper (thought of as the greatest philosopher of science in the 20th century) and his three interacting “Worlds”:

World One, is the phenomenal world, or the world of direct experience. World Two is the world of mind, or mental states, ideas, and perceptions. World Three is the body of human knowledge expressed in its manifold forms, or the products of the second world made manifest in the materials of the first world (e.g., books, papers, symphonies, and all the products of the human mind). World Three, he argued, was the product of individual human beings. The influence of World Three, in his view, on the individual human mind (World Two) is at least as strong as the influence of World One (Popper, 1972).

At its base, relevance is dual, perhaps a product of interaction between different Worlds, but from that dualism grows a pluralistic system of relevancies.

B. Beyond Duality

Relevance manifestations are cornucopian. There is much more to relevance manifestations than duality. A number of works suggested other or additional relevance manifestations. For instance, Cooper (1971) introduced “logical relevance,” and improving on this, Wilson (1973) introduced “situational relevance.” Harter (1992) championed “psychological relevance.” “Topical relevance” was a perennial topic of discussion. “Pertinence” and “utility” were used by a number of authors. And we also have “system relevance,” “documentary relevance,” and so on, as discussed below.

In the previously cited article, Mizzaro (1998) tried to create order and clarify the issue of relevance manifestations by suggesting a classification that accommodates all of them. He proposed that relevance manifestations can be classified in a four-dimensional space: (i) *information resources* (documents, surrogates, information); (ii) *representation of user problem* (real information need, perceived information need, request, query); (iii) *time* (interaction between other dimensions as changed over time); and (iv) *components* (topic, task, context). Accordingly, Mizzaro suggests that each manifestation of relevance can be represented by where it fits into this four-dimensional space as a partial order. For example:

rel (*Surrogate, Query, t(q₀), [Topic]*) stands for the relevance of a surrogate to the query at time *t(q₀)*, with respect to the topic component (the relevance judged by an IR system (ibid.: 311).

If we agree to these four dimensions, including the given definitions of what they contain, then Mizzaro is right: various manifestations can indeed be consigned to various dimensions. But is it a space? Hardly, for the expression of some logical placements of and distances between different manifestations cannot be derived.

Starting from the cognitive viewpoint and the idea that relevance judgments evolve during the process of IR interaction, Borlund (2003) developed a framework for viewing relevance that also can be considered a classification of various manifestations of relevance. She analyzed three instances of relevance relations, also enumerating aspects or variables involved: (i) the types of relevance relationships employed in traditional non-interactive IR during an IR session; (ii) the types of relevance relationships involved in a given instance of an IR session, which includes situational relevance as viewed by Wilson (1973); and (iii) the types of relevance relationships which include the interrelationship between judgment of situational relevance and the development of the information need during a dynamic and interactive IR session. Depicted manifestations are from non-interactive to situational to interactive.

The three instances build on each other, and the third, as expected, is most comprehensive. Topical, situational, and cognitive relevances are modeled.

Both of these works provide a framework for conceptualizing various attributes of relevance and a classification for relevance manifestations. But as the first sentence of this section ponders: We still do not know “how many relevances” there are.

1. User Relevances

User relevances follow from user context. And user context was a main consideration in a number of relevance models already discussed. But what does that mean? What manifestations are involved? One way is to classify them as internal and external.

Internally, the most prominent variable in which relevance plays a role is in changes in the cognitive state. This prompted Harter (1992) to introduce *psychological relevance*; more often labeled *cognitive relevance*—meaning a relation between *information objects or information* and the *user's cognitive state*. But this is not the only internal aspect. Carol Kuhlthau studied extensively and longitudinally the process of information seeking (her work, beginning in the 1980s, is synthesized in Kuhlthau, 2004). While she did not study relevance per se, she derived a model of information seeking (“Kuhlthau’s model”) that involved not only cognitive but also affective aspects of users. Following this, Saracevic (1996) added to other relevance manifestations also *motivational or affective relevance*—a relation between *information or information objects* and *intents, goals, motivations, frustrations of a user*. Cosijn and Ingwersen (2000) elaborated further on Saracevic (1996), and defined five manifestations of relevance: *algorithmic, topical, cognitive, situational, and socio-cognitive*. However, they made a distinction between motivation and intention or intentionality, and even “placed affective relevance not as a manifestation nor as an attribute, but as a dimension in line with time” (ibid.: 546). They considered that affective relevance is time dependent over all manifestations except algorithmic relevance. Affective relevance is also contentious.

Externally, we consider that a user is faced with something in relation to which relevance is inferred. This introduced *situational relevance*—a relation between *information or information objects* and *situation, task, or problem at hand facing the user*. However, “external” really is not wholly external—it also involves user interpretation of that externality. Cosijn and Ingwersen (2000, p. 547) made a further distinction: in addition to situational relevance, they introduced *socio-cognitive relevance*, a relation between *information or information objects* and *situation, task or problem at hand as perceived in socio-cultural context*. The context of relevance has a further context.

2. Topical Relevance

Vickery (1959b) labeled it *subject relevance*, but, more often than not, we call it *topical relevance*. Both terms denote the same relation: between *information or information objects* and *the topic or subject under consideration*. Topical relevance may be inferred from the output of an IR system, or completely independent of any system—from any set of information objects, for example from the pile of documents in my office that I gathered there over the years. Topical relevance may or may not involve an IR system.

Documentary relevance also denotes topical relevance, but is restricted to documents as texts, rather than a whole class of information objects that include not only texts, but other informational artifacts, such as images, music, speech, or multimedia. Ingwersen and Järvelin (2005) introduced *bibliographic relevance*—a relation between *representations of metadata* (e.g., as found in a catalog) and *the topic or subject under consideration*.

To narrow relevance manifestation down to systems, we have *system relevance*—a relation between *information or information objects retrieved by the system* and *the query*. Sometimes it is also called *algorithmic relevance* to denote the method of inference. It has been argued that in a narrow sense system relevance is always perfect; the system retrieved that which the query asked for. Not so. The whole point of the evaluation of different algorithms is that they produce different outputs for the same query and from the same set of documents in the system's belly.

3. Issue of Primacy: Weak and Strong Relevance

Does topical relevance underlie all others? Do all other manifestations of relevance follow from topical relevance and does it have primacy among relevance manifestations? As we can imagine, there are two schools of thought: yes and no.

In the first, topicality is basic. For example, in summarizing definitions of topical relevance, pertinence, and utility, Soergel (1994) suggests that an entity—information object—is topically relevant if it can help to answer a user's question; it is pertinent if topically relevant and appropriate for the user—a user can understand and use the information obtained—and it has utility if pertinent and gives the user new information. In this view, pertinence and utility follow from topicality.

In the second school of thought, topicality is not basic, there is relevance beyond topicality. Non-topical relevance can be derived, as discussed in the section *Meaning of Relevance*, from information objects that are not directly topically related.

The issue boils down to the query and request on one hand and information interpretation and derivation on the other. In a strict correspondence between a query and request, topical relevance is basic. But, if we approach the issue with human intellect and imagination, then many interpretations can be made. Topical relevance is but one manifestation, while others may be of even more interest—relevance is not necessarily restricted to a single, direct correspondence. Topical relevance by itself may be labeled as weak relevance: the second interpretation, relevance beyond topicality, includes derivative powers of the intellect and is more argumentative. This may be labeled as strong relevance: there is weak relevance and strong relevance. Weak relevance goes with systems, strong with people. Duality strikes again.

Topical relevance is certainly the basis for system or algorithmic relevance (Borlund, 2003). A simple line of reasoning is: systems retrieve that which is asked for in a query; a query represents a topic of interest. As is practiced today, the overwhelming majority of IR systems organize information objects around words; queries are expressed in words, and matching is based on words or derivative connections. These words are mostly noun phrases. Even when documents are matched based on similarity, matching is based on words. More sophisticated handling involves patterns, such as in music or image retrieval, or links, such as in citation retrieval or Google's page-rank retrieval. But word-based retrieval is still on the throne. In turn, word-based retrieval is based on trying to establish topical relevance. In this sense, it is also the simplest kind of relevance, no matter the sophistication of algorithms and procedures involved. Systems construct weak relevance. This does not mean that the task is simple, for words, arranged in language, are by no means a simple proposition to handle. They are human creation, complex and messy. It is very hard to deal even with the simplest, weakest kind of relevance.

C. Summary

Relevance is like a tree of knowledge. The basic structure of the system of relevances in information science is a duality. The tree of relevance has two main branches, system and human, each with a number of twigs, but it is still the same tree. The roots of the branches and the fruits (results) are a matter for exploration.

Here is a summary of the manifestations of relevance in information science, mainly following Saracevic (1997), Cosijn and Ingwersen (2000),

and Borlund (2003):

- *System or algorithmic relevance*: Relation between a query and information or information objects in the file of a system as retrieved or as failed to be retrieved, by a given procedure or algorithm. Each system has ways and means by which given objects are represented, organized, and matched to a query. They encompass an assumption of relevance, in that the intent is to retrieve a set of objects that the system inferred (constructed) as being relevant to a query. Comparative effectiveness in inferring relevance is the criterion for system relevance.
- *Topical or subject relevance*: Relation between the subject or topic expressed in a query and topic or subject covered by information or information objects (retrieved or in the systems file, or even in existence). It is assumed that both queries and objects can be identified as being about a topic or subject. Aboutness is the criterion by which topicality is inferred.
- *Cognitive relevance or pertinence*: Relation between the cognitive state of knowledge of a user and information or information objects (retrieved or in the systems file, or even in existence). Cognitive correspondence, informativeness, novelty, information quality, and the like are criteria by which cognitive relevance is inferred.
- *Situational relevance or utility*: Relation between the situation, task, or problem at hand and information objects (retrieved or in the systems file, or even in existence). Usefulness in decision-making, appropriateness of information in resolution of a problem, reduction of uncertainty, and the like are criteria by which situational relevance is inferred. This may be extended to involve general social and cultural factors as well.
- *Affective relevance*: Relation between the intents, goals, emotions, and motivations of a user and information (retrieved or in the systems file, or even in existence). Satisfaction, success, accomplishment, and the like are criteria for inferring motivational relevance.

VIII. Behavior of Relevance: Or Rather, How People Behave Around Relevance and How It Was Studied

Strictly speaking, relevance does not behave. People behave. A number of studies examined a variety of factors that play a role in how humans determine relevance of information or information objects. Relevance behavior studies are closely related to information seeking studies and to the broad area of human information behavior studies. Not surprisingly then, texts that deal with human information behavior or cognitive IR, which is based on human information behavior, extensively deal with relevance as well (e.g., Ingwersen and Järvelin, 2005; Spink and Cole, 2005a). Many studies on various aspects of human information behavior are related to relevance behavior but are not included here for space reasons. Examples include studies on decisions about documents in reading and citing (Wang and White, 1999), on judgment of cognitive authority and information quality (Rieh and Belkin, 2000), or on users' assessments of Web pages (Tombros *et al.*, 2005). Kelly (2005) reviewed a host of studies about human decisions during

interaction with the Web (or other information resources); the focus was on decisions as to what to examine, retain (save, print), reference, annotate, and the like. Such decisions are treated as implicitly indicating relevance. In other words, although relevance was not overly indicated, an action such as saving a page or document is regarded as implying relevance; relevance is not stated but assumed. While related to relevance by assumption, studies on implicit or secondary relevance are also not included here.

In this and the next section, I concentrate *exclusively* on observational, empirical, or experimental studies, that is, on works that contained some kind of data directly addressing relevance. Works that discuss or review the same topics but do not contain data are *not* included, with a few exceptions to provide a context. Works that are related but do not directly treat relevance, as the aforementioned human information studies, also are excluded. I probably missed some studies and did not include repetitive papers (where the same study is reported again), but I believe this coverage of relevance studies with data for the last three decades is a fairly complete representation. This seems to be it. A few studies before that period are included for context. Relevance experimental and observational studies were very much alive in the 1960s; they had a hiatus from the mid-1970s until the late 1980s, and started on a revival path in the early 1990s.

Studies are briefly summarized following this pattern:

- [author] used [subjects] to do [tasks] in order to study [object of research].

If the authors had several objects of research, only those related to relevance are mentioned, thus the full statement should actually be read as: “in order to study, among others, [object of research].” While most, if not all, studies included a discussion of a framework (underlying theories, models, concepts, and the like), this discussion is omitted in their description that follows because it is covered in preceding sections of this article. Where appropriate, some summaries include numerical results. However, the principal results from all of the studies, with a number of caveats, are synthesized and generalized at the end of the section.

A. Relevance Clues

What makes information or information objects relevant? Or more specifically: What do people look for in information or information objects in order to infer relevance? Two distinct approaches are used in deciphering this question. In the first, or topic, approach, the course of deriving topical or non-topical relation is analyzed. This approach (represented by Green and Bean, 1995 and Swanson and Smalheiser, 1997, 1999) was treated in the section Meaning of

Relevance. The second or clues approach, treated here, follows the research agenda proposed by Schamber *et al.* (1990) (reviewed in the section Models of Relevance) to study criteria or clues found in given information or information objects (usually documents) that people use in assessments of relevance. The first approach deals with topical relevance only; the second includes cognitive, situational, and affective relevance as well.

Specifically, clues research aims to uncover and classify attributes or criteria that users concentrate on while making relevance inferences. The focus is on criteria users employ while contemplating what is or is not relevant, and to what degree it may be relevant. A wide range of clues or criteria were investigated. Different observational studies came up with different lists and classifications. Here are summaries of various studies:

- Schamber (1991) interviewed 30 users of weather information using different sources, from oral reports to documents and maps in order to derive and categorize their relevance criteria. She identified 22 categories in 10 groups.
- Park (1993) interviewed four faculty and six graduate students who received an online search related to their real need in order to study the thought processes of users evaluating retrieved bibliographic citations. She identified three major categories that included 22 subcategories of variables affecting relevance inferences.
- Cool *et al.* (1993) report on two studies. In the first, they asked approximately 300 freshmen in a computer science course, who were assigned to write an essay on a topic and had selected at least five sources on the topic, to indicate reasons for their selections. In the second study, they interviewed an unspecified number of humanities scholars on their use of information sources for a variety of tasks from teaching to research. Both studies were done in order to identify characteristics of texts affecting relevance judgments. They identified six facets of judgment of document usefulness.
- Barry (1994) interviewed 18 academic users (not specified as being students or faculty) who had requested an information search for documents related to their work in order to categorize their relevance criteria. She identified 23 categories in seven groups.
- Howard (1994) studied nine graduate students who had selected five to seven documents for a class assignment, and identified the relevance criteria for their selections in order to determine and compare personal constructs (criteria) used in relevance assessments. She identified 32 personal constructs grouped in two groups (topicality and informativeness).
- Wang (1997) compared 11 relevance criteria derived from a study in her doctoral dissertation with criteria from four other studies (Barry, 1994; Cool *et al.*, 1993; Park, 1993; Schamber, 1991) in order to suggest a general model for document selection using relevance clues.
- Fidel and Crandall (1997) studied 15 engineering users and observed 34 sessions in which they received technical reports, asking them to think aloud about their decisions of deleting or retaining given reports in order to derive criteria for judging the reports relevant or not relevant. They identified 13 criteria explaining why a report was relevant, and 14 explaining why was not relevant.
- Barry and Schamber (1998) compared results from two of their studies (Barry, 1994; Schamber, 1991) in order to study similarities and differences in derived criteria. They identified 10 criteria in common and concluded that there is a high degree of overlap in criteria from both studies despite the difference in users and sources. This is the only study that attempted a badly needed generalization about relevance clues and criteria with a detailed analysis of data.

Other studies that addressed the issue compared different criteria with a checklist or in a brief discussion.

- **Barry (1998)** looked at 18 students and faculty (not differentiated as to how many in each category) who submitted a request for an online search and were presented with 15 retrieved documents. The documents were organized in four document representations in order to identify the extent to which various document representations contain clues that allow users to determine the presence, or absence, of traits, and/or qualities that determine the relevance of the document.
- **Tombros and Sanderson (1998)** asked two groups of 10 graduate students each to judge the relevance of a list of the 50 highest-ranked documents from 50 TREC queries in order to investigate the impact of different document clues on the effectiveness of judgments. Each subject judged relevance for five queries; one group judged documents with, and the other without, summaries, and judgment time was limited to 5 minutes.
- **Schamber and Bateman (1999)** used a total of 304 graduate students in five studies over several (unspecified) years to sort and rank a number of relevance criteria they used while seeking information, starting with 119 relevance criteria concepts/terms from previous studies, in order to interpret and rank user-determined relevance criteria while making relevance inferences.
- **Hirsh (1999)** interviewed 10 fifth-grade children, who searched various electronic sources for a class assignment, about their ways of searching and making decisions. The interviews were done during the first and third week of the project in order to examine how children make relevance decisions on information related to a school assignment. She identified nine categories of relevance criteria for textual materials and five categories for graphical materials.
- **Fitzgerald and Galloway (2001)** observed 10 undergraduate students using a digital library for their projects in assessing a total of 138 retrieved documents in order to derive relevance- and evaluation-related reasoning. They identified 11 relevance and 11 evaluation categories of reasoning, both entering in relevance decisions.
- **Maglaughlin and Sonnenwald (2002)** asked 12 graduate students with real information needs to judge the relevance of the 20 most recent documents retrieved in response to a query that were presented in different representations in order to derive and compare criteria for relevant, partially relevant, and non-relevant judgments. They identified 29 criteria in six categories and compared the presence of their criteria with criteria from 10 other studies.
- **Toms et al. (2005)** recruited 48 subjects from the general public to search the Web for answers to 16 tasks (topics) in four domains. The subjects were asked to indicate in a verbal protocol their assessment of and satisfaction with the results in order to identify and categorize a set of measures (criteria) for relevance along five relevance manifestations as formulated by Saracevic (1996). They identified 11 measures of relevance.

1. Image Clues

What makes images relevant? Are clues used in relevance inference about images similar to those for texts?

- **Choi and Rasmussen (2002)** interviewed 38 faculty and graduate students of American history (not differentiated as to faculty and students) on the retrieval of images using the Library of Congress *American Memory* photo archive in order to study the users' relevance criteria and dynamic changes in relevance criteria as expressed before and after the search. They used nine criteria before and identified an additional eight after the search.

B. Relevance Dynamics

Do relevance inferences and criteria change over time for the same user and task, and if so, how? The basic approach used to answer this question starts with two assumptions. As a user progresses through various stages of a task: (i) the user's cognitive state changes and (ii) the task changes as well. Thus, something about relevance also is changing. The idea of studying such dynamic changes in relevance has a long history. Rees and Schultz (1967) pioneered this line of inquiry by studying changes in relevance assessments over three stages of a given research project in diabetes. Since then, studies of relevance dynamics follow the same ideas and assumptions. Here is a representative sample of studies on this topic:

- Smithson (1994), in a case study approach, studied 22 graduate students with a semester-long assignment to produce a report on a given management information systems topic. Searches for information on the topic were performed by an unspecified number of intermediaries using online databases. In order to observe differences in judgments at different stages (initial, final, citing) and among different cases Smithson had the users judge a combined total of 1406 documents for relevance at the initiation and completion stages of the case. He found that 82% of the documents relevant in the initial stage were relevant in the final stage; 12% of the initially relevant documents were cited, but there was a large individual difference among cases.
- Bruce (1994) observed an unreported number of graduate students during three stages of search and retrieval (before, during, after) in relation to their coursework in order to study cognitive changes that occur during IR interaction.
- Wang and White (1995) interviewed 25 faculty and graduate students (not distinguished as to number) about relevance decisions they made concerning documents in the course of their research in order to identify relevance criteria used in early and later stages of the subjects' research. They identified 11 criteria in the early stages and another eight in the later stages of research.
- Tang and Solomon (1998) observed one graduate student in two sessions during the process of retrieving information for a term paper in order to study the evolution of relevance judgments.
- Bateman (1998) studied 35 graduate students during six different information seeking stages in respect to a research paper for their class. The students were asked to rate the importance of 40 relevance criteria in different stages in order to determine whether the criteria change at different stages. She found the criteria were fairly stable across stages.
- Vakkari and Hakala (2000) and Vakkari (2001) studied 11 students over a term taking a course on preparing a research proposal for a master's thesis. They observed the students' search results and relevance judgments at the beginning, middle, and final phases of their work in order to study changes in their relevance assessment. The share of relevant references declined from 23% in the initial phase to 11% in the middle and 13% in the final phase. They identified 26 criteria in six groups. They found that the distribution of criteria changed only slightly across phases.
- Tang and Solomon (2001) report on two studies: In the first, 90 undergraduate students who were given an assignment and 20 documents first as a bibliographic citation (called stage 1) and then full text (called stage 2) were asked to evaluate their relevance for the assignment; in the second study, nine graduate students who searched for documents to support their own

research also were evaluated at stages 1 and 2 in order to identify patterns in change in their use of criteria in the two studies and at different stages (i.e., from representations to full text). They found that there were dynamic changes in users' mental model (criteria) of what constitutes a relevant document across stages.

- Anderson (2005) observed two academics involved in scholarly research over a period of 2 years in order to explore relevance assessments as part of the decision-making process of individuals doing research over time. She identified 20 categories in 10 groups that users focused on in making relevance judgments. Three of the groups relate to determining the appropriateness of information and seven to shaping boundaries to a topic.

C. Relevance Feedback

What factors affect the process of relevance feedback? A short explanation of relevance feedback (RF) from the human perspective: I find a relevant document, go through it and, on the basis of something in that document, go on and re-formulate my search or identify something else that I should consult. In IR, RF is a technique aiming at improving the query being searched using terms from documents that have been assessed as relevant by users (manual RF), or by some algorithm, such as using terms from top-ranked retrieved documents (automatic RF). Manual RF has a long history in search practices by professionals and users, while automatic RF has a long history in IR evaluation. Of interest here are not the means and ways of either manual or automatic RF in IR, but the behavior of people when involved in RF.

- Spink and Saracevic (1997) used search logs and interaction transcripts from a study that involved 40 mediated searches done by four professional intermediaries on DIALOG databases in response to real information needs in order to analyze the nature of feedback involving users, intermediaries, searches, and results. The users judged 6225 retrieved documents as to relevance. The researchers identified 885 feedback loops grouped in five categories depicting different types of feedback.
- Jansen *et al.* (2000) analyzed logs of 51,423 queries posed by 18,113 users on the Excite search engine in order to determine a number of query characteristics, including the incidence of RF. They found that 5% of queries used RF.
- Quiroga and Mostafa (2002) studied 18 graduate students who searched a collection of 6000 records in consumer health on a system with various feedback capabilities. The researchers provided a verbal protocol of proceedings in order to categorize factors that influence RF assessments. They identified 15 factors in four categories related to users and three categories of factors related to documents.
- Ruthven *et al.* (2003) used 15 undergraduate and 15 graduate students to search six simulated search topics on an experimental and a control system in five experiments in which they assessed retrieved documents as to relevance in order to examine the searchers' overall search behavior for possibilities of incorporating manual RF into automatic RF. They found, among other things, that users are more satisfied when RF was available, and that their search was more effective. This is really an IR systems study, but it is included here to show the human side investigated.

D. Summary

Caveats abound. Numerous aspects of the studies reviewed can be questioned and criticized. Easily! Criteria, measures, and methods used in these studies are not standardized. While no study was an island, each study was done more or less on its own. As to the population of users, students were the primary target and studied ad nauseam—but more about that later. Thus, the results are hardly generalizable. Still, it is really refreshing to see conclusions made on basis of data, rather than on basis of examples, anecdotes, authorities, or contemplation. Summary conclusions below are derived from the studies reviewed and should be really treated as hypotheses.

Relevance clues. Clues studies inevitably involved classification; their results were categories of criteria used by users or factors affecting users in inferences about relevance, including different characteristics of information objects. Classification schemes and category labels more or less differed from study to study. However, the most important aspect of the results is that the studies independently observed a remarkably similar or equivalent set of relevance criteria and clues. With all the caveats, here are some generalizations to be treated as hypotheses:

- Criteria used by a variety of users in inferring relevance of information or information objects are finite in number and the number is not large; in general, criteria are quite similar despite differences in users. *Different users = similar criteria.*
- However, the weight (importance) different users assign to given criteria differs as to tasks, progress in task over time, and class of users. For instance, children assign little or no importance to authority, while faculty assigns a lot. *Different users, tasks, progress in tasks, classes of users = similar criteria = different weights.*
- While there is no wide consensus, on a general level, clues and associated criteria on which basis users make relevance inferences may be grouped as to:
 - *Content:* Topic, quality, depth, scope, currency, treatment, clarity.
 - *Object:* Characteristics of information objects (e.g., type, organization, representation, format, availability, accessibility, costs).
 - *Validity:* Accuracy of information provided, authority, trustworthiness of sources, verifiability.
 - *Use or situational match:* Appropriateness to situation, or tasks, usability, urgency; value in use.
 - *Cognitive match:* Understanding, novelty, effort.
 - *Affective match:* Emotional responses to information, fun, frustration, uncertainty.
 - *Belief match:* Credence given to information, acceptance as to truth, reality, confidence.
- These groups of criteria are *not* independent of each other. People apply multiple criteria in relevance inferences and they are used interactively.
- The interaction is between information (or object) characteristics (top three above) and individual (or human) characteristics (bottom four). This is posited in the stratified model presented in the *Models of Relevance* section.
- Content-oriented criteria seem to be most important for users. However, as pointed out, they interact with others. In other words, criteria related to content, including topical relevance, are

rated highest in importance, but interact with other criteria—they are not the sole criteria:

- However, when assessing the use of search outputs, *the value of search results as a whole* seems to be the critical criterion that users apply in making relevance inferences on retrieved information objects.
- Criteria used for assigning different ratings (e.g., relevant, partially relevant, not relevant) are substantially (but not completely) similar. However, the weight (could be positive or negative) assigned to a given criterion differs depending on the rating—for example weight for the same criterion on a document judged relevant differs from the weight of a document judged not relevant. *Different ratings of relevance = similar criteria = different weights.*
- Similarly, while the criteria are similar, the importance of criteria changes from the presentation of document representations to the presentation of full text. Some become more important, some less—no clear pattern has emerged.
- Of all document representations (excluding full text), titles and abstracts seem to produce the most clues.
- Visual information provides clues that make for a faster inference than textual information does.

Dynamics. Ultimately, dynamic studies involved observing changes over time, even though time itself was not involved directly in any of the studies as a variable. Some things indeed change over time, while others stay relatively constant.

- For a given task, it seems that the user's inferences about specific information or information object are dependent on the stage of the task.
- However, the user's criteria for inferences are fairly stable. As the time and the work on the task progress, users change criteria for relevance inferences, but not that much. The user's selection of given information or information objects changes—there is a difference. Also, the weight given to different criteria may change over stages of work. *Different stages = differing selections but different stages = similar criteria = different weights.*
- As time progresses and a task becomes more focused, it seems that the discriminatory power for relevance selection increases. *Increased focus = increased discrimination = more stringent relevance inferences.*
- As to criteria, user perception of topicality seems still to be the major criterion, but clearly not the only one in relevance inferences. However, what is topical changes with progress in time and task.

Relevance feedback. Human feedback studies reported here inevitably involved IR systems and search results; however, concentration was on how people behaved in relation to feedback:

- Human RF involves several manifestations in addition to commonly used search term feedback, it includes content, magnitude, and tactics feedback.
- Users seem to be more satisfied with systems in which they can incorporate their RF; when they use RF, retrieval performance increases. This is valid for laboratory systems and conditions. *Use of RF = increase in performance:*
 - However, when RF is available in real-life systems and conditions, users tend to use RF very sparingly—RF is not used that much.
- Searching behavior using RF is significantly different than when not using it as reflected in relevance assessments, selection of documents, time used, and ways of interaction:
 - However, criteria used in RF are similar to (or even a subset of) criteria used in relevance inferences in general.

IX. Effects of Relevance: Or Rather, What Influences Are Related To Relevance Judges and Judgments

It works both ways: Relevance is affected by a host of factors and, in turn, it affects a host of factors as well. A number of studies addressed questions about effects or variables concerning relevance judges and judgments. The synthesis below is organized along these questions. Of course, factors in these categories are interdependent, as is everything with relevance.

As in the preceding section, I will concentrate *exclusively* on observational, empirical, or experimental studies, that is, on works that contained some kind of data directly addressing relevance. Works that discuss or review the same topics but do not contain data are *not* included, with a few exceptions in order to provide context. Where appropriate, some summaries include numerical results. Main results from all studies, with a number of caveats, are synthesized and generalized at the end of the section.

A. Relevance Judges

What factors inherent in relevance judges make a difference in relevance inferences? A similar question was investigated in relation to a number of information-related activities, such as indexing and searching. Not many studies addressed the question in relation to relevance, and those that did concentrated on a limited number of factors, mostly involving the effects of expertise:

- Regazzi (1988) asked 32 judges, researchers, and students (but numbers for each group are not given), to rate as to relevance 16 documents in alcohol studies to a given topic in order to compare differences in relevance ratings, perceived utility and importance of document attributes and also to ascertain effects of various factors, such as learning during the process.
- Gluck (1995, 1996) used 82 subjects (13 high school students, three with associate's degrees, 41 with or working on bachelor's degrees, 19 with or working on master's degrees and six with or working on Ph.D. degrees) to: (i) respond to an unspecified set of geography-related questions using two packets of geographic materials and (ii) recall their recent experience where geographic questions were raised with responses coded by two coders on a five-point relevance scale in order to study the effects of geographic competence and experience on relevance inferences (1995 study) and compare user relevance and satisfaction ratings (1996 study).
- Dong *et al.* (2005) asked a physician (whose assessment was considered the "gold standard"), six evaluators with biology or medical backgrounds, and six without such backgrounds to assess for relevance 132 Web documents retrieved by a meta-crawler in relation to specific medical topics in order to measure variation in relevance assessments due to their domain knowledge and develop a measure of relevance similarity.
- Hansen and Karlgren (2005) used eight students and 20 professionals with a variety of academic backgrounds whose first language was Swedish and were fluent in English to search a newspaper database according to several simulated scenarios serving as queries with results presented in Swedish and English in order to investigate how judges assess the relevance of retrieved documents in a foreign language, and how different scenarios affect assessments.

1. Individual Differences

How large are and what affects individual differences in relevance inferences? Individually (and not at all surprisingly), people differ in relevance inferences, just as they differ in all other cognitive processes in general, and involving information in particular:

- Davidson (1977) presented 25 engineering and 23 social sciences students with a given question in their area and asked them to assess the relevance of 400 documents in order to study individual differences related to variables of expertise and information openness—the individual's cognitive repertoire as indicated by various scales—open-mindedness, control, rigidity, width.
- Saracevic and Kantor (1988a, b) used five professional searchers each to search 40 questions, posed by 40 users (19 faculty, 15 graduate students and six from industry) with real information needs. Their pooled results were presented to the users for relevance assessment in order to observe the overlap in retrieval of relevant documents among different searchers. They found that the overlap in retrieval of relevant documents among the five searchers was 18%.

B. Relevance Judgments

What factors affect relevance judgments? A short answer: a lot of them. In a comprehensive review of relevance literature, Schamber (1994) extracted 80 relevance factors grouped into six categories, as identified in various studies. She displayed them in a table. In another table, Harter (1996) extracted 24 factors from a study by Park (1993) and grouped them in four categories. A different approach is taken here. Rather than extracting still another table, I summarize various studies that tried to pinpoint some or other factor affecting relevance judgments organized on the basis of assumptions made in IR evaluations. The goal is not to prove or disprove the assumptions, but to systematize a wide variety of research questions for which some data has been obtained.

When it comes to relevance judgments, the central assumption in any and all IR evaluations using Cranfield and derivative approaches, such as TREC, has five postulates assuming that relevance is:

1. *Topical*: The relation between a query and an information object is based solely on a topicality match.
2. *Binary*: Retrieved objects are dichotomous, either relevant or not relevant—even if there was a finer gradation, relevance judgments can be collapsed into a dichotomy. It implies that all relevant objects are equally relevant and all non-relevant ones are equally non-relevant.
3. *Independent*: Each object can be judged independently of any other; documents can be judged independently of other documents or of the order of presentations.
4. *Stable*: Relevance judgments do not change over time; they are not dynamic. They do not change as cognitive, situational, or other factors change.
5. *Consistent*: Relevance judgments are consistent; there is no inter- or intra-variation in relevance assessments among judges. Even if there are, it does not matter; there is no appreciable effect in ranking performance.

A sixth, or *completeness*, postulate can be added for cases where only a sample of the collection (rather than the whole collection) is evaluated as to relevance (such as when only pooled retrievals are evaluated). This postulate assumes that the sample represents all relevant objects in the collection—no relevant objects are left behind. Zobel (1998) investigated the issue of completeness in relation to the TREC pooling method; however, since this is really a question for IR evaluation methods, rather than relevance judgments, the completeness postulate is not treated further here.

These are very restrictive postulates, based on a highly simplified view of relevance—it is a variation on the theme of *weak relevance*, as defined in section *Manifestation of Relevance*. The postulates are stringent laboratory assumptions, easily challenged. In most, if not all laboratory investigations in science, things are idealized and simplified in order to be controlled; IR evaluation followed that path. In a scathing criticism of such assumptions about relevance in IR evaluation, supported by empirical data from a number of studies, Harter (1996) pointed out that this view of relevance does not take into account a host of situational and cognitive factors that enter into relevance assessments and that, in turn, produce significant individual and group disagreements. However, using this weak view of relevance over decades, IR tests were highly successful in a sense that they produced numerous advanced IR procedures and systems. By any measure, IR systems today are much, much better and diverse than those of some decades ago. IR evaluation, with or despite of its weak view of relevance, played a significant role in that achievement.

Harter was not the only critic; the debate has a long history. These postulates produced no end of criticism or questioning of the application of relevance in IR tests from both the system's and the user's point of view, starting with Swanson (1971) and Harter (1971) and continuing with Robertson and Hancock-Beaulieu (1992), Ellis (1996), Harter (1996), Zobel (1998), and others. This review is not concerned with IR systems, including their evaluation, thus the arguments are not revisited here. But the postulates also served as research questions for a number of experimental or observational studies that investigated a variety of related aspects. These are synthesized here, organized along the postulates.

1. Beyond Topicality

Do people infer relevance based on topicality only? This question was treated in the preceding sections at length, thus, it is rehashed only briefly here. The question is one of the postulates in the central assumption for IR evaluation. Short conclusion: seems not. Topicality plays an important, but not at all an exclusive, role in relevance inferences by people.

A number of other relevance clues or attributes, as enumerated in the summary of *Behavior of Relevance*, enter into relevance inferences. They interact with topicality as judgments are made.

Only a few observational studies directly addressed the question, among them:

- Wang and Soergel (1998) provided 11 faculty and 14 graduate students with printouts of search results from DIALOG containing a total of 1288 documents retrieved in response to the information needs related to their projects (with no indication as to who did the searches) and asked them to select documents relevant to their need in order to assess and compare user criteria for document selection. They identified 11 criteria for selection, with topicality being the top criterion followed by orientation, quality, and novelty as most frequently mentioned criteria.
- Xu and Chen (2006) asked 132 students (97% undergraduate and 3% graduate) to search the Web for documents related to one of the four prescribed search topics or a search topic of their interest, and then choose and evaluate two retrieved Web documents, thus analysis included 264 evaluated documents. The study was done in order to test five hypotheses, each specifying that a given criterion has a positive association with relevance. They found that topicality and novelty were the two most significant criteria associated with relevance, while reliability and understandability were significant to a smaller degree and scope was not significant. This is the only study that did hypothesis testing as to relevance criteria; others provided either frequency counts or description only.

2. Beyond Binary

Are relevance inferences binary, that is relevant—not relevant? If not, what gradation do people use in inferences about relevance of information or information objects? The binary premise was immediately dismissed on the basis of everyday experience. Thus, investigators went on to study the distribution of relevance inferences and the possibility of classifying inferences along some regions of relevance:

- Eisenberg and Hue (1987) used 78 graduate and undergraduate students to judge 15 documents in relation to a stated information problem on a continuous 100-mm line in order to study the distribution of judgments and observe whether the participants perceived the break point between relevant and non-relevant at the midpoint of the scale.
- Eisenberg (1988) used 12 academic subjects (unnamed whether students or faculty) with “real” information needs to judge the relevance of retrieved “document descriptions” to that need (quotes in the original) in order to examine the application of magnitude estimation (an open-ended scaling technique) for measuring relevance and to compare the use of magnitude scales with the use of category scales.
- Janes (1991a) replicated the Eisenberg and Hue (1987) study by using 35 faculty, staff, and doctoral students (not distinguished as to numbers) to judge the relevance of retrieved document sets in response to their real information need in order to determine the distribution of judgments on a continuous scale.
- Su (1992) used 30 graduate students, nine faculty and one staff as end users with real questions for which online searches were done by six intermediaries. She had the users indicate the success of retrieval using 20 measures in four groups in order to determine whether a single

measure or a group of measures reflecting various relevance criteria is/are the best indicator of successful retrieval.

- **Janes (1993)** rearranged relevance judgment data from two older studies (Cuadra *et al.*, 1967; Rees and Schultz, 1967) and from two of his own studies with 39 faculty and doctoral students used in the first study and 33 students and 15 librarians in the second, along the scales they used in the studies in order to investigate the distribution of relevance judgments.
- **Greisdorf and Spink (2001)** used 36 graduate students in three studies, who in 57 searches related to their personal or academic information need, retrieved 1295 documents. The students were asked to indicate relevance assessments using various scales and criteria in order to investigate the frequency distribution of relevance assessments when more than binary judgment is used.
- **Spink and Greisdorf (2001)** used 21 graduate students who, in 43 searches related to their academic information need, retrieved 1059 documents. The students were asked to indicate relevance assessments using various scales and criteria in order to investigate the distribution of relevance assessments along various regions of relevance—low, middle, and high end of judgments as to relevance.
- **Greisdorf (2003)** used 32 graduate students who, in 54 searches related to their personal or academic information needs, retrieved 1432 documents in response. The students were asked to assess their results using a number of relevance criteria on a continuous relevance scale in order to study the users' evaluation as related to different regions of relevance.

3. Beyond Independence

When presented for relevance judging, are information objects assessed independently of each other? Does the order or size of the presentation affect relevance judgments? The independence question also has a long history of concern in relevance scholarship. In a theoretical, mathematical treatment of relevance as a measure, **Goffman (1964)** postulated that relevance assessments of documents depend on what was seen and judged previously, showing that, in order for relevance to satisfy mathematical properties of a measure, the relationship between a document and a query is necessary but not sufficient to determine relevance; the documents' relationship to each other has to be considered as well. Several papers discussing the issue followed, but only at the end of 1980s did the question start receiving experimental treatment:

- **Eisenberg and Barry (1988)** conducted two experiments, first with 42 graduate students, and then with 32. The subjects were provided with a query and 15 document descriptions as answers ranked in two orders: either high to low relevance or low to high relevance. Each subject was given one of the orders, using in the first experiment a category rating scale, and in the second, a magnitude rating in order to study whether the order of document presentation influences relevance scores assigned to these documents.
- **Purgailis and Johnson (1990)** provided approximately (their description) 40 computer science students who had queries related to class assignments with retrieved document citations that were randomly "shuffled" for relevance evaluation in order to study whether there is an order presentation bias.
- **Janes (1991b)** asked 40 faculty and doctoral students (numbers for each group not given) with real information requests to judge the relevance of answers after online searches by intermediaries. Answers were given in different formats (title, abstract, indexing) in order to

examine how users' relevance judgments of document representation change as more information about documents is revealed to them.

- Huang and Wang (2004) asked 19 undergraduate and 29 graduate students to rate the relevance of a set of 80 documents to a topic presented in a random order in the first phase and then sets of 5 to 75 documents presented from high to low and low to high relevance in the second phase in order to examine the influence of the order and size of document presentation on relevance judgments.

4. Beyond Stability

Are relevance judgments stable as tasks and other aspects change? Do relevance inferences and criteria change over time for the same user and task, and if so how? The question is treated in preceding section under relevance dynamics, thus not rehashed again. Short answer: Relevance judgments are not completely stable; they change over time as tasks progress from one stage to another and as learning advances. What was relevant then may not be necessarily relevant now and vice versa. In that respect Plato was right: Everything is flux. However, criteria for judging relevance are fairly stable.

5. Beyond Consistency

Are relevance judgments consistent among judges or group of judges? Many critics of IR evaluation or of any relevance application had a ball with this question, pointing out easily observed inconsistencies. However, human judgments about anything related to information are not consistent in general, and relevance judgments are no exception. Why should they be?

The great-granddaddy of all studies that put some data to the question and opened a Pandora's box was done at the very dawn of IR development in the 1950s. Gull (1956), in a study that is also a classic example of the law of unintended consequences, showed not only that relevance inferences differ significantly among groups of judges, but also inadvertently uncovered a whole range of issues that IR evaluation struggles with to this day. Actually, consistency of relevance judgments was not the purpose of the study at all. But IR evaluation was. The results are worth recalling. Gull reported on a study whose goal was to compare two different and competing indexing systems—one developed by the Armed Services Technical Information Agency (ASTIA) using subject headings, and the other by a company named Documentation Inc., using uniterms (index terms searched in a Boolean manner). In the test, each group searched 98 requests using the same 15,000 documents, indexed separately, in order to evaluate performance based on relevance of retrieved documents. *However, each group judged relevance separately.* Then, not the system's performance, but their relevance judgments became contentious. The first group found that 2200 documents were

relevant to the 98 requests, while the second found that 1998 were relevant. There was not much overlap between groups. The first group judged 1640 documents relevant that the second had not, and the second group judged 980 relevant that the first had not. You see where this is going. Then they had a reconciliation and considered each others' relevant documents and again compared judgments. Each group accepted some more as relevant, but at the end, they still disagreed; their rate of agreement, even after peace talks, was 30.9%. That did it. The first ever IR evaluation did not continue. It collapsed. And it seems that the rate of agreement hovers indeed around that figure. The corollary that IR evaluators learned: *Never, ever use more than a single judge per query.* They don't.

Only a few consistency studies were done:

- Haynes *et al.* (1990) did not intend to study consistency, but rather to assess MEDLINE use in a clinical setting. However, their report does include data from which consistency rates can be derived. They used 47 attending physicians and 110 trainees who retrieved 5307 citations for 280 searches related to their clinical problem, and assessed the relevance of the retrieved citations. Authors then used two other search groups of 13 physicians experienced in searching and three librarians to replicate 78 of those searches where relevance was judged by a physician with clinical expertise in the topic area in order to compare retrieval of relevant citations according to expertise. For the replicated searches, all searcher groups retrieved some relevant articles, but only 53 of the 1525 relevant articles (3.5%) were retrieved by all three search groups. This is the only real-life study on the question.
- Shaw *et al.* (1991) used four judges to assess the relevance of 1239 documents in the cystic fibrosis collection to 100 queries. Judged documents were divided into four sets: A from query author/researcher on the subject, B from nine other researchers, C from four postdoctoral fellows, and D from one medical bibliographer, in order to enable performance evaluations of different IR representations and techniques using any or all of the judgment sets. The overall agreement between judgment sets was 40%.
- Janes and McKinney (1992) used a previous study (Janes, 1991b) from which they selected relevance assessments by four students as users with information requests. The students judged two sets of retrieved documents that differed in the amount of information presented (primary judges) and then used four undergraduate students without and four graduate students with searching expertise (secondary judges) to re-judge the two sets in order to compare changes in judgments due to increase in provided information between primary and secondary judges. The overlap in judgment of relevant documents (calculated here as sensitivity) between all secondary judges and primary judges was 68%.
- Janes (1994) used 13 students inexperienced in searching, 20 experienced student searchers and 15 librarians to re-judge 20 documents in each of two topics that were previously judged as to relevance by users in order to compare users' vs. non-users' relevance judgments. The overall agreement in ratings between original users' judgments and judgments of the three groups was 57% and 72% for the respective document sets.
- Sormunen (2002) used nine master's students to reassess 5271 documents already judged on relevance in 38 topics in TREC-7 and -8 on a graded four-point scale (as opposed to a binary scale used in TREC) in order to compare the distribution of agreement on relevance judgment between original TREC and newly reassessed documents and seek resolution in cases of disagreement. He found that 25% of documents rated relevant in TREC were rated not

relevant by the new assessors; 36% of those relevant in TREC were marginally relevant; and 1% of documents rated not relevant in TREC were rated relevant.

- Vakkari and Sormunen (2004) used 26 students to search four TREC-9 topics that already had pre-assigned relevance ratings by TREC assessors on a system that provided interactive RF capabilities, in order to study the consistency of user identification of relevant documents as pre-defined by TREC and possible differences in retrieval of relevant and non-relevant documents. They found that the student users identified 45% of items judged relevant by TREC assessors.

6. But Does It Matter?

How does inconsistency in human relevance judgments affect results of IR evaluation?

Aforementioned critics of IR evaluation posited, among other things, that because of inconsistency in human relevance judgments, the results of IR evaluations dependent on stated judgments are suspect. Again Harter (1996, p. 43):

Researchers conducting experimental work in information retrieval using test collections and relevance assessments *assume* that Cranfield-like evaluation models produce meaningful results. But there is massive evidence that suggest the likelihood of the contrary conclusion.

How do you evaluate something solely on the basis of human judgments that are not stable and consistent? This is a perennial question, even a conundrum, for any and all evaluations based on human decisions that by nature are inconsistent, way above and beyond IR evaluation.

As far as I can determine there are only five studies in some four decades that addressed the issue. They are modeled on the first and often cited Lesk and Salton (1968), study that had actual data on the complaint voiced by critics. Four of the five studies had also data that show the magnitude of agreements/disagreements on relevance judgments, thus can also be used as consistency studies:

- Lesk and Salton (1968) used eight students or librarians (not specified as to which) who posed 48 different queries to the SMART system containing a collection of 1268 abstracts in the field of library and information science, to assess the relevance of those 1268 documents to their queries (called the A judgments). Then a second, independent set of relevance judgments (B judgments) was obtained by asking each of the eight judges to assess for relevance six additional queries not of his/her own in order to rank system performance obtained using four different judgments sets (A, B, their intersection and union). They found that the overall agreement between original assessors (A) and eight new assessors (B) was 30% and concluded after testing three different IR techniques that all sets of relevance judgments produce stable performance ranking of the three techniques.
- Kazhdan (1979) took the findings from the Lesk and Salton (1968) study as a hypothesis and used a collection of 2600 documents in electrical engineering that had 60 queries with two sets of relevance judgments—one from a single expert and the other from a group of 13 experts—in evaluating seven different document representations in order to compare the

performance of different representations in relation to different judgment sets. He found that Lesk and Salton hypothesis is confirmed: the relative ranking of the seven different representations remained the same over two sets of judgments; however, there was one exception where ranking changed.

- **Burgin (1992)** used a collection of 1239 documents in the cystic fibrosis collection (*Shaw et al. 1991*, synthesized above) that had 100 queries with four sets of relevance judgments in the evaluation of six different document representations in order to compare performance as a function of different document representations and different judgment sets (as mentioned, the overall agreement between judgment sets was 40%). He found that there were no noticeable differences in overall performance averaged over all queries for the four judgment sets; however, there were many noticeable differences for individual queries.
- **Wallis and Thom (1996)** used seven queries from the SMART CACM collection of 3204 computer science documents (titles and in most cases, abstracts) that already had relevance judgments by SMART judges in order to compare two retrieval techniques. Then two judges (paper authors, called judges 1 and 2) assessed separately 80 pooled top-ranked retrieved documents for each of seven queries in order to rank system performance using three different judgments sets (SMART, intersection, and union of judges 1 and 2). They found that the overall agreement between original assessors (SMART) and two new assessors (judges 1 and 2) on relevant documents was 48%. After testing two different IR techniques they concluded that the three sets of relevance judgments do not produce the same performance ranking of the two techniques, but the performance figures for each technique are close to each other in all three-judgment sets.
- **Voorhees (2000)** (also in *Voorhees and Harman, 2005*, p. 44, 68–70) reports on two studies involving TREC data. (*Reminder*: A pool of retrieved documents for each topic in TREC is assessed for relevance by a single assessor, the author of the topic, called here the primary assessor.) In the first study, two additional (or secondary) assessors independently re-judged a pool of up to 200 relevant and 200 non-relevant documents as judged so by the primary assessor for each of the 49 topics in TREC-4; then the performance of 33 retrieval techniques was evaluated using three sets of judgments (primary, secondary union, and intersection). In the second study, an unspecified number of assessors from a different and independent institution, Waterloo University, judged more than 13,000 documents for relevance related to 50 TREC-6 topics; next, the performance of 74 IR techniques was evaluated using three sets of judgments (primary, Waterloo union, and intersection). Both studies were done in order to look at the effect of relevance assessments by different judges on the performance ranking of the different IR techniques tested. She found that in the first study, the mean overlap between all assessors (primary and secondary) was 30%, and in the second study, 33%. After testing 33 different IR techniques in the first and 74 in the second test, she concluded: “The relative performance of different retrieval strategies is stable despite marked differences in the relevance judgments used to define perfect retrieval” (*Voorhees, 2000*, p. 714). Swaps in ranking did occur but the probability of the swap was relatively small.

C. Summary

Caveats abound again and for the same reasons mentioned in the summary of the previous section. While similar or even identical research questions were asked in a number of studies, the criteria and methodologies differed so widely that general conclusions offered below are no more than possible hypotheses.

Judges. A very limited number of factors related to relevance judges were studied. This is in sharp contrasts to a much large number of factors studied in various studies of indexers and searchers (e.g., Saracevic and Kantor, 1988):

- Subject expertise seems to be one variable that accounts strongly for differences in relevance inferences by group of judges—*higher expertise = higher agreement, less differences.*
- Lesser subject expertise seems to lead to more lenient and relatively higher relevance ratings—*lesser expertise = more leniency in judgment.*
- Relevance assessment of documents in a foreign language (for native speakers who are fluent in that language) is more time consuming and taxing. Assessment agreement among judges across languages differs; it is lower when assessing foreign language documents.

1. Individual Differences

- A relatively large variability can be expected in relevance inferences by individuals. Individual differences are the, if not THE, most prominent feature and factor in relevance inferences.
- However, the differences are comparable to individual differences in other cognitive processes involving information processing, such as in indexing, classifying, searching, feedback, and so on (Saracevic, 1991).

2. Judgments

- Relevance is measurable—this is probably the most important general conclusion from all the studies containing data.
- None of the five postulates in the central assumption of IR testing holds:
 - However, using these postulates (representing a simplified or weak view of relevance) in a laboratory evaluation over the years produced significant improvements in IR techniques.
- What is relevant depends on a number of factors, but the artifact of relevance inferences can be expressed by users on a variety of measures.
- Users do not use only binary relevance assessments, but infer relevance of information or information objects on a continuum and comparatively:
 - However, even though relevance assessments are not binary they seem to be bimodal: high peaks at end points of the range (not relevant and relevant) with smaller peaks in the middle range (somewhat not relevant or relevant). The highest peak is on the non-relevant end.
 - Following that, relevance judgments may be subdivided into regions of low, middle, and high relevance assessments, with middle being the flattest part of the distribution.
- Different document formats (title, abstract, index terms, full text) have an effect on relevance inferences. Relevance judgments do change as information is added, such as from titles, to abstracts, to additional representations. Titles seem to be not as important as abstracts and full texts.
- The order in which documents are presented to users seems to have an effect:
 - It seems that documents presented early have a higher probability of being inferred as relevant.
 - However, when a small number of documents are presented, order does not matter.

- Subject expertise affects consistency of relevance judgments. Higher expertise = higher consistency = more stringent. Lower expertise = lower consistency = more encompassing.
- Different search request scenarios make a difference in the relevance assessment process as to time but seem not to affect the degree of agreement. *Longer scenarios = more time spent in assessment; all scenarios = similar degree of agreement among judges.*
- A complex set of individual cognitive, affective, situational, and related variables is involved in individual differences. As of now, we know little about them and can only barely account (beyond hypotheses) for sources of variability.

3. Consistency

- The inter- and intra-consistency or overlap in relevance judgments varies widely from population to population and even from experiment to experiment, making generalizations particularly difficult and tentative:
 - In general, it seems that the overlap using different populations hovers around 30%.
 - However, it seems that higher expertise and laboratory conditions can produce an overlap in judgments up to 80% or even more. The intersection is large.
 - With lower expertise the overlap drops dramatically. The intersection is small.
 - Whatever the overlap between two judges, when a third judge is added it falls, and with each addition of a judge it starts falling dramatically. Each addition of a judge or a group of judges reduces the intersection dramatically:
 - ^ For instance, it seems that the overlap in retrieval of relevant documents by five different professional searchers when searching the same question drops to under 20%, where pair-wise comparisons were much higher.
 - *Higher expertise = larger overlap. Lower expertise = smaller overlap. More judges = less overlap.*
- In evaluating different IR systems under laboratory conditions, disagreement among judges seems not to affect or affects minimally, the results of relative performance among different systems when using *average* performance over topics or queries. The conclusion is counter intuitive, but a small number of experiments bear it out. So far, evaluators seem right and critics wrong:
 - Rank order of different IR techniques seems to change minimally, if at all, when relevance judgments of different judges, averaged over topics or queries, are applied as test standards.
 - However, swaps—changes in ranking—do occur with a relatively low probability. The conclusion of no effect is not universal.
 - *Different judges = same relative performance (on the average).*
 - However, performance ranking over *individual* topics or queries differs significantly depending on the topic and not on the IR technique tested:
 - ^ In that respect, note the use of averaging performance in rankings (or even using averages of averages) that in itself has an affect on results.

4. Measures

- Users are capable of using a variety of scales, from categorical to interval, to indicate their inferences.
- However, the type of scales or measures used for recording relevance inferences seems to have an effect on the results of measurement. There is no one “best” scale or measure.
- It seems that magnitude estimation scales are appropriate for judging relevance; they may be less influenced by potential bias than category scales. However, they are difficult to explain and analyze.

5. Reflection on Approach

The pattern used in this and the previous section to synthesize studies ([author] used [subjects] to do [tasks] in order to study [object of research]) comes from the studies themselves. For a great many studies, this means that certain stimuli were given to subjects in order to study resulting responses. Stimulus-response studies were the hallmark of behaviorism, an approach in psychology, championed by B. F. Skinner (1904–1990) that dominated psychology from the 1930s until the 1960s. It is based on a notion that human behavior can be studied experimentally without recourse to consideration of mental states, from the theory that there is a predictable pattern between stimulus and response in the human brain. Various schools of behaviorism developed and numerous stimulus-response studies did and still do provide valuable insight into human behavior. However, because of many shortcomings in underlying notions, assumptions and methodological approaches, behaviorism fell out of favor. The basic problem is that behaviorism does not include diagnostics beyond responses. Modified behaviorism methodologies were absorbed in cognitive psychology.

Many relevance behavior and effect studies were and still are based on behaviorism. Not all, but a great many. These produced black-box experiments where systems and users are treated as a whole, inputs controlled, and outputs observed and evaluated. In the ultimate black-box experiment, only inputs and outputs are visible and relevance is inferred on the basis of some action on the part of a user or simulated user. How come? Behaviorism and related methods were imported to relevance studies through experiments carried by the hallmark relevance studies of Rees and Schultz (1967) and Cuadra *et al.* (1967). Of the four principal investigators in those studies, three were psychologists (Douglas Schultz, Carlos Cuadra, and Robert Katter); the background of the fourth, Alan Rees, was English literature. Following behaviorism as the major approach in psychology at the time, they applied related stimulus-response methodologies, including underlying assumptions, to the study of relevance. Others followed. In all fairness, in no study can we find a reference to a work in behaviorism proper. But in a great many studies, behaviorism was there with all of its strengths and shortcomings. And in many instances, it still is.

6. Reflection on Population

An overwhelming number of studies on behavior and the effects of relevance used students as the population studied. (Well, we are not alone—in psychology, a large number of studies use students as well.) The reasons are

simple: they are readily available, the cost to involve them is minimal, and so is the effort. In a way, what was studied is *student relevance*. This is not a critique and even less a condemnation of using students as the population in relevance studies. There is nothing wrong in studying student relevance, but it is an open question whether conclusions and generalizations can be extended to other populations in real life. This is another reason why the results of studies should be treated as hypotheses. But even though students predominate as a population, let me repeat: still, it is really refreshing to see conclusions made on the basis of data, rather than on the basis of examples, anecdotes, authorities, or contemplation alone.

X. Epilogue: A Backward and a Forward Look on Relevance Scholarship With Some Suggestions for Research Agenda

IR emerged after the World War II, addressing the problem of the information explosion by using technology as a solution. Many things have changed since, but the basic problem and solution are still with us. The fundamental idea was and still is to retrieve *relevant information* with the help of technology. Thus, relevance became the central notion in information science. As treated in practice, relevance is thoroughly entangled with IT. However, relevance is also a thoroughly human notion and as all human notions, it is somewhat messy. The goal of scholarship on relevance is to make it more understandable and less messy.

Some 30 years ago, I wrote a critical review that synthesized the thinking on the notion of relevance in information science during the preceding decades. This current review is an update; together Parts I and II or the previous and the current review cover the evolution of thinking on relevance since the emergence of information science some six decades ago. The purpose of this review is to trace the evolution of thinking on relevance in information science for the past three decades and to provide an updated, contemporary framework within which the still widely dissonant ideas on relevance may be interpreted and related to one another. I concentrated on scholarship about relevance and did *not* include works dealing with applications in information systems that are geared toward retrieval of relevant information or information objects. Literature on this area is huge, but outside of the scope of this review. This work is about the notion of relevance, not about relevance in information systems.

The framework for organizing this review was derived from the way phenomena and notions are studied in science in general. In science,

phenomena are studied as to their nature, manifestations, behavior and effects. As to the nature of relevance, there has been a marked progress in past decades in the elaboration of its meaning, less marked progress in developing or adapting theories, and considerable diversity in the development of models. I suggested a stratified model as an integrative framework for viewing relevance interactions between users and computers. As regarding manifestations of relevance, a consensus seems to be emerging that there are several kinds of relevance, grouped in a half dozen or so well distinguished classes. They are interdependent when it comes to interaction between people, information, and technology. As to the behavior and effects of relevance, we have seen a number of experimental and observational studies that lifted the discourse about relevance from opinions and insights (as valuable as they are) to interpretation of data and facts. These studies addressed a number of facets of relevance, however and regrettably, generalizations must be taken as hypotheses only, because experimental and observational criteria, standards and methods were all over the place.

Each of the sections concluded with a summary—my own synthesis and interpretation of what was discussed and found. Thus, here I am not providing further summaries from the literature as conclusions. Instead, I am looking at the big picture by analyzing several critical issues and manifested trends that have impacted relevance scholarship in general in the past and, in my opinion, will continue to do so in the near future. I am also suggesting, in broad brushstrokes, problems to be considered for a relevance research agenda.

A. Research Funding

Relevance is poor. Relevance research was funded much better in the past than it is today. Whatever funding exists now is spotty and without an agenda or direction. In the United States, the National Science Foundation (NSF) funded such research way back in the 1960s, but no longer. At that time, NSF funding for relevance research produced, among others, classic experimental studies with results and conclusions that stand up to this day (Cuadra *et al.*, 1967; Rees and Schultz, 1967). The research agenda of funding agencies concerned with information became completely oriented toward *computers and information* to the exclusion of almost any other issue that has to do with *humans and information*—despite support for periodic workshops that talk about social and human aspects of information systems design. I checked the acknowledgements in the papers on experimental and observational studies reviewed in the preceding two sections. Less than 17% mentioned support by an external granting agency, and of those, about half are from outside the United States.

Over the past three decades, most relevance research has been funded locally, meaning individually at academic institutions, in an old-fashioned way of basement and attic research. Ph.D. students do it in the time tested, solitary way of producing a dissertation, with very limited or no funding. Assistant professors do it on their own on the way to tenure-valued publications. Most of the more comprehensive relevance projects were without budgets—funded as a part of work at local institutions. Relevance is definitively small science in comparison to the big science of information systems.

Because of poor and spotty funding, scholarship on relevance has not progressed in a meaningful, comprehensive and organized manner. As the result, the conclusion that experimental and observational studies were all over the place is not surprising. It seems to me that in the absence of some meaningful funding, progress in relevance scholarship will still be all over the place. The desired merging of the two streams, reflecting users and systems relevance, can hardly produce significant results without funding for relevance research. This does not mean that coming up with bright ideas depends *only* on funding, but it does mean that further exploration and expansion of bright ideas in today's research environment must be funded.

B. Globalization of IR: Globalization of Relevance

As IR went global, relevance went global. Relevance went to the masses. From the very start of information science in the 1950s, scholarship on relevance was concerned primarily, if not even exclusively, with problems associated with scientific, technical, professional, business, and related information. In a significant way it still is. But things in the real world changed dramatically—new populations, new concerns entered. With the development of the Web and massive search engines starting in the mid-1990s, the public also became increasingly concerned with information in every facet of life in a very similar way. *Relevant* information is desired. The rapid, global spread of information searching is nothing short of astonishing. Millions of users perform untold millions of searches every day all over the globe, seeking the elusive, relevant information. The thirst for relevant information is global, massive, and unquenchable.

As relevance went global and public, a number of questions emerged. To what extent are the results of relevance scholarship—primarily concerned with a restricted and relatively well-defined population and information—applicable to the broad public and every conceivable type of information? A great many fascinating questions worthy of research could be asked. Here are

but a few:

- Are relevance clues similar, different?
- Is relevance behavior similar, different?
- Can the broad public be defined at all as to relevance effects?

It seems that the globalization of relevance also has exposed a need for an additional and different agenda and approach for relevance scholarship.

C. Proprietary IR: Proprietary Relevance

Increasingly, relevance is becoming proprietary because major search engines are proprietary. IR techniques used by a majority of larger search engines are well known in principle, but proprietary and thus unknown in execution and detail.

From anecdotal evidence, we know that proprietary IR systems are very much interested in relevance and that they conduct their own relevance studies. Results are not disseminated in open literature. There may have been (or not) some major advances in understanding relevance behavior and effects from studies done at proprietary systems. After all, they have developed or are trying to develop a number of innovations that include user-in-the-loop technique. For that, they must have studied users. For the most part, we do not know the results of the studies, even though we may observe the innovations themselves.

Relevance research may be developing into a public branch where results are shared freely and widely, and a proprietary branch in which research results, if any, remain secret. One cannot escape the irony of the situation. The Internet and the Web are hailed as free, universal, and democratic, and their very success is directly derived from the fact that they were indeed free, universal, and democratic. Yet, proprietary relevance research is anything but.

D. Research Agenda: Beyond

In several respects, relevance research should go beyond. Here are a few suggested “beyonds”.

1. Beyond Behaviorism and Black Box

As described in some detail in the summary of the preceding section, many (not all) relevance studies followed, directly or accidentally, approaches to experimentation used in behaviorism. That is, stimulus and responses were studied, while for the most part people and/or systems were black boxes. We

can gain some understanding this way, but such understanding is generally limited and may easily be biased as well.

Other theoretical bases, assumptions and methods should be explored and implemented more fully. The black-box approach is especially limited and potentially even misleading in results, particularly when systems involved in studying human behavior and effects are a complete black box. Research that is more imaginative involves diagnostics and other non-stimuli variables. It is much harder to do, but more can be learned.

2. Beyond Mantra

Practically every study that dealt with relevance behavior and effects either began or ended (or both) with a statement to the effect that *results have implications for information systems design*. A similar sentiment is repeated in many other relevance papers that vehemently argue that the user viewpoint should be predominant. The overwhelming majority of studies did not go beyond that statement, so the statement became a mantra.

Very little was ever done to actually translate results from user studies into system design. In a way, this is not surprising. The problem is exceedingly difficult theoretically and pragmatically, as demonstrated through the interactive track of TREC, which ran over the course of nine years and conducted experiments with human participation, finding, among other things, that a number of issues need a resolution (Dumais and Belkin, 2005).

However, is the problem of incorporating to a sufficient degree users concerns, characteristics and the like into systems essentially intractable? In other words, is the pessimistic relevance a la Swanson (1986) based on reality? Alternatively, is the optimistic relevance as suggested by the mantra warranted?

I believe that the sentiment beyond the mantra is warranted, but it cannot be realized by the underlying hope that somebody, somehow, somewhere, sometime will actually do it. I believe that systems designs and operations on the one hand, and users on the other, could and should be connected in a much more consequential, involved and direct way than they are now, where the connection is from minimal to none. The interactive track of TREC was on the right track. Among the key items on the agenda is conduct of studies in tandem with system design, such as:

- study of relevance interactions in a variety of manifestations and processes in and beyond retrieval;
- study of cognitive, affective, and situational factors as they dynamically affect relevance and are affected in turn;

- study of human tendencies of least effort for maximum gain as reflected in relevance;
- study of connections between secondary or implied relevance (e.g., as in a decision to retain an information object in some way) and primary or explicit relevance where relevance is actually inferred.

The beyond mantra agenda also means that IR research itself has to go beyond the classical IR model (TREC like), and thus go beyond TREC-like evaluations as done so far, with the one exception I mentioned. Proposals for cognitive IR as advocated, among others, by [Ingwersen and Järvelin \(2005\)](#) are an effort in laying the groundwork for that direction. Relevance research and IR research should at least get engaged, if not married. However, this is highly unlikely to happen without a dowry—without substantial redirection of funding. Namely, the availability of funding has the marvelous ability to change and redirect mindsets and efforts.

However, a word of caution is in order. The problem of building more responsive, complex, and dynamic user-oriented processes and more complex relevance manifestations into IR systems is by no means simple. As [Dumais and Belkin \(2005\)](#) and cohorts discovered, it is hard, tough and consuming, requiring new mindsets, directions, approaches, measures, and methods.

3. Beyond Students

As mentioned, students were endlessly used as experimental subjects for relevance experimentation and observation. Some 70% of studies reviewed in the preceding two sections included students as population studied. Again, this is not surprising. With little or no funding, other populations are much more difficult to reach—actually, the effort is unaffordable. As a result, we are really getting a good understanding of student relevance. Regrettably, we are not getting a good understanding of relevance related to real users, in real situations, dealing with real issues of relevance. If we are to gain a better understanding of relevance behavior and effects in diverse populations, other populations should (or even must) be studied as well. Maybe student relevance is a norm and results could be generalized to other populations, but we do not know.

With relevance going global and reaching a wide diversity of populations the problem becomes more urgent and expansive. We have learned quite a bit about student relevance but, beyond anecdotal evidence and pronouncements of gurus, we really know little about mass relevance (or relevance of, by, and for the people). Relevance research should extend to those populations. However, without funding for such research, students will remain the primary population.

E. In Conclusion

IT and information systems will change in ways that we cannot even imagine, not only in the long run, but even in short term. They are changing and expanding at an accelerated pace. But no matter what, relevance is here to stay.

Acknowledgments

Under its search box, Google Scholar has a cryptic command: “*Stand on the shoulders of giants.*” A few centuries ago, Isaac Newton, referring to Galileo and Kepler, said it better: “*If I have seen further {than certain other men} it is by standing upon the shoulders of giants.*” (Letter to Robert Hooke, February 5, 1675.) And a few centuries before that, in the 12th century, Bernard of Chartres said (as reported by John of Salisbury) it even better: “*We are like dwarfs sitting on the shoulders of giants; we see more things and more distant things than did they, not because our sight is keener nor because we are taller than they, but because they lift us up and add their giant stature to our height*” (Metalogicon, III, 4).

In that spirit I wish to thank the authors synthesized in this review. I stood on their shoulders and saw further.

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Intellectual Freedom in Libraries: Then and Now

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I. Introduction

This chapter compares the status of intellectual freedom in libraries “then” (1970s) and “now” (2005). As starting points for comparisons, it uses two *Advances in Librarianship* chapters, by Edwin Castagna (Castagna, 1971) and David K. Berninghausen (Berninghausen, 1979), respectively. The US Supreme Court, although somewhat ducking the direct question of library censorship in a school library case in 1982, has consistently upheld intellectual freedom, even in the face of an onslaught of federal laws passed by Congress to restrict speech. The high-water mark came in 1997 when the American Library Association joined the American Civil Liberties Union and others to challenge the Communications Decency Act of 1996, which would have prohibited “indecent” speech on the Internet, an undefined term that could have swept away vast quantities of speech. In 2003, however, the Supreme Court ruled against libraries when it held that a narrower law, the Children’s Internet Protection Act (CIPA) is constitutional. This law requires libraries and schools that receive specified federal funds and discounts to use “technology protection measures” to block obscenity, child pornography, and material “harmful to minors.” This chapter looks at these and related cases, as well as the library profession’s evolving ethical and political stance on intellectual freedom issues.

The views expressed in this chapter are solely the authors’.

II. Predictions Made in the 1970s for the Future of Intellectual Freedom in Libraries

To assess intellectual freedom in libraries today, it is instructive to look at the assessments and predictions made by Edwin Castagna in 1971 and by David K. Berninghausen in 1979. These authors witnessed the huge advances (and some retreats) in the 1960s and 1970s of the library profession's articulation of intellectual freedom principles.

A. 1971 Edwin Castagna Chapter

The first chapter to address censorship, intellectual freedom, and libraries in *Advances in Librarianship* was written by Edwin Castagna during the Nixon administration in 1971. He asked whether democracy and personal freedom of choice were going to be expanded or contracted. Would there be a "death of censorship" and an "end of obscenity" or would we head for a time of authoritarian rule?

Castagna saw signs of authoritarian rule looming in the wake of the Nixon administration's castigation and threatening of the press, and in the "hundreds of laws and ordinances on obscenity before our legal bodies." On the other hand, he noted that Supreme Court decisions had been consistently for greater freedom of expression.

He predicted a continuing surging back and forth between extremes, with libraries likely to follow a zigzag course, struggling toward intellectual freedom with a minority "dragging their feet." Some librarians would fall victim, he predicted, and the American Library Association would be called upon for help.

He reported on specific recommendations made in 1970 by the Activities Committee on New Directions for the American Library Association to strengthen the Intellectual Freedom Office, and opined that its subcommittee on intellectual freedom's call to enlarge the scope of intellectual freedom to encompass "considerably more than just the freedom to read" could be a vast obligation. This obligation, he said, "will be difficult and may be impossible for [the ALA] to undertake," and he noted the enormous resources that would be required to support librarians fired "for sporting a beard, for expressing unpopular opinions as a private citizen, for engaging in civil rights activities, etc." (Castagna, 1971, p. 249).

He predicted further advances in librarianship in intellectual freedom, accomplished under stress, usually after bitter controversy and often with damage to the antagonists on both sides. Yet "librarians are well trained in

that struggle. Should they ever flag, they have only to read the record of their predecessors. It will encourage them to keep up the fight for the first freedom.”

B. 1979 David K. Berninghausen Chapter

In the years between Castagna’s chapter and Berninghausen’s, the American Library Association suffered a major internal intellectual freedom fracas when its own commissioned film, “The Speaker,” which was about intellectual freedom, was targeted by ALA members who wanted to stop its distribution. (The film was about a William Shockley-type speaker; Shockley was a physicist who argued that black people were innately less intelligent than white people.) No doubt this led to an outlook for the profession’s intellectual freedom future that was far more pessimistic than Castagna’s.

Berninghausen wrote that ALA leadership in preserving free inquiry in libraries may decline. He quoted Pauline Wilson, who wrote that “The ALA is so ridden with dissention [sic] as to be effectively immobilized” (Berninghausen, 1979, p. 27). Berninghausen challenged readers with his final sentence: “The question of whether free inquiry for library users will survive depends on the vigor and effectiveness of those who defend it when it is challenged” (Berninghausen, 1979, p. 28).

III. Intellectual Freedom Cases and Laws of Direct Relevance to Libraries from the 1970s to 2005

Even though the First Amendment contains what appears to be a total ban on laws that abridge the freedom of speech, the Supreme Court has upheld various abridgements that Congress and the states have imposed. This section of this chapter considers some restrictions on speech that affect libraries, including obscenity, child pornography, and material that is “indecent” or “harmful to minors.” It also examines how the Supreme Court has dealt with government attempts to regulate speech in libraries—attempts such as banning certain books, requiring filtering of sexual material on the Internet, and limiting the use of library meeting rooms, exhibit spaces, bulletin boards, and giveaway racks. This section includes a brief mention of how not only the First Amendment, but also the Commerce Clause, limits state regulation of the Internet.

A. Free Expression

The First Amendment to the US Constitution provides, “Congress shall make no law ... abridging the freedom of speech, or of the press.” The

Supreme Court has interpreted this restriction, however, to apply not only to Congress, but to every governmental entity (federal, state, or local) including, of course, public libraries, public school libraries, and any other government-run library. The Supreme Court has also found that “no law” should not be taken literally, and no one ever has taken it literally. No one believes that the government may not prohibit speech that consists of threatening to kill someone, conspiring to commit a crime, offering a bribe (other than a campaign contribution), engaging in perjury, treason, or false advertising, or, to cite Oliver Wendell Holmes’ famous example, falsely shouting fire in a theater. There are no First Amendment absolutists, even if some people claim to be absolutists.

Other exceptions to the First Amendment are more controversial. These include the exceptions the Supreme Court has created for two types of pornography: obscenity and child pornography, thereby enabling them to be banned by federal and state law. Libraries have not traditionally collected obscenity or child pornography, but critics complain that, in the Internet age, libraries disseminate such material through public access terminals. They also complain that libraries disseminate material that, even though protected by the First Amendment with respect to adults, is inappropriate for minors. These include material, that is “indecent,” “harmful to minors,” or violent. Let us run through all these types of speech in order.

1. Obscenity

Obscenity is a small subset of hardcore pornography. Pornography, hardcore or otherwise, is, for the most part, protected by the First Amendment. This means that the government may not totally ban it, although it may forbid its distribution to minors. Pornography is not a legal term, so the law does not define it; it’s simply a form of speech that, under the First Amendment, the government may not abridge. Obscenity, by contrast, is a legal term, and, as the Supreme Court has said that the government may ban it, it must define it, and has done so.

In *Miller v. California*, the Supreme Court held that, to be obscene, pornography must, at a minimum, “depict or describe patently offensive ‘hard core’ sexual conduct” (*Miller v. California*, 1973: 27). The Court in *Miller* created a three-part test, known as the *Miller* test, to determine whether a work is obscene. The *Miller* test asks: (a) whether the “average person applying contemporary community standards” would find that the work, taken as a whole, appeals to the prurient interest; (b) whether the work depicts or describes, in a patently offensive way, sexual conduct specifically

defined by the applicable state law; and (c) whether the work, taken as a whole, lacks serious literary, artistic, political, or scientific value.

Obscenity, incidentally, may consist of words or pictures, though it is hard to imagine an obscenity prosecution today being brought against mere words.

The Supreme Court has clarified that only “the first and second prongs of the *Miller* test—appeal to prurient interest and patent offensiveness—are issues of fact for the jury to determine applying contemporary community standards” (*Pope v. Illinois*, 1987: 15). As for the third prong, “[t]he proper inquiry is not whether an ordinary member of any given community would find serious literary, artistic, political, or scientific value in allegedly obscene material, but whether a reasonable person would find such value in the material, taken as a whole.”

Note that nothing in the *Miller* test requires that a publication be harmful to be deemed obscene, and obscenity may be the only type of speech to which the Supreme Court has denied First Amendment protection without regard to whether it is harmful. The Court has found simply “that any benefit that may be derived from [obscenity] is clearly outweighed by the social interest in order and morality,” and that there is evidence that, at the time of the adoption of the First Amendment, obscenity “was outside the protection intended for speech and press” (though Justice William O. Douglas, dissenting, wrote that “there is no special historical evidence that literature dealing with sex was intended to be treated in a special manner by those who drafted the First Amendment”) (*Roth v. United States*, 1957: 483, 485).

Obscenity is unique among exceptions to the First Amendment in other respects as well. Defining it in part on the basis of whether it is patently offensive according to community standards means that a majority of the population in a given community may prevent the minority from viewing what it wants, and that seems contrary to the very purpose of the First Amendment. Furthermore, because there is no way that a publisher or library can know what any particular community’s standards are—until after a jury convicts or acquits it of publishing or distributing obscenity—the *Miller* test denies publishers and libraries notice of when they commit a crime. In almost any other context, this would violate the Constitution’s guarantee of due process of law. On top of that, the *Miller* test is incoherent in requiring that a publication simultaneously appeal to the prurient interest of, and be patently offensive to, one and the same community. As law professor Kathleen M. Sullivan succinctly put it, the first two parts of the *Miller* test “require the audience to be turned on and grossed out at the same time” (Sullivan, 1992).

The notion of community standards has been problematic since the Supreme Court adopted it in 1973, but it became more problematic with the advent of the Internet. It was problematic before because the Court never defined “community,” except to note that it was not any precise geographic area, though it might be less than an entire state, and that a trial judge who directs a jury to apply community standards need not specify what community he means (*Hamling v. United States*, 1974; *Jenkins v. Georgia*, 1974). This makes it impossible for the publisher of a national magazine to instruct its distributors not to sell it to retailers in any particular community whose standards it fears the magazine might not meet. Even if this were possible, a publisher could not prevent a purchaser of its magazine from bringing it or mailing it into a disapproving community.

Then we come to the age of the Internet. When someone posts material on the Internet, he posts it on a server and does not send it to any community. Rather, any community that has a computer and a means to connect to the Internet may obtain access to the material. Web publishers cannot, therefore, even in theory, restrict access to their material based on the locale of the site visitor. This means that, under the *Miller* test, the most puritanical community in the nation may prevent the entire nation (and the world) from gaining access to material that it finds patently offensive. Yet the Supreme Court held that this fact did not render unconstitutional a statute that used “community standards” in defining a crime committed via the Internet (*Ashcroft v. American Civil Liberties Union*, 2002). In 1994, a husband and wife in Milpitas, California, were convicted and sentenced to prison for transmitting obscenity over the Internet, after a Tennessee undercover Postal agent, in a sting operation, downloaded images they had posted (*United States v. Thomas*, 1996).

The good news for free-speech advocates is that the “community standards” requirement makes it difficult for the government to get convictions for obscenity, and, as a consequence, the government brings relatively few obscenity prosecutions. The difficulty arises because pornography is so prevalent in the United States that the defense can usually call a witness, such as the proprietor of a local video shop, to testify that the allegedly obscene material on trial is similar to what members of the community buy or rent on a regular basis. This may have been a factor that prompted a comment by an anonymous Federal Bureau of Investigation (FBI) agent, when, in the summer of 2005, Attorney General Alberto Gonzales announced that he would divert eight FBI agents, a supervisor, and assorted support staff to gather evidence against manufacturers and purveyors of adult pornography. The reportedly “exasperated” FBI agent said, “I guess this means we’ve won the war on terror” (Gellman, 2005).

2. Child Pornography

Libraries are increasingly contending with the unhappy fact that some patrons use their public terminals to download child pornography. Because child pornography, like obscenity, is unprotected by the First Amendment, the Supreme Court has had to define it too, and has defined it as material that “visually depicts sexual conduct by children below a specified age” (*New York v. Ferber*, 1982: 764). The “sexual conduct” that may not be depicted is defined by federal law to include not only sex acts but also the “lascivious exhibition of the genitals or pubic area of any person,” even when clothed. Child pornography is unprotected by the First Amendment even when it is not legally obscene; in other words, child pornography need not meet the *Miller* test to be banned—it need not be prurient, patently offensive, or lack serious artistic value. The fact that child pornography may be artistic, after all, is no defense to child molestation.

A free-speech advocate might argue that, though the government may certainly prohibit adults from having sex with minors, the First Amendment should preclude the government from banning photographs of the activity. After all, the First Amendment ordinarily protects photographs of crimes being committed. The difference with child pornography, however, is that the crime—child abuse—is committed *for the sake of* the photograph, and, as the Supreme Court wrote, it would be “difficult, if not impossible, to halt the exploitation of children by pursuing only those who produce the photographs and movies,” and not also by pursuing the photographs and movies themselves and those who possess them.

To this extent, child pornography law is uncontroversial. Controversy arises where non-sexual pictures of children are prosecuted as child pornography, and where pictures produced without the use of real children are prosecuted as child pornography. The Supreme Court heard a case on each of these controversies, though, in the first, it didn’t decide anything.

In *Massachusetts v. Oakes*, the Supreme Court considered a Massachusetts statute that made it a crime to knowingly permit a child under 18 years “to pose or to be exhibited in a state of nudity ... for purpose of visual representation or reproduction in any book, magazine, pamphlet, motion picture film, photograph, or picture” (*Massachusetts v. Oakes*, 1989: 579). The defendant in the case had been convicted for taking topless photographs of his 14-year-old stepdaughter, but the Massachusetts Court reversed on the ground that the statute was overbroad (which means that its proscription encompassed speech that was protected by the First Amendment) because it would make “a criminal of a parent who takes a frontal view picture of his or her naked 1-year-old running on a beach or romping in a wading pool.”

While the case was pending before the US Supreme Court, the statute was amended to allow convictions only where nude pictures are taken “with lascivious intent.” Because the statute no longer existed in the form it had when the defendant was convicted under it, the Court chose not to decide whether the statute in that form was overbroad or whether the defendant’s conduct was protected by the First Amendment.

In *Ashcroft v. Free Speech Coalition*, the Supreme Court held that child pornography that is produced without using an actual minor is protected by the First Amendment (*Ashcroft v. Free Speech Coalition*, 2002). This case was a challenge to a federal statute that banned child pornography, including any “visual depiction [that] is, or appears to be, of a minor engaging in sexually explicit conduct.” The statute thus applied to computer-generated child pornography, to cartoons and other drawings where it was obvious that no minor was used, and to child pornography in which adult actors looked like minors. The Supreme Court noted that statutes that prohibit child pornography that use real children are constitutional because they target “[t]he production of the work, not its content.” The statute banning child pornography not produced with a real child, by contrast, targeted the content, not the means of production. “Virtual child pornography is not ‘intrinsically related’ to the sexual abuse of children,” as is child pornography produced with real children.

The government’s rationales for the statute included that “[p]edophiles might use the materials to encourage children to participate in sexual activity” and might “whet their own sexual appetites” with it, “thereby increasing ... the sexual abuse and exploitation of actual children.” The Court found these rationales inadequate because “[t]he government may not prohibit speech because it increases the chance an unlawful act will be committed ‘at some indefinite future time.’” This was not, in other words, a case of falsely shouting fire in a theater.

The government also argued that the existence of “virtual” child pornography “can make it harder to prosecute pornographers who do use real minors,” because, “[a]s imaging technology improves ... , it becomes more difficult to prove that a particular picture was produced using actual children.” “This analysis,” the Court found, “turns the First Amendment upside down. The Government may not suppress lawful speech as the means to suppress unlawful speech.” Though child pornography produced without a real child may cause harm, many types of speech, such as racist speech, may cause harm, yet are protected by the First Amendment.

The Court also noted that, because child pornography, unlike obscenity, may include material with serious literary, artistic, political, or scientific value, it includes “[a]ny depiction of sexually explicit activity, no matter how

it is presented.” The statute therefore “applies to a picture in a psychology manual, as well as a movie depicting the horrors of sexual abuse. ... [T]eenage sexual activity and the sexual abuse of children ... have inspired countless literary works,” and some movie versions of Shakespeare’s *Romeo and Juliet* “suggest that the teenagers consummated their relationship.”

Ascroft v. Free Speech Coalition nevertheless caused an uproar in Congress (What politician is going to vote against banning child pornography, however it is defined?), and in 2003 it enacted a new statute. The new one does not go as far as the one that the Supreme Court struck down, in that it covers only computer-generated images that appear indistinguishable from that of a minor engaging in sexually explicit conduct. It thus covers neither cartoons and drawings nor photographs of adults who look like minors. Nevertheless, its constitutionality is questionable.

3. Material that is “Indecent” or “Harmful to Minors”

Material that is legally “indecent” or “harmful to minors” is protected by the First Amendment, and the government therefore may not totally ban it, although it may forbid its distribution to minors. Federal law prohibits “indecent” material on radio and broadcast (not cable or satellite) television from 6 a.m. to 10 p.m.; Congress chose these hours, after a court had overturned a total ban, as the hours when children would most likely be in the audience. In applying this statute, the Federal Communications Commission has defined “indecent” material as material that, in a manner that is “patently offensive as measured by contemporary community standards for the broadcast medium,” “describe[s] or depict[s] sexual or excretory organs or activities” (*In the Matter of Industry Guidance on the Commission’s Case Law Interpreting 18 U.S.C. Section 1464 and Enforcement Policies Regarding Broadcast Indecency*, 2001). “Indecent” material thus includes the seven dirty words that George Carlin repeated in his famous monologue, as well as pictures of nude bodies, including even Janet Jackson’s breast as exposed during the Superbowl halftime show in 2004.

Part of another federal law, the Communications Decency Act of 1996, which was struck down by the Supreme Court before it took effect, would have made it a crime to use a telephone, fax machine, or e-mail to transmit an “indecent” communication to a minor, or to display such material on a web site available to a minor. The Court held unconstitutional the provision that banned transmitting “indecent” communications to a minor because it was so broad that “a parent who sent his 17-year-old college freshman information on birth control via e-mail could be incarcerated even though neither he, his child, nor anyone in their home community found the

material ‘indecent’ or ‘patently offensive,’ if the college town’s community thought otherwise” (*Reno v. American Civil Liberties Union*, 1997: 878). The Court held unconstitutional the provision that banned similar material on web sites that are available to minors because, except on web sites that may be accessed only upon showing proof of age, to make material unavailable to minors means to remove it entirely, and the government, the Court wrote, may not “reduc[e] the adult population ... to ... only what it fit for children.”

Congress tried again in 1998 by enacting the Child Online Protection Act (COPA). It has not yet been held unconstitutional, but it has never taken effect because its constitutionality was challenged and a federal district court issued a preliminary injunction against its enforcement pending trial, finding that the plaintiffs were likely to prevail in their challenge. The government appealed, and, in 2004, the Supreme Court affirmed the injunction and sent back the case for trial (*American Civil Liberties Union v. Reno*, 2004).

COPA differs from the Communications Decency Act in two main respects: (1) it prohibits communication to minors only of material that is “harmful to minors,” rather than material that is indecent and (2) it applies only to communications for commercial purposes on publicly accessible web sites, and not to telephone, fax, or e-mail communications. The concept of “harmful to minors” is narrower than the concept of “indecent”; it derives from state statutes that prohibit the sale to minors of what the Supreme Court once called “girlie” magazines (*Ginsberg v. New York*, 1968: 634). “Harmful to minors,” as defined in COPA and in state statutes generally, parallels the *Miller* test for obscenity, and, therefore, like the *Miller* test, is incoherent. Material that is “harmful to minors” is material that, with respect to minors, appeals to the prurient interest and is patently offensive, and that lacks serious literary, artistic, political, or scientific value for minors. Note that the definition of “harmful to minors” does not require that the material be harmful to minors. If it did, then one might wonder how the same material could be harmful to minors in one community but not in another.

In its 2004 decision upholding the preliminary injunction against the government’s enforcement of COPA, the Supreme Court found that the lower court had not abused its discretion in finding that the plaintiffs who had challenged the statute were likely to prevail. This was because there were alternatives to COPA that would be as effective in accomplishing COPA’s goal yet would restrict speech less than COPA would. The primary alternative to COPA, the Court noted, is filtering software. Filters are less restrictive than COPA because “[t]hey impose selective restrictions on speech at the receiving end, not universal restrictions at the source.” In addition

filters may be more effective than COPA because “a filter can prevent minors from seeing all pornography, not just [the 60% of all Internet] pornography posted to the Web from America,” and filters “can be applied to all forms of Internet communication, including e-mail, not just communications available via the World Wide Web.” The Court’s opinion does not foreclose the trial court from concluding that COPA is in fact the least restrictive alternative available to accomplish Congress’ goal and therefore is constitutional, but it seems to make that outcome improbable. COPA, in short, seems likely to go the way of the Communications Decency Act. If it does, that should finally establish that the government may not censor sexual material on the Internet, other than obscenity and child pornography, in a way that affects adults.

4. Violent Material

The Supreme Court has never decided a case involving the censorship of violence in the media, but six lower federal courts have addressed the constitutionality of state and local laws that prohibited the sale or rental of violent video games to minors. Each of the six courts—including two federal courts of appeals—that has ruled on such a law has found it unconstitutional, or has issued a preliminary injunction against its enforcement after finding that the law was likely to be found unconstitutional.

These courts applied the principle established by the Supreme Court that the government may not restrict speech on the basis of its content unless the government proves that the restriction is necessary “to promote a compelling interest” and is “the least restrictive means to further the articulated interest” (*Sable Communications of California, Inc. v. Federal Communications Commission*, 1989: 126). The Supreme Court has “recognized that there is a compelling interest in protecting the physical and psychological well-being of minors.” The question is whether violent material threatens the psychological well-being of minors, and, in all the video game cases, the courts found that the government had not proved that it does. The US Court of Appeals for the Eight Circuit struck down a St. Louis County ordinance, writing that, “[w]here first amendment rights are at stake, ‘the Government must present more than anecdote and supposition’” (*Interactive Digital Software Ass’n*, 2003: 959). Judge Richard Posner, holding for the Seventh Circuit that a preliminary injunction against enforcement of an Indianapolis ordinance was warranted, concluded that the psychological studies on which the city relied did “not find that video games have ever caused anyone to commit a violent act, as opposed to feeling aggressive, or have caused the average level of violence to increase anywhere” (*American Amusement Machine Ass’n v. Kendrick*, 2001: 579).

Four federal district courts have reached similar conclusions. In 2004, a district court struck down a statute enacted by the state of Washington, finding that “there has been no showing that exposure to video games that ‘trivialize violence against law enforcement officers’ is likely to lead to actual violence against such officers” (*Video Software Dealers Ass’n v. Maleng*, 2004: 1188). In 2005, a district court struck down an Illinois statute that prohibited both violent and sexually explicit video games, finding that “defendants have failed to present substantial evidence showing that playing violent video games causes minors to have aggressive feelings or engage in aggressive behavior” (*Entertainment Software Ass’n v. Blagojevich*, 2005). A third federal district court issued a preliminary injunction against the enforcement of a 2005 Michigan statute that the court described as “designed to prohibit the dissemination, exhibiting, or display of certain sexually explicit and ultra-violent explicit video games to minors without the consent of their parents or guardians” (*Entertainment Software Ass’n v. Granholm*, 2005). The plaintiffs challenged only the portion of the statute that related to violent video games, and the court found that “[a] cursory review of the research relied upon by the state shows that it is unlikely that the State can demonstrate a compelling interest in preventing a perceived ‘harm.’” The research upon which the state relied, the court found, “concluded that both video game and television media violence exposure are related to aggression in adolescents,” but “did not evaluate the independent effect of violent video games.” Finally, a federal district court in California, also finding the research insufficient to show a compelling interest on the part of the government in restricting speech, granted a preliminary injunction against a California statute that, effective in 2006, would have prohibited the sale or rental to minors of violent video games (*Video Software Dealers Ass’n v. Schwarzenegger*, 2005).

Thus, although the courts tend to assume without evidence that sexual material is harmful to minors, they demanded evidence in the cases that challenged restrictions on violent video games. One reason may be that so much great literature (e.g., Shakespeare) portrays violence, as does much popular entertainment, including fairy tales and children’s Saturday morning cartoon shows. Judge Posner wrote: “To shield children right up to the age of 18 from exposure to violent descriptions and images would not only be quixotic, but deforming; it would leave them unequipped to cope with the world as we know it.”

5. The Commerce Clause

The First Amendment is not the only provision of the Constitution that limits the states’ power to regulate of the Internet; the Commerce Clause

does too. The Commerce Clause (Article I, Section 8, Clause 3) authorizes Congress “[t]o regulate Commerce ... among the several States,” and the Supreme Court has construed this to mean that the states may not interfere with the flow of interstate commerce. If one state bans a particular type of speech, such as “indecent” material, on the Internet, then that state effectively bans such material on the Internet in every state, and thereby unconstitutionally burdens interstate commerce. As one court wrote, “the Internet is one of those areas of commerce that must be marked off as a national preserve to protect users from inconsistent legislation that, taken to its most extreme, could paralyze development of the Internet altogether. Thus, the Commerce Clause ordains that only Congress can legislate in this area, subject, of course, to whatever limitations other provisions of the Constitution (such as the First Amendment) may require” (*American Library Association v. Pataki*, 1997: 169).

B. Right to Receive Information in a Library

To what extent can governmental bodies, including public libraries, keep out books to which they object, require filtering of the Internet to block web sites they find inappropriate, and limit the use of library meeting rooms, exhibit spaces, bulletin boards, and giveaway racks?

1. Books

In *Board of Education v. Pico*, a plurality of the justices found that a school board must be permitted “to establish and apply their curriculum in such a way as to transmit community values,” but that it may not remove school library books in order to deny access to ideas with which it disagrees for political or religious reasons (*Board of Education v. Pico*, 1982: 864). The Court therefore allowed a lawsuit to proceed to trial that had challenged the local school board’s removal from school libraries of nine books, including *Slaughterhouse Five*, *The Naked Ape*, *Down These Mean Streets*, and *Best Short Stories of Negro Writers*. The trial would be to determine whether the school board’s removal decision was based on constitutionally valid concerns or was an attempt to “prescribe what shall be orthodox in politics, nationalism, or other matters of opinion.” But the parties settled without going to trial, resulting in open access to all the challenged books.

The Court noted that, “nothing in our decision today affects in any way the discretion of a local school board to choose books to *add* to the libraries of their schools.” Nevertheless, one may assume that there are limits to that

discretion. The Court wrote: “If a Democratic school board, motivated by party affiliation, ordered the removal of all books written by or in favor of Republicans, few would doubt that the order violated the constitutional rights of students denied access to those books. The same conclusion would surely apply if an all-white school board, motivated by racial animus, decided to remove all books authored by blacks or advocating racial equality and integration.” And surely the same conclusion would also apply if we substituted “purchase any” for “remove all,” or if we were speaking of a public library rather than a public school library. But these questions were not before the Court.

2. Internet (Federal Law)

CIPA amended three federal statutes to provide that a school or library may not use funds or discounts it receives under these statutes to purchase computers used to access the Internet, or to pay the direct costs of accessing the Internet, and may not receive universal service discounts (other than for telecommunications services), unless the school or library enforces a policy “that includes the operation of a technology protection measure” that blocks or filters minors’ Internet access to visual depictions that are obscene, child pornography, or “harmful to minors”; and that blocks or filters adults’ Internet access to visual depictions that are obscene or child pornography (Children’s Internet Protection Act, 2000).

CIPA provides that blocking or filtering technology “may” be disabled when an adult uses a computer “for bona fide research or other lawful purposes.” It defines a “minor” as a person under 17 years, and it defines “material that is harmful to minors” in a way that parallels the *Miller* test, similarly to COPA, as discussed above under “Material that is ‘indecent’ or ‘harmful to minors,’ except that CIPA covers only “visual depictions,” whereas COPA also covers words that fit its definition of “harmful to minors.”

In 2002, in *American Library Association v. United States*, a three-judge federal district court unanimously declared CIPA unconstitutional and ordered that it not be enforced insofar as it applies to libraries. (The provisions affecting schools were not challenged.) In 2003, the Supreme Court reversed the district court, finding CIPA constitutional (*United States v. American Library Association*, 2003). The decision, by Chief Justice Rehnquist for a four-justice plurality, noted that “Congress may not ‘induce’ the recipient [of federal funds] ‘to engage in activities that would themselves be unconstitutional.’” The plurality therefore viewed the question before the Court as “whether [public] libraries would violate the First Amendment by

employing the filtering software that CIPA requires.” Does CIPA, in other words, effectively violate library *patrons’* rights?

The plurality acknowledged “the tendency of filtering software to ‘overblock’; that is, to erroneously block access to constitutionally protected speech that falls outside the categories that software users intend to block.” It found, however, that, “[a]ssuming that such erroneous blocking presents constitutional difficulties, any such concerns are dispelled by the ease with which patrons may have the filtering software disabled.” This was despite the fact that, as Justice Souter noted in his dissent, “the statute says only that a library ‘may’ unblock, not that it must.” It was also despite the fact that the three-judge court had found that “At least tens of thousands of pages of the indexable Web are overblocked by each of the filtering programs evaluated by experts in this case. ... Many erroneously blocked pages contain content that is completely innocuous for both adults and minors, and that no rational person could conclude matches the filtering companies’ category definitions, such as ‘pornography’ or ‘sex.’” Overblocking, in fact, is inevitable because, as Justice Stevens quoted from the district court opinion: “[T]he search engines that software companies use for harvestings are able to search text only, not images. This is of critical importance, because CIPA, by its own terms, covers only ‘visual depictions.’” Furthermore, no software can determine whether material, with respect to minors, appeals to the prurient interest, is patently offensive, or lacks serious literary, artistic, political, or scientific value as to minors; these are subjective human judgments. It seems that, even if CIPA’s definition of “material that is harmful to minors” were coherent, any success that filtering software has in blocking such material and not other material will be in substantial part coincidental.

The plurality also considered whether CIPA imposes an unconstitutional condition on the receipt of federal assistance—in other words, does it violate public *libraries’* rights by requiring them to limit their freedom of speech if they accept federal funds? The plurality found that, assuming that government entities have First Amendment rights (it did not decide the question), CIPA does not infringe them. This is because CIPA does not deny a benefit to libraries that do not agree to use filters; rather, the statute “simply insist[s] that public funds be spent for the purposes for which they were authorized.” “CIPA does not ‘penalize’ libraries that choose not to install such software, or deny them the right to provide their patrons with unfiltered Internet access. Rather, CIPA simply reflects Congress’ decision not to subsidize their doing so.” In effect, then, the plurality seemed to view CIPA as raising no First Amendment issue other than the possible one of overblocking, which it found the statute to deal with adequately by providing that filters “may” be disabled when adults use computers in public libraries.

3. Internet (State Law)

The National Conference of State Legislatures reports at its web site that, in addition to CIPA, “Twenty-one states have Internet filtering laws that apply to public schools or libraries. The majority of these states simply require school boards or public libraries to adopt Internet use policies to prevent minors from gaining access to sexually explicit, obscene or harmful materials. However, some states also require publicly funded institutions to install filtering software on library public access terminals or school computers” (National Conference of State Legislatures, 2006: *Children and the Internet: Laws Relating to Filtering, Blocking and Usage Policies in Schools and Libraries*). The National Conference of State Legislatures’ web site includes a chart citing and summarizing these state laws. Because a filter on a computer in one state does not affect access to material in other states, these laws, unlike state laws that restrict what may be posted on a web site, do not unconstitutionally restrict interstate commerce.

C. Meeting Rooms, Exhibit Spaces, Bulletin Boards, Giveaway Racks

Some public spaces, such as streets and parks, are known legally as “traditional public forums,” which means that they generally are open to all people to express themselves in, by speech-making, demonstrating, or leafleting, and the like. The government may regulate speech in traditional public forums only as to its time, place, and manner of expression, so that, for example, two demonstrations do not occur at the same time and place. The government may not limit speech in traditional public forums on the basis of its content, even when, for example, a group of Nazis announces plans to march in Skokie, Illinois, having chosen that city because of its large Jewish population, including several thousand Holocaust survivors (*Collin v. Smith*, 1978).

The Supreme Court has held, however, that “the First Amendment does not guarantee access to property simply because it is owned and controlled by the government. ... The State, no less than a private owner of property, has power to preserve the property under its control for the use to which it is lawfully dedicated” (*United States Postal Service v. Council of Greenburgh Civic Ass’ns*, 1981: 129–130). Thus, though public streets and parks are traditional public forums, a public library is not, and the government may prohibit speech-making, demonstrations, and leafleting in it on the ground that these activities would interfere with the library’s purpose.

Sometimes the government makes particular public property available to private groups for expressive activities—it “designates a public forum,” in

the legal jargon. It may designate a public forum “for a limited purpose such as use by certain groups (e.g., student groups) or for the discussion of certain subjects (e.g., school board business)” (*Perry Education Assn. v. Perry Local Educators’ Assn.*, 1983: 46, note 7). The government may not, however, designate a public forum but limit its use to the expression of particular viewpoints. Thus, a court held that, if a library makes a meeting room “available for public programs sponsored by non-profit educational and cultural agencies,” it may not exclude a group that wishes to hold a “creation science workshop” (*Pfeifer v. City of West Allis*, 2000: 1256, 1267). This same principle would apply to exhibit spaces, bulletin boards, and giveaway racks that a library designates for public use: it may close the forum or limit the type of material that may be displayed, but it may not limit the viewpoint that the material may express.

The fact that a creationist group was found entitled to use a designated public forum raises an issue that sometimes causes confusion. If a public library makes a meeting room or a bulletin board available to all non-profit groups, then for it to allow a religious group to use its property does not cause the library to violate the establishment clause of the First Amendment. This is because the library would not be sponsoring or endorsing the religious group’s speech, but rather would be neutrally making its property available to all non-profit groups. In fact, if the library, under the circumstances, excludes a religious group, then it might violate not only the First Amendment’s free speech clause, but the First Amendment’s free exercise of religion clause as well.

IV. The Expanding Role of the Library Profession in Defending Intellectual Freedom from the 1970s to 2005

Has the library profession met Berninghausen’s challenge to defend free inquiry for library users with vigor and effectiveness? Over the past 30 years, the library profession has greatly expanded its efforts in the fight for intellectual freedom.

Berninghausen tells us that intellectual freedom for library users was conspicuously absent from the American Library Association’s 1939 *Code of Ethics for Librarians*. In contrast, the 1975 and 1979 Draft Statements said that respect for intellectual freedom should guide the library profession, as the library profession carries special obligations and responsibilities. Berninghausen left us with a challenge to write a Code of Ethics that would declare it unethical for librarians to exclude expressions of beliefs or values with which they disagree. He went further by saying that librarians should not only avoid exclusion, but should affirmatively ensure equal access to

expression regardless of whether they agree or disagree with it. The very first responsibility of librarians, he wrote, is to provide users full and free access so that they may make individual judgments.

Castagna surveys the problems of censorship and intellectual freedom from ancient times through 1971. He notes that librarians in the United States dealt with censorship mostly on an individual basis until the late 1930s, when the American Library Association (ALA) first made intellectual freedom a major official concern for the organization.

Castagna then outlines the development of the ALA's official actions: the Library Bill of Rights, the Intellectual Freedom Committee, the *Newsletter on Intellectual Freedom*, the Office for Intellectual Freedom and the Freedom to Read Foundation (FTRF). These endeavors were largely in their infancy when Castagna described them in 1971. This section looks at their progress since that time.

A. American Library Association's Code of Ethics

Does today's American Library Association's Code of Ethics meet Berninghausen's challenge? Today's Code ([American Library Association, 1995](#)), states as Article II:

II. We uphold the principles of intellectual freedom and resist all efforts to censor library resources.

This text may not go as far as Berninghausen implored. Although it establishes a defensive posture to censorship, it does not set forth a proactive responsibility to assure a diversity of viewpoints. Nevertheless, it forms a foundation that is supplemented by the Library Bill of Rights, its interpretations, and related statements.

Additionally, the Code expands on the privacy provision of the 1939 Code of Ethics for Librarians, which reads, "It is the librarian's obligation to treat as confidential any private information obtained through contact with library patrons."

Today's Code states as Article III:

III. We protect each library user's right to privacy and confidentiality with respect to information sought or received and resources consulted, borrowed, acquired or transmitted.

Although similar in scope, today's code uses the term "protect," suggesting a greater guardianship of confidential information. This, in turn, is expanded upon in additional statements, guidelines, and model policies on privacy and confidentiality.

B. The Library Bill of Rights, Expanding Interpretations and Related Statements by the American Library Association

The Library Bill of Rights' (LBR) genesis in 1939 was a response to attempts around the country in the late 1930s to censor John Steinbeck's *The Grapes of Wrath*. The Library Bill of Rights was rewritten and adopted in 1948 under the leadership of Berninghausen, who served as chair of the Intellectual Freedom Committee. In 1961, in response to the burning issue of segregation, the ALA set up a Special Committee on Civil Liberties, which led to a new Article stating that "the rights of an individual to the use of a library should not be denied or abridged because of his race, religion, national origins, or political views." In 1967, "age" was added to that Article. In 1980, sex-linked pronouns were eliminated and the principle of equitable and non-discriminatory use of meeting rooms and exhibit space was formulated. In 1996, "age" was reaffirmed in the face of challenges to restrict Internet access to children and young adults.

1. Interpretations of the Library Bill of Rights

Berninghausen told us in 1979 that each "Interpretation" served as an advance in the preservation of intellectual freedom for library users. The number of interpretations has more than doubled since that time.

Labels and Rating Systems (1951; amended 1971; 1981; 1990; 2005) was developed in response to pressures on libraries to label materials that "advocate or favor communism," such as the request from the Montclair, New Jersey chapter of the Sons of the American Revolution to label and segregate communistic and subversive materials. This LBR interpretation depicts labeling as a censor's tool.

Challenged Materials (1971; amended 1981; 1990) was prompted by attempts to remove publications from libraries. For example, a library board in Groton, Connecticut was threatened with prosecution for violating a state obscenity law if it did not remove the magazine *Evergreen Review*. This LBR interpretation says that challenged materials should not be removed if the materials meet the library's selection criteria.

Free Access to Libraries for Minors (1972; amended 1981; 1991; 2004) resulted from a 1967 ALA preconference titled *Intellectual Freedom and the Teenager*. It states that it is the parents' responsibility to advise their children and that librarians cannot assume a parental role. Librarians have a professional obligation to provide equal access to all library resources for all library users.

Evaluating Library Collections (1973; amended 1981) states that the ALA opposes "silent censorship," such as using the weeding process as a convenient means to remove controversial materials.

Expurgation of Library Materials (1973; amended 1981; 1990) was sparked by a book publisher who objected to the Caldwell Parish (Louisiana) Library's using white tempera paint to "diaper" nude young Mickey in Maurice Sendak's *In the Night Kitchen*. The Children's Book Council brought the situation to the attention of the ALA, resulting in this LBR interpretation, which decries any deletion, excision, alteration, editing, or obliteration of any part of books or other library resources.

Restricted Access to Library Materials (1973; amended 1981; 1991; 2000; 2004) was adopted in response to an objection by the San Jose (California) branch of the National Association for the Advancement of Colored People (NAACP) to the book *Epaminondas and His Auntie* as depicting a black child to look "completely idiotic and stupid." The San Jose City Council placed the book on reserve. Soon afterwards, it returned the book to open stacks and also adopted the LBR as city policy upon recommendation by the city's Library Commission. This LBR interpretation decries "closed shelf" and "locked case" designations for controversial materials.

Diversity in Collection Development (1982; amended 1990) states that censorship includes removing or not selecting materials because some consider them racist or sexist, and not purchasing conservative religious materials or materials from non-mainstream political entities.

Library-Initiated Programs as a Resource (1982; amended 1990; 2000) resulted from challenges to controversial speakers and films appearing in libraries. For example, an Italian-American group objected to a library's showing of "The Godfather" in the New Rochelle library, and parents' groups lodged many objections to children's programs emphasizing magic or the occult. This LBR interpretation states that topics, speakers, and resource materials should not be excluded from library-sponsored programs because of possible controversy.

Access to Resources and Services in the School Library Media Program (1986; amended 1990; 2000; 2005) states that school library media professionals should promote an atmosphere of free inquiry, and that school media collections should represent diverse points of view and reflect the linguistic pluralism of the community.

Access for Children and Young People to Non-print Materials (1989; amended 2004) rejects library imposition of private rating systems on children's viewing of audiovisual library materials.

Exhibit Spaces and Bulletin Boards (1991; amended 2004) resulted from growing exhibit space controversies. The Ku Klux Klan sponsored an exhibit at a public library in North Carolina, and Turkish students at the University of California library at Berkeley protested against an exhibit on the early-20th century massacre of Armenians by Turks. This LBR

interpretation states that libraries should not censor exhibits or bulletin boards because some members of the community may disagree with their content.

Meeting Rooms (1991) was developed concurrently with the Interpretation on *Exhibit Spaces and Bulletin Boards*. It states that library meeting rooms should be made available to the public without regard to the subject matter discussed or the beliefs and affiliations of the users.

The Universal Right to Free Expression (1991) was formulated by the ALA in response to a request by the Association of American Publishers concerning US sanctions. The sanctions kept books from entering South Africa. The statement is based on Articles 18, 19, and 20 of the Universal Declaration of Human Rights and recognizes freedom to seek, receive, and impart information regardless of frontiers.

Access to Library Resources and Services Regardless of Sex, Gender Identity, or Sexual Orientation (1993; amended 2000; 2004) was sparked by Colorado Constitutional Amendment 2, which repealed civil rights legislation protecting gays and lesbians. The statement affirms that librarians must resist efforts that systematically exclude materials dealing with any subject matter, including sex, gender identity, or sexual orientation.

Economic Barriers to Information Access (1993) set forth principles opposing user fees at libraries that receive their major support from public funds. According to Intellectual Freedom Committee Chair Candace Morgan, the draft was revised to address the “creeping acceptance, by governing bodies and funding sources, of the idea that libraries should be required to recover some costs through user charges, which have the potential to create barriers to access based on economic status.”

Access to Electronic Information Services and Networks (1996; amended 2005) was developed as the national information infrastructure rapidly grew in importance. This LBR interpretation and its accompanying *Questions and Answers* (1997; revised 2000), as well as *Guidelines and Considerations for Developing a Public Library Internet Use Policy* (1998; revised 2000; 2005), state that users should not be restricted from expressing or receiving constitutionally protected speech, that user fees should not be imposed by libraries that receive their major support from public funds, and that libraries should not require parental permission before allowing children access to electronic networks.

Intellectual Freedom Principles for Academic Libraries (2000) recommends that faculty senates and similar bodies endorse the principles in the *Library Bill of Rights*.

Privacy: An Interpretation of the Library Bill of Rights (2002) and its accompanying *Questions and Answers* (2002; revised 2005) affirm that rights

of privacy are necessary for intellectual freedom and are fundamental to the ethics and practice of librarianship.

The full text of these interpretations, as well as their history, can be found in the Intellectual Freedom Manual ([American Library Association, 2006](#)). Updates can be found at the American Library Association web site ([American Library Association, 2005](#)).

2. Statements Related to the Code of Ethics and the Library Bill of Rights

In addition to the Code of Ethics, the Library Bill of Rights, and its official Interpretations, the American Library Association has issued a number of statements that embrace intellectual freedom principles.

The Freedom to Read Policy Statement (1953; revised 1972; 1991; 2000; 2004) grew out of a 1953 conference co-sponsored by the American Library Association and the American Book Publishers Council. The conference focused on obscenity, pornography, disloyalty, and subversive materials. This document has been endorsed by many organizations outside the library world, from the American Booksellers Association to the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) to the National Board of the Young Women's Christian Association of the United States. It states that the freedom to read is essential to our democracy, and that most attempts at suppression rest on a denial of the fundamental premise that the ordinary citizen, exercising critical judgment, will accept the good and reject the bad.

Policy on Confidentiality of Library Records Policy (1971; revised 1975; 1986) is a statement in response to US Treasury agents who demanded circulation records from libraries in Milwaukee, Ohio, California, and Georgia. The ALA issued an emergency advisory statement urging all libraries to make circulation records confidential as a matter of policy. David K. Berninghausen, Intellectual Freedom Committee chair at the time, stated that, "when a government takes action to control what its citizens are thinking, it is a telltale sign that all is not well in that society."

Policy on Governmental Intimidation (1973; revised 2004) is a two-sentence statement encouraging resistance to government intimidation of free expression. This was prompted by FBI agent intimidation of librarians Zoia Horn and Patricia Rom and subpoenas to testify during the Vietnam War.

Policy Concerning Confidentiality of Personally Identifiable Information about Library Users (1991; revised 2004) was a response to the FBI Library Awareness Program and an Oregon case where law enforcement officials took fingerprints from library materials as part of a criminal investigation. It states

that the ethical responsibilities of librarians, as well as statutes in most states and the District of Columbia, protect the privacy of library users.

Statement on Library Use of Filtering Software (1997; revised 2000) stated that filtering software in libraries blocks access to constitutionally protected speech and violated the LBR.

Libraries: An American Value (1999) differs from the LBR primarily in its target audience. This statement is aimed at informing the public about the role of the library in the community in the face of accelerating change and uncertainty. It is a very short statement affirming the rights of all individuals to use the library's resources and services in privacy.

C. Intellectual Freedom Committee

Castagna tells us that the ALA Council created the Committee on Intellectual Freedom in 1940 as an advisory body and was not set up to take action. The Committee invited librarians to report censorship attempts, and took the lead in formulating the ALA's first LBR Interpretation: the Statement on Labeling (listed above).

In 2005, the Committee recommended intellectual freedom policies to the ALA Council. The Committee works closely with the Office for Intellectual Freedom and with other units and officers of the Association in matters touching intellectual freedom and censorship.

D. Newsletter on Intellectual Freedom

The Intellectual Freedom Committee began the *Newsletter on Intellectual Freedom* in early 1952 with a grant from the Fund for the Republic. In the 1970s, the Office for Intellectual Freedom took over the writing, editing, and production of the newsletter after the untimely death of LeRoy C. Merritt. Today it reports on attempts to remove materials from school and library shelves across the country. It is published bimonthly in print and online (at www.ala.org/nif/) by the Intellectual Freedom Committee. Each issue includes:

- *Censorship Dateline*: A state-by-state survey of challenges, bannings, and burnings.
- *From the Bench and Is It Legal?*: Developments in federal and state laws affecting librarians, teachers, students, authors, journalists, and artists.
- *Intellectual Freedom Bibliography*: A guide to current articles and books on freedom of expression in America.

E. Office for Intellectual Freedom

Castagna called it “a momentous event” back in 1968 when the Office for Intellectual Freedom was established and Judith F. Krug was appointed its director. Its chief purpose then and now is to defend intellectual freedom.

Today the Office has expanded to a staff of seven. It offers assistance to librarians throughout the country who request assistance to fight censorship efforts. It gives training to librarians who chair their state library associations’ intellectual freedom committees. In recent years, it has initiated a successful Lawyers for Libraries program to train attorneys throughout the country on the legal precedents protecting intellectual freedom in libraries. According to Deborah Caldwell-Stone, Deputy Director of the Office for Intellectual Freedom, the lawyers who complete the training have become very involved in helping libraries craft sound policies as a proactive measure to prevent problems down the road.

F. Freedom to Read Foundation

Newly established when Castagna wrote his chapter, the FTRF had yet to mount any legal challenges. The first case that was fully funded by the FTRF, *Moore v. Younger* (1976), arose in the 1970s. This tortuous case wound its way through state and federal courts.

Everett Moore, then associate librarian of the University of California, Los Angeles and Vice President of the FTRF, was the lead plaintiff, challenging a state “Harmful Matters” statute in California. In January 1975, the Los Angeles trial court exempted libraries from the statute. The librarians appealed that decision, wishing to void the statute as unconstitutionally vague or overbroad, but, in January 1976, the state appellate court ruled that they lacked standing, as the trial court had ruled in their favor.

The *Freedom to Read News* (Spring, 1976) wrote: “We have won the first legal precedent ever for the Library Bill of Rights, and we have won it in one of the most respected court systems in the United States.” Further, it noted that the Foundation had gained expertise during the case to defend any librarian or library in the United States charged with violating an obscenity law.

The FTRF uses the following factors to evaluate whether it will take a case:

GUIDELINES FOR PARTICIPATING AS A PARTY IN A LITIGATION OR SUBMITTING AN AMICUS BRIEF

The following factors are deemed relevant in determining whether the Freedom to Read Foundation should participate as a party to a litigation and/or submit an amicus curiae brief in an existing court case. Any of the listed factors may be deemed persuasive in a given circumstance.

Factor One: How directly the case or governmental action at issue implicates the freedom to read, including the creative process and the right to receive reading materials.

Comment: A case should be examined not only for its facts, but on the importance of the legal doctrines at issue with respect to the freedom to read.

Factor Two: The significance of an adverse result in the case, both with respect to the situation at issue and the precedential implications of the decision.

Comment: Decisions from state supreme courts and federal appellate courts carry the greatest weight in terms of precedential value.

Factor Three: The perceived impact of an amicus submission by the Freedom to Read Foundation or its participation as a party and the costs of such participation.

Comment: Where a case specifically involves libraries, the Freedom to Read Foundation may be the only organization with a primary interest in the case and a willingness to incur the costs of briefing. Even where a case provokes interest from a broad coalition of groups, there is a benefit to be gained from presenting a united front of organizations known to the interested in preserving free expression.

Factor Four: Where the Freedom to Read Foundation is joining a brief written by another organization, whether the contents of the brief and its quality accord with the principles and standards of the Freedom to Read Foundation.

The key court cases that the FTRF has taken on are discussed in Section III; they include *Board of Education v. Pico*, *Reno v. American Civil Liberties Union*, and *United States v. American Library Association*. (All cases in which the FTRF has been involved are listed in the [Freedom to Read Foundation Time Line \(n.d.\)](#)).

In addition, the FTRF has been a successful plaintiff in challenging “Harmful to Minors” Internet laws in Arizona, Michigan, and Virginia. It is currently a plaintiff challenging Ohio’s “Harmful to Juveniles” statute and an Internet censorship bill in Utah.

G. Initiatives since the 1970s

1. LeRoy C. Merritt Fund

Castagna discussed the desire to support librarians who fight censorship battles at the risk of losing their livelihoods. In 1970, the Leroy C. Merritt Fund was established to this end. Merritt was one of the library profession’s staunchest opponents of censorship and the editor of the Newsletter on Intellectual Freedom, from 1942 until 1970. He became the FTRF’s first benefactor by donating the entire \$500 cash award that he received as the first recipient of the Robert B. Downs Intellectual Freedom Award.

2. Banned Books Week

Initiated in 1982 after a tremendously successful display of banned books in padlocked cages at the American Booksellers Convention in Anaheim,

California, the American Library Association and the American Booksellers Association created Banned Books Week. According to Robert P. Doyle, author of *Books Challenged or Banned in 2004–2005*, this initiative was intended to take a proactive role defending intellectual freedom rather than waiting to respond to crises in the field. The essential message is the importance of ensuring the availability of those unorthodox or unpopular viewpoints to all who wish to read them.

During Banned Books Week in 1982, the most frequent questions from press and the library community across the country were, “Why was the book banned?,” “Where was it banned?,” “When was it banned?,” and “What can we do?” For the next Banned Books Week (September 10–17, 1983), Robert P. Doyle, from the American Library Association’s Office for Intellectual Freedom, prepared “A List of Books Some People Consider Dangerous.” The list contained 404 titles and briefly stated the reasons, location, and dates for the challenged, restricted, or banned titles. The brochure was prepared to help bookstores, libraries, and schools organize their programs in support of the First Amendment. It also included information about banned books, specific suggestions for activities for Banned Books Week, and clip art to help launch a successful publicity campaign. This grew into an annual book *Banned Books*, edited by Robert P. Doyle, filled with each year’s incidents. The 2004 list contained 1531 titles.

H. The USA PATRIOT Act and Related Privacy Threats

In 2001, 6 weeks after the attacks of September 11th, the US Congress passed the USA PATRIOT Act. Although several of its provisions affect libraries and library users, the one that the library profession has most directly challenged is Section 215, which allows the FBI to obtain business records (including “any tangible thing”) upon approval by the Federal Intelligence Surveillance Court.

The FTRF filed an amicus brief in 2003 with the American Civil Liberties Union in *Muslim Community Association of Ann Arbor v. Ashcroft* (2003). The brief claims that the Act provides the government with an unchecked and unprecedented power to obtain materials protected by the First Amendment whenever the government merely states that the materials are sought “to protect against international terrorism” (50 U.S.C. Section 1861(a)(1)). The case is pending in federal district court in Michigan.

In 2005, the American Civil Liberties Union filed a lawsuit on behalf of a Connecticut librarian who was served a National Security Letter demanding the disclosure of certain subscriber records and other sensitive

information. A federal judge ruled that the FBI must lift the gag order that by statute automatically attaches to the national security letter. The gag had prevented the librarian from discussing his situation, even at a time when reauthorization hearings were being held to evaluate the wisdom of extending the USA PATRIOT Act provisions that applied to his situation. The FTRF and ALA also participated as an amicus in a challenge to the constitutionality of the gag provisions in national security letters. The case, *Doe v. Gonzales* (2005), was consolidated on appeal with the Connecticut librarian case.

V. The Future of Intellectual Freedom for Library Users

As we set forth into the 21st century, the censorship battles show no sign of abating. Bonfires have been made to burn Harry Potter books because they allegedly contain witchcraft; a strong anti-homosexual agenda has resulted in an increasing number of challenges to books with gay themes; and the challenges each year have become more organized, as the Internet has made it possible for groups who challenge library materials to share information. Whereas one group may have challenged a particular title in the past, a virtual “echo chamber,” according to Deborah Caldwell-Stone, had arisen by the early 21st century. Small groups across the country had set up web sites linking to the same titles for parents to consider challenging. Sometimes the web site was really the work of just one person, but appeared to have greater support. On the other hand, the library community also has been able to use the Internet to marshal its own resources—sharing tips on how to respond to challenges, and quickly get its own information out to those in need.

Alongside the threat of direct censorship of materials, library users face an equally threatening development—the erosion of reader privacy. After the September 11th attacks, the USA PATRIOT Act and related measures were passed that made it easier for law enforcement and intelligence officers to gain access to patron reading records. Although controversy rages as to when and how often these measures are put into effect, one thing is clear: they have a potentially chilling effect on library readers.

The library profession is currently taking a leadership role in the privacy front, and this area is just as important to intellectual freedom as direct censorship is. One librarian reports seeing a young boy, of apparent Middle Eastern descent, ready to check out a book on airplanes. The boy’s father quietly said, “You better put that one back.”

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Statutes

Children's Internet Protection Act. Public Law 106-554 (2000). Section 1711 of this statute amended Title III of the Elementary and Secondary Education Act of 1965, 20 U.S.C. Sections 6801 et seq. Section 1712 amended Section 224 of the Museum and Library Services Act, 20 U.S.C. Section 9134, which is part of the Library Services and Technology Act (LSTA), which is Title II of the Museum and Library Services Act. Section 1721 amended Section 254(h) of the Communications Act of 1934, 47 U.S.C. Section 254(h), which establishes the "universal service discount," or "e-rate," for schools and libraries. Only Sections 1712 and 1721 (insofar as they applies to libraries) were at issue in the case before the three-judge district court and the Supreme Court.

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Focusing on Library Services and Resources

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Reference Service: From Certainty to Uncertainty[☆]

James Rettig

Boatwright Memorial Library, University of Richmond, Richmond, VA,
USA

I. A Representative Reference Transaction circa 1976

(An undergraduate approaches the reference desk in her college library.)

Librarian: Hello, may I help you?

Student: Yeah, I have to do a paper for my English class.

Librarian: Do you have a topic in mind?

Student: Yeah, I want to do it on Matthew Arnold.

Librarian: Anything in particular about Arnold?

Student: Yeah, his ideas in his essays about poetry.

Librarian: Have you narrowed that down?

Student: I don't know. Maybe I'll see how other European writers influenced his poems.

Librarian: OK. Have you looked for any sources on that yet?

Student: No; I'm not sure where to look.

Librarian: That's OK. I'll help you. How big a project is your paper?

Student: Pretty big! It counts for a quarter of the course grade. It's gotta be at least twenty pages.

Librarian: That is big. Let's look for some books first.

Librarian and student leave the reference desk and walk to the card catalog.

Librarian: Let's look in the subject card catalog. (*Librarian pulls a drawer out and places it on a tall table adjacent to the catalog cabinets.*) Here is the section listing books about Matthew Arnold. And these cards with

[☆] Because most of the ferment and experimentation in rethinking reference service during the past three decades has taken place in academic libraries and because the author's professional experience is limited to academic libraries, this chapter focuses on academic reference service.

the heading “Arnold, Matthew, 1822–1888—Criticism and interpretation” are the books about his works. Look through those and see which ones look useful. Copy down the call numbers here in the upper left corner of each card and then I’ll show you how to find literary criticism articles about Arnold’s poetry.

Student: OK. Do you have a pencil I can use?

Librarian: There are “golf” pencils in the container over there.

Student: OK. Thanks!

(Student returns to librarian at reference desk.)

Student: I got some that look good. Where do I find them?

Librarian: Books with call number beginning with “PR” are on the third floor. When you look at the books up there, it will probably be helpful to look in their tables of contents in the front and their indexes in the back. But before you go looking for those, let me show you how to find some literary criticism articles. Are you familiar with the *MLA Bibliography*?

Student: No, I don’t think so.

Librarian: That’s OK. I’ll show you where it is and how to use it.

(Librarian and student walk away from the reference desk and sit down side-by-side on stools at a nearby index table.)

Librarian: This is organized by national literatures and then by century. Do you know Arnold’s nationality and century?

Student: Yeah, I think so. Isn’t he British and from the nineteenth century?

Librarian: Let’s check and see. (*Librarian opens the 1975 annual cumulation of the MLA International Bibliography.*) Here is the section for English Literature and here is its section for the nineteenth century, section Roman numeral IX. Sure enough, Arnold is listed there (*pointing to the page*).

This lists articles about Matthew Arnold and his work. Here in quotation marks is the title of an article. It is in this journal in the italicized letters. That is an abbreviation for the journal’s full title. It is important that you turn to the front of the book and check that abbreviated title in the list so that you know the journal’s complete title (*flipping to the front of the volume*). See, “MLN” stands for *Modern Language Notes* (*flipping back to the citation being explained*). Then it tells you which year the article was published in *Modern Language Notes* and the page numbers the article is on.

So look through these and copy down the full citations. You’ll probably also have to go through earlier years of the *MLA Bibliography* to get enough. Then when you have all of your citations (*walking*), you need to go to this small card catalog over

here and look up the journal title for each article and see if the library has it. Be sure to look carefully on the journal's card to see if we have the year you need.

Let me know if you get confused. I've given you a lot of information here. And if you don't find enough, please come back and we'll do something more.

Student: OK. I guess I get it.
(Librarian returns to reference desk.)

II. Introduction

Academic reference service during the past 30 years has faced change and challenge; these have been the emblems of reference in this period. The opportunities offered by emerging technologies have provided much of the challenge and spurred change. From within the profession, reference practitioners and library administrators brought about change by challenging their colleagues through serious questioning of the assumptions and practices of reference service. Thirty years ago few would have questioned the definition of reference service as "personal assistance provided by members of the reference staff to library users in pursuit of information" (Young *et al.*, 1983, p. 118). At that time "personal" invariably implied interpersonal and usually face-to-face interaction. That implication is no longer valid.

In the mid-1970s, certainty characterized reference librarianship—certainty about the respective roles of the reference librarian and of those they served, certainty about the ways in which information was published and disseminated, certainty about long established access tools for discovery and retrieval of information. The reference transaction scenario above includes local variants (e.g., tools users needed to consult to learn local journal holdings information) to complement other resources. With exceedingly rare exception, all of the other resources used would have been paper-based and located in a library's building.

The certainty reference librarians enjoyed then was not absolute, of course. Nor did reference librarians share a monolithic view of their role. The so-called "instruction vs. information" debate was alive and well in the 1970s and gained vigor if not clarity over the three decades since then. Reference librarians were, nevertheless, much more certain and much more comfortable with their view of themselves and the service they provided than are today's reference librarians. Uncertainty about the future has replaced that past certainty. Today their greatest certainty is that rapid changes in technology

will continue and that those changes will affect the ways in which users seek and manage information. Those changes in user behavior will, in turn, continue to challenge the ways that reference librarians offer their services.

The economics and cost of reference service have received less attention than technology even though technology has been the major cost driver as reference service has changed. Technology and the cost of offering reference service coupled in a glum assessment of the future of reference service with the foreboding title "When Reference Librarianship Died: It Began in Detroit" (Vavrek, 1978). Vavrek connected topical threads from programs presented at the American Library Association's annual conference held in Detroit in 1977. Linking the challenge of funding the cost of "computer-assisted reference service" (as it was then called) with the savings realized through a trend towards staffing reference desks with "non-professional library staff," Vavrek sounded a death knell for reference service, declaring that "it is a suicidal position to assume it is now appropriate and justifiable to usurp the professional reference librarian's role by having a substitute take that position" (ibid., p. 303). Mark Twain's riposte to his premature obituary that the report of his death was exaggerated applies equally to Vavrek's failed prophecy. Costs, addressed primarily in the fee-vs.-free debate of the late 1970s and a good part of the 1980s, played a role in the development of reference service, but not a determining one. Use of paraprofessionals to provide reference service can still inspire debate, usually more philosophical than economic. It is a well-established accepted practice in many libraries but anathema in others. Reference service has continued, even thrived, despite Vavrek's dire assessment.

A review of the literature of reference librarianship over the past three decades reveals that far more common than dire predictions were calls to rethink the premises of reference service. The context for these was technological change.

III. Technological Change

In the mid-1970s paper was the primary medium for storing and providing access to bibliographic information. That changed in notable increments over the next two decades, gentle precursors to the revolutionary change brought about by the World Wide Web's possibilities and its ever-growing ubiquity. Technology transformed the process of searching for bibliographic information more frequently than any other aspect of reference. Reference service's responses to and accommodation of those changes in searching make an ideal lens through which to examine broader trends.

Paper gave way initially to unseen people operating computers on behalf of reference patrons. At some universities it was possible to submit a request for a search of a database such as ERIC, *Dissertation Abstracts*, and *Psychological Abstracts* to a specially trained librarian or by mail to a commercial service provider. The librarian would then interact through a console with a main-frame computer which would search computer tapes and generate a result set of citations to documents. Rarely did this process occur in real time. There were time lags between submission of the written request, its transmittal to the specialist, and return to the requestor of results—as likely as not printed out in all capital letters on wide green bar tractor feed paper. One test of three services revealed turnaround time ranging from 14 to 21 days (Langley, 1976). Results were inconclusive when the quality of these services' searches conducted by distant mediators was compared to the quality of the results of manual searches of printed indexes. Time lag was a negative; savings in labor was a positive. However in two of the three cases, a manual search of the same sources retrieved more citations than the machine searches. Cost models varied. Some companies based charges "on the number of citations retrieved, such as *DATRIX II* which charges \$15.00 for the first 150 citations plus \$10 for each additional citation. Others base[d] charges on the complexity of the search, as is the case with *PASAR*" (ibid., p. 229).

In the 1976 reference scenario above, the student was responsible for searching for relevant citations. The processes of searching for citations and evaluating each citation's relevance were conducted simultaneously by the person who would use the information in the cited sources. The advent of electronic databases changed that. The process of searching belonged exclusively to the librarian; the process of evaluating citations was usually shared by the librarian and the patron. Here in a kernel is the most important trend in reference service over the past 30 years. The respective roles and, in some ways, the responsibilities of the reference librarian and the user of reference service changed. If in 1977 Vavrek considered it suicidal for the reference librarian to allow usurpation by paraprofessionals of the reference librarian's role, what, one wonders, would he have said then about the degree to which key elements of that role have transferred to library users.

A. Real-Time Online Searching

Services allowing librarians to conduct database searches online in real time emerged in the late 1970s. BRS and DIALOG dominated the library database search market. The H.W. Wilson company's Wilsonline service was a latecomer to online searching. These services acted as wholesalers, making multiple databases available to librarians. This offered the advantage of

going to one or two or three providers, each using a consistent interface to all of its databases. Their systems employed arcane command structures using, for example, “..” or “/” prefixes to commands that compacted multiple factors into the fewest possible number of characters. This required training through classes these companies conducted throughout the country. Specialized journals supplemented this training. Information Today began publication of *Online* in 1977 to meet the needs of librarians and businesses working to use online databases effectively in their organizations. *Database* began publication the following year. Learned Information began publication of *Searcher* in 1993. All three continue to publish today, a testament to the ongoing vitality of the online search business. These magazines offer industry news, trend analysis, and practical information for searching particular databases or for types of information. Information Today’s annual Computers in Libraries conference also thrives; the 21st was held in Washington, DC in 2006.

Once trained to use DIALOG or another service, librarians could place a telephone handset into the acoustic coupler of a portable “briefcase” terminal, and transmit and receive data at a 300 baud rate. Results emerged from these terminals on a slow scroll of thermal paper. A librarian’s preparation before a search consisted of database selection; consultation of a manual providing information on each database’s scope and structure (librarians of that time recall DIALOG’s “blue sheets”); consultation of a thesaurus of controlled indexing terms for each database; and a reference interview of the end user. That person typically sat beside the librarian during a scheduled appointment for the search. The end user helped the librarian evaluate results as they appeared. Using this counsel the librarian could modify the search to increase or decrease the size of the set of records retrieved or to achieve more pertinent results. Potential weaknesses were inherent in this collaborative arrangement between librarian and end user. The reference interview might not have identified the user’s need; the user’s expectations of the search might have been unrealistic; or the search might not have employed the most pertinent terms.

The cost structure of database searching, as well as the training required to craft and conduct successful searches, precipitated the division of labor between the librarian (search and discovery) and the patron (evaluation and selection). Typically these consisted of timed charges for connection to a telecommunications network, timed charges for connection to the database aggregator’s system, and charges for every printed or downloaded citation. The last charge varied from database to database; the format and completeness of each citation (e.g., with or without abstract, descriptors, etc.) also modulated cost.

Left to a self-service user, the cost of a single search would have been astronomical and the quality of the results highly questionable. Some

libraries absorbed in whole or part the cost of searches; others passed them on in full to the end user. End users were generally satisfied with the results of mediated searches. One study showed that the majority of users were satisfied with the results of searches and the cost (Hilchey and Hurych, 1985). Seeing opportunities to clarify mystery citations and to provide other information to answer reference questions quickly, librarians incorporated, at no cost to the end user, ready reference searches into their desk services (Brownmiller *et al.*, 1985). They used the Online Computer Library Center (OCLC) and Research Libraries Information Network (RLIN) databases in similar ways (Gould, 1984). Despite their name, ready reference searches were generally conducted away from the desk. Because of the pressures of timed costs, searches were generally conducted in offices where interruptions were minimal. Some librarians worried that electronic databases shortchanged researchers “since the computer supplies only references containing the stated parameters, giving a limited output. Important citations may be missing because the requestor forgot to include a term, but perhaps more important, the search does not give the surrounding or overlapping fields that could have been surveyed in the printed index” (Champlin, 1985, p. 216). Despite such reservations, users demanded more of these searches. The introduction of online circulation systems and first generation integrated library systems in the 1980s undoubtedly contributed to user’s acceptance of machine searching of other bibliographic databases (Bates, 1984).

B. Early End-User Searching

Given the cost considerations, mediated searching of electronic databases was the norm in the 1970s and into the 1980s, even as microcomputers replaced dumb terminals and telecommunication speeds increased. The Personal Computer (PC) allowed librarians to quickly download large sets of results for the end user to examine and evaluate at leisure. Once library users adopted the IBM PC, introduced in 1981, and the Apple Macintosh, introduced in 1984, for their other academic work, they became interested in using their computers for their bibliographic searches. An experiment conducted at a Boston teaching hospital demonstrated an appetite for self-service searching. In 1979 the hospital’s library installed a computer terminal that enabled “casual, walk-in users to access directly a specially prepared file of 400,000 citations in clinical medicine” (Dalrymple, 1984). This system, known as Paper-Chase, demonstrated user acceptance of unmediated searching.

The companies that made librarians’ searching of a wide range of databases practical also worked to offer end users the same opportunity. In the early 1980s BRS created its BRS/After Dark service, DIALOG created its

Knowledge Index, and Dow Jones created its Dow Jones News/Retrieval. As the menu-driven BRS/After Dark system implied, these complemented librarian-mediated searches. Indeed, After Dark was available only in “off” hours evenings and weekends, times when few libraries offered mediated searches. These end user systems offered access to a subset of the ever-growing number of databases available to librarians through the parent systems. Even with simplified interfaces, these systems required some training—either that or librarians decided on behalf of users that they required training. One library’s test of BRS/After Dark that included a training component concluded that the training was indeed necessary (Trzebiatowski, 1984). It also concluded that the student participants were satisfied with the results of the searches they conducted for themselves (*ibid.*).

OCLC also entered the online end user search market in 1991 when it introduced FirstSearch for access to its vast bibliographic database and additional databases (Benaud and Bordeianu, 1993). To simplify database selection, FirstSearch organized databases in broad topical areas such as Arts and Humanities, Education and Social Sciences, and Business/Law/Public Affairs. Searches cost a fixed amount. To control costs most libraries that offered FirstSearch to their users during the service’s first few years required users to purchase cards, each card authorizing a set number of searches. This was awkward to administer. Even though it was simpler to use than the other online end user systems and it offered the option of simple and advanced searches, FirstSearch did not become widely used until simpler, more convenient access replaced the card system. FirstSearch also went through several major revisions to its user interface, each time becoming friendlier for the untrained, every-now-and-then searcher.

Despite users’ satisfaction with the end user online systems of the 1980s, libraries did not adopt them widely. Some librarians doubted that end users, despite having been left for decades to do their own manual searches in paper indexes, could conduct quality online searches and were thus better served by librarian-mediated searches. These doubts, user training requirements, the need in some places for a dedicated telephone line, the need for an on-call librarian to troubleshoot problems with search and telecommunications systems, limited hours of service, the inability to download results, and cost factors all worked against wide acceptance and implementation of these services (Ankeny, 1989). Furthermore, a powerful competitor soon entered the market.

C. Maturing End User Searching: The Disc

In the mid-1980s the Information Access Corporation introduced its InfoTrac system, “A laserdisc database system that provides nearly instant access

to the citations of over 1000 periodicals as well as *The New York Times* and the *Wall Street Journal*" (Walker and Westneat, 1985). To create this user-friendly system, InfoTrac brought together a laser disc that held the searchable bibliographic citations, one or more dedicated IBM PCs, and an equal number of inkjet printers. Special caps replaced some standard caps on the PCs' keyboards. These bore labels such as "SEARCH" making it easy for the user to issue commands to the system. InfoTrac updated its database monthly by shipping a new laserdisc. A drawback to the system was its shallow temporal coverage; initially it offered indexing back to only 1982. Cost—typically more than \$14,000—was a barrier for some libraries. Everywhere InfoTrac was installed, students took to it immediately, some willing to wait as much as an hour to use it rather than an immediately available paper index providing similar coverage.

The nature of some librarians' criticism of InfoTrac prompted one commentator to ask, "one wonders if maybe part of the problem is the librarians not the products" (Kleiner, 1987, p. 261). Criticism of the quality of the database, its mix of the scholarly and the popular, and its lack of Boolean search capabilities revealed a difference in values between some reference librarians and many library users. The librarians valued scholarly information, precision in information identification, and powerful search capabilities. The users valued printable citations, acceptably relevant citations, and labor- and time-saving ease of use. That is not to dismiss many librarians' conviction that they could perform more efficient, more precise, and more relevant searches than end users. It does, however, raise questions about the librarian's and the end user's respective roles. A series of studies at Louisiana State University (LSU) showed that "about one-third of the students needed assistance" with InfoTrac (*ibid.*, p. 260). Unfortunately the study did not report on the type(s) of assistance needed. Some assistance surely responded to problems with inkjet printers. Reference librarians quickly learned to clear paper jams and to bend a paperclip straight to insert it into an ink cartridge to "massage its bladder" to get the last bit of ink out of it. The LSU study reaffirmed roles of the librarian and the end user. The librarian possesses and can apply expert knowledge of information sources, storage and retrieval systems, and search techniques. Since reference service's origins in the 19th century, reference librarians have applied their expert knowledge to help individuals identify and obtain information relevant to their needs. The reference librarian serves as conduit to information, not gatekeeper. Even so, the reference librarian is not the exclusive conduit; individuals are free to find their own paths to information and to make their own judgments about its value. Librarians directed users to InfoTrac and provided brief information on how to use it; end users

conducted their own searches and judged the value of citations from the printed results.

In response to InfoTrac's popularity many libraries placed appointment sheets beside each of the PCs so users could reserve it for a specific time, usually a 15-minute period. "A trade-off normally exists between the complexity and power of a retrieval system and its ease of use; the more capabilities a system offers, the more difficult it is to master" (Harter and Jackson, 1988). InfoTrac offered ease of use over power and complexity. As a result it may have attracted new library users who didn't have the patience to slog through annual printed indexes but who were engaged by computerized information retrieval.

CD-ROM technology soon eclipsed the laserdisc. In use by the music industry since 1982, the compact disc was adopted for data storage and retrieval later in the decade. Following the success and popularity of Info Trac, database producers complemented their online access with CD-ROM access. SilverPlatter and OVID filled the role that BRS and DIALOG played as online database gateways. Each of these companies developed a proprietary interface for its databases. Database vendors made their content available through one or more of these gateway vendors. During the late 1980s and the early 1990s library administrators demonstrated their willingness to fund the cost of improved reference service. Librarians rearranged reference rooms, often by disposal or reduction in size of the card catalog, a tool superseded by the online catalog and retrospective conversion of the card catalog's contents. Just ten years after Vavrek decried cost cutting as a threat to reference service, administrators funded tables, chairs, PCs, CD-ROM drives, and even electrical system upgrades to accommodate this popular new information technology. As libraries added more CD-ROM databases they also paid higher licensing fees to allow multiple users simultaneous access. Mediated online searches became less common as CD-ROM offerings increased and as users demonstrated a preference for doing their own searches, even where their library fully subsidized mediated searches.

Even though CD-ROM databases were promoted as end-user products and even though librarians deployed them in public areas, this technology raised the same concerns about the roles of the end user and the librarian that BRS/After Dark, Knowledge Index, and InfoTrac raised. The issue of user education received a great deal of attention, succinctly framed in the question "what are the obligations of librarians when aware that users are satisfied even though they are obtaining less than optimal results?" (Harter and Jackson, 1988, p. 519) This is a question of authority and control. Does authority belong to the user or to the librarian and who should control a search and its outcome? In a sense, CD-ROM brought the librarian's and

user's respective roles full circle. With CD-ROM end user search systems, once again the processes of searching for citations and evaluating each one's relevance were conducted simultaneously by the person who would use the information in the cited sources.

At the same time, CD-ROM offered ample opportunities for instruction. When CD-ROM databases became popular in the late 1980s PC ownership among college students and even faculty was far from universal. Much point-and time-of-need instruction dealt with using computer equipment and printers. CD-ROM databases almost universally offered Boolean search, nested search statements, limits, and other capabilities. Librarians had come to expect these features, familiar to them in the online world, in any database and to judge its value in large part on these capabilities. Reference librarians longed for uniformity in search interfaces. It was not uncommon for them to interact in the course of a typical day with two or three CD-ROM interfaces, OCLC, the local online catalog, and several DIALOG online databases not available locally on CD-ROM. All of these raised training issues for librarians themselves. Those same training issues were, potentially at least, applicable to the users of the end-user systems. Nonetheless a study conducted towards what turned out to be the end of CD-ROM's ascendancy revealed that end users "relied heavily on simple searches" and made very little use of Boolean operators and other advanced search techniques (Anderson, 1995). This prefigured the popularity of Google and its minimalist search interface.

D. Mature End User Searching: The Web

Everything changed and nothing changed in the mid- and late-1990s when the World Wide Web rapidly became the preferred medium for access to bibliographic databases, breaking news stories, prospective dates and mates, books and music CDs, airline tickets, current weather information and forecasts, government information, sports scores, pornography, and much, much more. In late 1994 the Netscape browser was released. The cliché "spread like wildfire" applies to librarians' and the populace's acceptance of the Web. During the latter half of the 1990s database producers and Online Public Access Catalog (OPAC) vendors migrated access to their products to the Web. CD-ROM towers disappeared from reference rooms and PCs connected to campus networks were added. Users clamored for more and more information online through the Web, especially full-text and full-image journal articles. Reference budgets were reworked to meet user expectations.

By the time the Web debuted, students were accustomed to graphical interfaces and computer mouse manipulation. Instruction in the use of Netscape would have been superfluous. PC use, if not ownership, had become

very common among students and all but the most curmudgeonly of faculty. Database providers enjoyed the luxury of revising HTML interfaces more frequently to make searching easier or to incorporate additional search features. Longing for uniformity in interfaces became pointless. Web users quickly took in stride the variety of appearances and structures of Web sites as they rapidly followed links from one site to another. They had no need for an intermediary; searching was simple and links implicitly provided guidance to related resources. Never before had people had such ready access to so much information from so many sources. The comparison of using the Web to drinking from a fire hose quickly became trite. Yet the Web as all-purpose information resource raised issues, some old, some new, about the roles of reference librarians and users.

Librarians immediately recognized the issue of reliability, accuracy, and authority of information published on the Web. In the print world authors depended on a publisher's editorial, production, and marketing services to share their creations with the world. In contrast, the World Wide Web was self-service publishing. It offered anyone with a bit of technical knowledge, a willingness to learn HTML, and access to a server the opportunity to publish anything—absolutely anything! It seemed that everyone did just that. What role, then for the reference librarian in this world in which anyone could publish anything, library licensed databases could be searched from home over a modem and phone line, and users were content in their ignorance of Boolean and nested searching?

Reference librarians routinely apply criteria such as authority, accuracy, currentness, depth of treatment, etc., to make judgments about the quality of information sources. They quickly recognized a role for themselves to apply this knowledge to develop topical resource guides to Web resources. As early as the 1995 Charleston Conference, a presentation, later published as an article in *Online*, addressed Web evaluation criteria (Rettig, 1996). The “To Net or Not to NET: That is the Question” program sponsored by RASD CODES at the 1997 American Library Association's annual conference focused on the quality of Web content and how to judge it. This abiding issue has become a staple in libraries' instructional programs.

With so much to choose from, even on their own Web sites, reference librarians also saw a user education issue in database selection. It is not uncommon for an academic library today to offer access to more than 200 databases. How can librarians help users choose the best resource for their needs? Librarians have addressed this by creating discipline- and subject-specific resource guides on their libraries' Web sites. Federated searching (i.e., the simultaneous searching of multiple databases) has thus far shown more promise than practicality. Some reference librarians hold out hope that

the problems impeding cross-database searching will be solved and that it will become easy to bundle related databases for simultaneous searching. This would simplify the task of guiding users to databases germane to their purposes. It would also eliminate the inconvenience of conducting the same search or similar searches in each of several databases. Others are at best suspicious of federated searching since it is “lowest common denominator” searching because it dilutes the power offered by each database’s advanced search features.

Google and other Web search engines have had greater influence on shaping users’ information search experiences and expectations than all the lessons they have had in crafting Boolean searches. As Roy Tennant (2001) has asked, “isn’t it true that only librarians like to search? Everyone else likes to find”. Even though these search engines offer advanced features, most users appear to be content with Google’s simple default keyword search box. Google *et al.*, are well positioned to become the ultimate federated search engines. Google Scholar retrieves citations to articles in scholarly journals and OCLC’s Open World Cat program allows libraries to make their holdings visible through Google. As more database producers and academic institutional repositories expose their metadata to Google, multi-database federated search and catalog search may coalesce in Google searches. Casting the Google net into the Web’s variegated sea of reliable and questionable information sources from trusted and suspect providers catches a bit of everything. The users have total control of the process of searching and choosing what information to use. Reference librarians have a role in helping students learn how to separate the Web’s wheat from its chaff. “As information becomes more ubiquitous, and learning occurs anytime and anyplace, librarians must continue to help users to understand that instantly accessible data does not translate into credible, reliable, accurate, or authoritative information” (Rockman, 1999).

The mediated search era was an anomaly in the history of academic reference service. It shifted responsibility for search, discovery, and selection from the user to the librarian. Cost and complexity necessitated this shift. Previously it had been the user’s responsibility. That responsibility began to shift back to the users with end-user systems. This already well-established trend accelerated apace with growth and ubiquity of the Web. There are significant differences between the pre-electronic print world and the Web world. Many users lacked knowledge of the vast, complex, mature system of printed information resources. Librarians, of course, possessed this knowledge and applied it on behalf of users. Once started on their way, as in the historical vignette above, the users bore responsibility for carrying out the search, discovery, and selection processes. The difference

today is that users are comfortable with the Web and, thanks to the apparent simplicity of Web search engines, confident in their ability to find information. Because the Web is a medium and an information environment in which they already feel in control, they feel that much less need to seek a librarian's assistance. The Web, after all, is the place they now instinctively turn for information on any topic and any situation in their lives. This is so engrained in contemporary society that Google the search engine has spawned "Google" as a verb. Reference librarians are frustrated that many in their communities Google frequently and contentedly but are not aware of the vast, complex, ever maturing system of licensed online information available through the library. Increasing users' and potential users' awareness of these resources and the need to access them through library gateways is, perhaps, a greater challenge than it was to increase awareness of printed reference books and indexing and abstracting sources 30 years ago. Then, however, librarians had no opportunity comparable to their current opportunity to make at least some of these licensed resources discoverable through Google Scholar. Nor did many reference librarians thirty years ago have a vision of being able to bring their resources to users with such relative ease. Yet during this period many of the profession's leaders sought ways to bring reference service to the users rather than expect the users to come to the service.

IV. Rethinking Reference

Sustained, deep questioning about reference service, its role, and its future accompanied the changes in the reference librarian's role that technology, especially search technology, prompted. A number of much-discussed articles placed and kept this on the professional agenda. Some took the form of symposia in which a lead author offered a provocative view or challenge and invited librarians responded to those ideas.

Shortly before the CD-ROM boom, Miller asked "What's Wrong with Reference?" (Miller, 1984). He cited a combination of burned out long-serving librarians, increasing instructional responsibilities, and integration of new technologies as sources of pressure on librarians' ability to provide quality reference service at the desk. His wistful solution was increased staffing through new reference librarian positions. His more practical proposals were creating separate information desks staffed by students and clerical employees, use of paraprofessionals and students at the reference desk, incorporation of librarians from other departments in the desk schedule, and spinning off "ancillary activities" such as interlibrary loan and database

searching. Miller represented the day's prevailing desk-centric view of reference service: a service offered at a specific place in a library during scheduled hours to those who requested it.

Miller had definitely expressed a widespread feeling among reference librarians. They wondered how to sustain desk service, reference librarians' major duty, when newer duties such as online searching and increased emphasis on bibliographic instruction competed for their time and attention. In one way or another, the theme of the desk as service point needing continuous staffing runs through articles calling into question prevailing reference practices and philosophies.

In a wide-ranging overview of trends in academic libraries Freides (1983, pp.466–467) cited the “unexamined and unarticulated ... assumption that the hub of ... assistance is the reference desk, where a reference librarian, or surrogate, is available to the reader at all times. The arrangement conveys an implicit promise never to let the reader go unserved, but also pegs the service at a low level.” She added that “by establishing the desk as the focal point of reader assistance, libraries not only expend professional time on trivial tasks, but also encourage the assumption that the low-level, undemanding type of question handled most easily and naturally at the desk is the service norm” (ibid., p. 467).

So ingrained was the value accorded the reference desk some sought solutions in redesign of the desk itself. Pierson (1977) mused about the influence of desk and furniture design on service quality. Others offered illustrated designs of local solutions; the title of one article asked “The Reference Desk: Service Point or Barrier?” (Becket and Smith, 1986; Larason and Robinson, 1984; Morgan, 1980; Shapiro, 1987). By the mid-1980s reference desks began to sport computer terminals and OCLC terminals. More recently thinking about the spaces in which libraries provide their services has broadened substantially to take in the whole, taking into consideration users' behaviors and viewing the library building as learning space (Library as Place, 2005).

Some who sought ways to improve reference service, however, questioned the desk-centric view.

Biggs characterized existing practice as “fast fact drop-in” service that ought to be replaced by “gourmet information service” (Biggs, 1985). Comparing reference unfavorably to other professions' practices, Biggs argued that only reference librarians should provide reference service. She also argued that the quality of this service would improve if reference desks were staffed fewer hours so that the librarians could devote more time to important tasks such as learning the library's collection in depth, learning more about applying automation to reference service, and carrying out meaningful

evaluation studies. Those invited to respond to Biggs's proposals saw more merit in her questions than in her solutions.

In 1985 Surprenant and Perry-Holmes (1985, p. 236) sketched a scenario of the reference librarian of the future as an information broker whose salary "will come directly from their clientele." They envisioned the librarian working "in service point offices, outside the library, where they can be close to the action in their user community" (ibid.). Eight rejoinders (*Reference Librarian of the Future: Rejoinders*, 1986) showed little sympathy for this entrepreneurial vision, especially since the scenario was "hazy" because it did not offer a transition path to that vision.

While recognizing the value reference librarians place on face-to-face interaction with those they serve, Ford (1986) advised that "reference librarians need to begin to think the unthinkable, exploring alternatives and possibly eliminating the reference desk" because "the present configuration does not satisfy either librarians or users." She recommended expanded use of computers' ability to provide answers to "the low-level, undemanding type of question," supplemented by opportunities to consult with a reference librarian during scheduled office hours. Ford repeated and expanded this challenge in a 1988 symposium at the University of Texas at Austin (Ford, 1988; *The Future of Reference Service*, 1988). Respondents defended the reference desk's success in meeting users' need for answers to those undemanding questions and agreed that the desk was not a suitable setting for more extended assistance. A summary of the symposium noted: "The discussion, of course, ended with no resolution; but the program was invigorating and thought-provoking" (Dillon, 1988).

One institution accepted Ford's challenge. Needing a solution to the problems Miller cited, in March 1990 Brandeis University eliminated its reference desk in favor of scheduled appointments with reference librarians. It did, however, retain an information desk staffed by students. Massey-Burzio's "Reference Encounters of a Different Kind: A Symposium" stirred considerable discussion among reference librarians (Massey-Burzio, 1992). Miller, Ford, Biggs, and others invited to respond applauded Brandeis's willingness to experiment boldly but largely withheld judgment until its success could be demonstrated. In spirit, "the Brandeis model" was not an isolated effort. Tiered reference, generally using paraprofessionals in a role complementing librarians', took various forms at other libraries. These included referral to on-call librarians and two desks, each with a distinct function and staff. The distinction between the desks was generally clearer to library staff than to users.

Others experimented with roving reference whereby reference librarians got out from behind the desk and offered assistance to users in the reference

room (Kramer, 1996). Variants on this have continued over the years. Because networked access to information sources has made the notion of a reference room obsolete, in recent years the University of Texas at Dallas has taken roving campus-wide with its “Librarians on the Loose” program (Librarians on the Loose, 2006). Librarians at the University of Florida set up “outdoor, mobile reference stations at campus cross-roads, using quick-to-assemble kiosks, wireless access, and laptop computers” (Hisle, 2005). Warm climates seem to promote such services! At some colleges and universities reference librarians hold regular hours in campus buildings housing faculty offices. During these hours subject specialist librarians offer consultations to faculty and students.

The most concentrated questioning of reference occurred in 1992–1993. James Rettig (1992) adopted “Rethinking Reference” as the theme for his year as president of ALA’s Reference and Adult Services Division; Anne Lipow conducted a “Rethinking Reference in Academic Libraries” institute at the University of California at Berkeley, later repeated it at Duke University and the University of Iowa (Wetherbee and Lipow, 1993); and Jerry Campbell (1992) published an article shaking the conceptual foundations of reference. The cartoon logo for Lipow’s institutes depicted a librarian atop a desk labeled “Information.” The librarian’s speech bubble says “I’ve been rethinking reference.” The librarian grips the detonation plunger of a bomb labeled “Danger! New Paradigm.” Lipow’s stimulating workshops generated many ideas but no consensus, let alone an explosive new paradigm for reference service.

Campbell (1992) found a lack of consensus among reference practitioners about their mission and the ways they can best fulfill that mission. “Some swear by bibliographic instruction; others swear at it. Some avow that the reference desk should be the center of the reference universe; others concentrate on a primary constituency. Some say that when a seeker asks for a fish, we should teach her to fish; others say that we should give her a fish. Some argue that all questions should come directly to reference professionals; others propose an intermediary, other than a professionally staffed desk to filter out directional and routine questions” (ibid., p. 30). Campbell echoed Ford’s call to develop automated systems to respond to frequently asked, easily answered questions. He also noted that the reference service of 1992 was “a building-centered, old style, ‘make them come to us’ model” that could not survive in the technological information age in which users increasingly want to find and receive their information online. To assure the vitality of reference service in the future he recommended that reference librarians recast themselves as “Access Engineers.” Campbell’s Access Engineers would analyze users’ needs and the ways in which they seek and use

information. They would draw on this knowledge of users as they collaborated with other specialists to develop systems for optimal delivery of information to end users. At the time Campbell stirred considerable controversy in the reference community on listservs and elsewhere. Over time, however, parts of his vision of access engineering have gained traction. LaGuardia (1995) has identified reference librarians as “the natural designers of the new tools for information organization, access, retrieval, and distribution: these are the functions we do best.” In building their libraries’ Web sites, reference librarians have acted as access engineers.

The rapid adoption of the World Wide Web, accompanied by the proliferation of high-speed campus networks, broadband access from homes, and Wi-Fi access in public spaces, confirmed the inadequacy of the old style, building-centered model. So did data. The member libraries of the Association of Research Libraries reported a collective 34% drop in reference transactions between 1991 and 2004. In that period the number of reference transactions rose from 1991 through 1996 but declined every year thereafter (*Service Trends in ARL Libraries, 1991–2004*). Some saw this downward trend as the dying canary in the coal mine. Looked at in isolation, this was a reasonable interpretation. But looked at in the context of the information services libraries offer end users through their Web sites, the ARL data signified a shift in user behaviors more than a decline (Welch, 2005).

Despite this decline in reference transactions and growing criticism of the reference desk model, reference and information desks have survived in libraries. Why? One reason may be “that reference librarians value the service provided at the reference desk much more than do many of the users” (Ford, 1992). Tyckoson (1999, p. 58), simultaneously echoing and answering Miller in an *American Libraries* article titled “What’s Right with Reference,” asserted that most efforts to reform reference “resulted in generally poorer service for most library patrons” and found fault with nearly every proposal of the previous fifteen years except for Miller’s wish for additional staff to accomplish a growing list of tasks. By not finding fault with the traditional desk approach, he affirmed it. Ferguson, however, offered a compelling answer for the desk’s durability: “It is tempting to think that the proliferation of digital technology and the emergence of the digital library will one day enable libraries to effect overnight a massive shift from print collections, traditional classrooms, and heavy reliance on fixed space for collections and services. We must, instead, recognize the need to maintain for the indefinite future a range of on-site services that embrace print collections even as we seek place and meaning in an emerging digital world” (Ferguson, 2000, pp. 303–305).

A panel program at the 2002 ALA Annual Conference distilled the debate. Tyckoson (2003) made a plea for respecting the value of personal interaction in reference service even as new tools replace old ones. Rettig (2003) called for services that respond to contemporary users' values and expectations of immediacy, interactivity, personalization, and mobility. Janes (2003) recommended a sort of cafeteria approach to reference services in which each library would adopt modes of service suitable to their respective communities' needs. He also recommended that librarians "declare victory and move on," conceding that many would-be users get answers to their reference questions independently by turning to Google and the Web. He recommended that reference librarians focus on what they do better than any other group—helping people solve information problems that cannot be solved on the Web with just a few mouse clicks. Lipow (2003) predicted global collaboration among libraries to provide this sort of service to a mobile population seeking help with information needs at any time of day or night. Whitlatch (2003) called for a focus on users' assessments of reference services so that their feedback can be used for continuous improvement of those services.

V. Meeting Users Where They Are

Discussions of the desk and its role have faded, not evaporated. The late Anne Lipow frequently reminded reference librarians that "There are no remote users, only remote libraries." In other words, reference librarians had to look at reference service from the user's perspective and modify it to meet their expectations. In the middle of the new century's first decade a number of factors have affected users' view of information services. They are accustomed to round the clock access to the World Wide Web for all of its uses—information, shopping, travel planning, banking, managing investment portfolios, etc. They are also accustomed to having that access wherever they are through devices such as laptop computers PDAs (Personal Digital Assistants), and Internet-enabled cell phones.

In the 1990s reference librarians began offering e-mail reference service. This service was tied not so much to the reference desk as to the reference desk-staffing schedule. It was common for this service to have a caveat that questions received Sunday through Thursday would be answered within 24 hours and questions received Friday or Saturday would be answered no later than the following Monday. This met users' desire to obtain service without making a trip to the library facility; but it failed to live up to their desire for quick response, something they could usually count on when

seeking help at the reference desk. Because of this time lag, e-mail reference did not significantly add to reference librarians' workload.

Online chat reference initiatives addressed this issue. Some early chat reference products required installation of client software on a user's computer before that user could ask reference questions through the service. This approach failed to meet the potential users where they spent their online time—on the Web. OCLC's QuestionPoint grew out of the Library of Congress's Collaborative Digital Reference Service. It offers subscribing libraries Web form templates through which users pose their questions, a two-way chat response system, and a collaborative referral system among participating libraries around the world. This collaborative approach, combined with agreements among participating libraries, makes it possible to offer the service, including responses, 24/7. The libraries of the Association of Jesuit Colleges and Universities banded together to offer 24/7 chat reference service to their faculty and students (*AJCU Virtual Reference Project, 2004*). Librarians at the 23 institutions staff the service from 9:00 AM to 9:00 PM in all time zones. During the "off" hours these libraries have contracted with Tutor.com's commercial "Ask A Librarian" service to respond to questions (*ibid.*).

Text-based chat systems posed new challenges, such as conducting an effective reference interview in the absence of other communication cues such as voice tone and body language (*Bobrowsky et al., 2005*). In contrast to face-to-face reference, most chat reference systems generate a transcript. Researchers have used this important raw material to study the online reference process and reference department managers have used it to identify training needs (*Porter, 2003*).

Many libraries have gained significant student acceptance of chat reference by relying on AOL's free AIMTM instant messaging chat software, a tool that their students already use intensively, almost incessantly. This has required librarians to publicize vigorously their service's screen name and urge students to add it to their buddy lists. Added features in the Triton AIM 1.0.4 software offer libraries the opportunity to replicate the reference desk in a virtual service. In addition to real-time chat text messaging, Triton AIM allows for audio and video communication between the librarian and a user seeking assistance. Not only does this have the potential for replicating the personal, face-to-face interaction of the reference desk, it also has the potential to replicate issues such as how to manage multiple information seekers in message queues. If chat reference, e-mail reference, and traditional face-to-face reference are all based at a physical reference desk and all handled by a single librarian on duty, those issues are exacerbated. Libraries have continued, in the vein Miller decried, to add virtual services to their

desk-based services without adding personnel. Ferguson (2000) has acknowledged this difficulty, but has called for a commitment to find a way to do both well: "Although on-site services such as circulation and reference must continue to be supported, a commitment also must be made to explore different ways of providing these services that enable their extension into the new environments that library users are entering."

Users are even creating their own environments; for example, Really Simple Indication (RSS) feeds let an individual build a personalized information space. If libraries can adequately address privacy concerns and develop Amazon-like recommender systems for their user communities, they can deliver personalized information to that space. Meeting the users where they are reverses the roles librarians and users played in the "make them come to us" model. This role reversal will not come full circle. Development of communications technologies will continue to challenge reference librarians to meet users wherever they and their communications devices are, whatever time of day.

VI. Assessment

Miller's landmark article has received considerable attention over the years; but his call for planning based on assessments of reference services and users' needs has not. He asked, "How can we plan to serve people until we know for certain what they need? As obvious as this question seems, it is not widely understood. Most of us believe we know intuitively what our users need—a convenient belief, considering that as yet we know little about making an objective assessment" (Miller, 1984, p. 321). That is not to say that reference librarians have lacked data. In 1976 Pings (1976, p. 121) observed that "we have a great deal of data and many methods to gather more ... If we have difficulty undertaking reference service investigation and evaluating the results, the problem is in our attitudes rather than the methods of study and the results." Data had not yielded evaluation. Researchers have developed additional methods; the question of whether or not reference librarians' attitudes have hindered reliable assessment of their services is a subjective matter, itself possibly beyond assessment.

Unobtrusive tests of reference service took on a high profile, in part because they yielded disturbing results. In an unobtrusive test the researcher devises questions with verifiable answers and has members of a research team pose these at reference desks. The reference librarian's responses are judged as either right or wrong, depending on whether or not they produced the answer established for each question. These studies showed that reference staff tested produced the "correct" answer only a little more than half of the

time, thereby providing “half right” reference service. McClure and Herson (1983) conducted an in-depth unobtrusive test of the accuracy of answers to reference questions that could be answered using government publications. Based on the experience of that test, they revised questions and conducted a similar test in public and academic libraries. This latter test yielded a 61.8% accuracy rate (Herson and McClure, 1986). They concluded that librarians not only produced incorrect answers a significant percentage of the time, but also that they were not as persistent as they needed to be to find the correct answers. The duration of the librarian’s interview and search process rarely exceeded 5 minutes, “even if they were not busy answering the questions of other library clientele” (Herson and McClure, 1986, p. 39). In time they characterized the findings of such test “an unrecognized crisis” (Herson and McClure, 1987). Results of unobtrusive tests were consistent enough that they gave rise to the questionable labels of “half right reference” and the “55% rule,” both implying that reference service providers correctly answered only a little more than half of all reference questions.

Others begged to differ, including one of the pioneers of unobtrusive testing. Childers (1987) noted that reference service consists of more than question answering and that “until the field has achieved a deeper knowledge of the numbers and nuances of the total reference function and its component service offerings, it is too early to label the state of practice a ‘crisis.’” To test the value of unobtrusive testing Whitlatch (1989) conducted an unobtrusive test of reference and found the technique lacking. The type of questions used in such tests represent only a small fraction of the types of questions actually posed by users and researchers have not assigned a degree of difficulty to them.

By focusing on results for one type of question, these studies successfully isolated one variable, but at the expense of others of equal importance. These include the messages sent by the physical environment in which reference service is offered, the public’s ignorance of role differentiation among library staff, the public’s uncertainty of what sort of service they can and should expect from their library, and quality of the librarian’s interpersonal skills in conducting the interview (Durrance, 1989). Some libraries developed locally applied lists of behaviors to judge in peer review of reference librarians; but these did not develop into performance evaluation tools applicable in other libraries (Young, 1985). In 1996 ALA’s Reference and User Services Association codified recommended behaviors in “Guidelines for Behavioral Performance of Reference and Information Services Professionals” (Reference and User Services Association, 1996). RUSA updated these in 2004 as “Guidelines for Behavioral Performance of Reference and Information Service Providers” (Reference and User Services Association, 2004).

Most significantly, unobtrusive tests omitted the user’s judgment of the value of the reference transaction. A retrospective survey of unobtrusive

studies characterized unobtrusive evaluation as “nothing more than a standardized test” that “can be, at best, only one tool along side others” (Hubbertz, 2005). Both qualitative and quantitative measures play a role in effective, meaningful evaluation that can yield results helpful to planning and program revision (Westbrook, 1990).

In keeping with the growing role of the user, the Wisconsin-Ohio Reference Evaluation Survey was developed to gather both the librarian’s and the patron’s judgment of the success of the same reference transaction. It aggregated these paired judgments to yield a performance profile for a reference department. The instrument was used to test Brandeis’s appointment service. Results indicated that “the library has achieved a high level of success in answering reference questions. The consultation model appears at least partly responsible for this success” (Stalker and Murfin, 1996). This study also found evidence supporting Herson and McClure’s implication that adequate interview and search time increases quality: “Sufficient time for each patron and question is a key to breaking the barrier of the ‘55% Rule’ on reference success. Ensuring adequate time for reference success should surely be accorded serious consideration” (ibid.). A committee of RASD produced *The Reference Assessment Manual*; it offers a good snapshot of the state of the art in the mid-1990s (Reference and User Services Division, 1995). Today its main value lies in its extensive annotated bibliography and its “Summaries of Instruments,” an annotated and evaluative list of assessment instruments. Many of these were included as ASCII files stored on a floppy disk accompanying the book. More recently, the Association of Research Libraries’ LibQUAL+ user satisfaction instrument includes several measures from which reference managers can draw some inferences. But they do not constitute a true assessment of reference service (Welcome to LibQUAL+, 2006).

The reference literature of the past three decades is replete with calls for better assessment of reference service’s quality and value. Used in concert, the various evaluation methods of the past remain relevant but require adaptation to a different environment. In the digital age more and more reference transactions take place through technology rather than face to face. Researchers have begun to make these adaptations and exploit the opportunities unique to the online environment (Whitlatch, 2001). Surely, however, calls for better assessment will continue because better assessment is needed.

VII. Collaboration

Cooperative reference service ventures have a rich history. Public library systems, multi-type library organizations, and state libraries have developed cooperative reference service more than academic libraries have. These

ventures have expanded the service capabilities of small public libraries with small reference collections and, perhaps, no professional staff. Probably the best known networks have been the Bay Area Reference Center (BARC) in California and Minnesota's MINITEX (Roberts, 1990; Dustin, 1988). MINITEX thrives; BARC operated from 1967 to 1988. Cooperative reference referrals are an important feature of OCLC's QuestionPoint service. Success in cooperative reference depends to a significant degree on the ability of the initial recipient of a question to elicit from the end user a thorough explanation of the user's need and to articulate that in the referral to the librarian who would actually supply relevant information.

Reference librarians have taken advantage of technology to expand the reach of their informal reference networks. In its simplest forms, a librarian practices cooperative reference when asking an in-house colleague for help in finding information for a user or by calling a colleague at another library. The "The Exchange" column in *RQ* gave librarians a place to seek help nationwide to find answers to reference questions that had stumped them. With *RQ*'s quarterly publication, this service may have been more for the amusement and satisfaction of librarians than a solution for patrons who had posed those questions months earlier. "The Exchange" had a good run through all thirty-seven volumes of *RQ* and the first volume of *RUSA Quarterly* until it was discontinued in 1999. The Internet allowed these collaborative arrangements to go national, even international, when online e-mail discussion groups (commonly called "listservs" even though "listservTM" is a trademarked term) became popular. In February 1992 Ann Feeney, then a student at the Graduate School of Library and Information Science at Rosary College, created the STUMPERS-L list (Stumpers, 2006). After Dominican University discontinued its support for the list in late 2005, Project Wombat took over its role (Project Wombat, 2006). It is highly unlikely that *RQ* enjoyed non-librarian subscribers because of "The Exchange." One needn't be a librarian, however, to subscribe to the Wombat list, an acknowledgment that the end user's role has grown. Reference departments use blogs and wikis internally for in-house cooperative reference. Perhaps Project Wombat will experiment with these technologies.

VIII. Reference Works

Every resource used in the 1976 reference scenario above was a printed reference work. Other formats existed, for example, telephone directory and college catalog collections on microfiche. But print dominated. The 1981 debut in *RQ* of reviews of online reference sources was a significant enough

innovation that the column editor, Danuta Nitecki, wrote an introduction to the feature (Nitecki, 1981). It was separate from the book reviews column.

As in the pages of *RQ*, print and online resources coexisted in reference collections. Few libraries discontinued subscriptions to printed periodical indexes and abstracting services when these became available online. The cost of online services, availability hours limited by trained librarians' work schedules, the limited number of terminals or computers available, and the reluctance of some users to pay for online searches precluded this option, especially in a time when ownership was viewed as more important than access. Even with CD-ROMs and the library's ostensible ownership of that physical medium, many libraries maintained print subscriptions to indexing and abstracting services. Once, however, these subscription indexes became searchable through the Web, libraries began to abandon their print subscriptions. Web access accommodated multiple simultaneous users, was accessible outside the library, and was fully subsidized by the library. As student behavior quickly demonstrated a preference for searching these resources online, libraries canceled print sources wholesale and reinvested the savings into additional online subscriptions.

The shift of reference monographs and multi-volume specialized sets from print to online has been slower and far from uniform. Some, such as the venerable *Oxford English Dictionary (OED)* took the interim step of CD-ROM publication in 1988. In the *OED*'s case this option remains for individuals who wish to purchase it frozen in its 2004 state for \$295. Every reference book that moved online offered users new keyword search capabilities complementing and expanding their print progenitors' indexes.

Not every print-to-online migration has been an unqualified success. The 1996 *Dictionary of Art* appeared online as *Grove Art Online*. Because the publisher had not obtained online rights to a number of the illustrations used in the print edition, users of the online version had the peculiar opportunity to limit a search to picture captions, but with little hope of seeing the works captioned!

Reference publishers moved into electronic reference books cautiously, undoubtedly made wary by e-books' failure to live up to their hype. NetLibrary launched its very ambitious e-book distribution program in 1998. It obtained mostly new and very recent books and converted them into HTML files. It sold these to libraries, requiring an initial purchase of a minimum of 500 titles. This effectively shut out most small- and medium-sized academic libraries. E-books could be purchased for list price plus a declining annual access fee or for 150% of list price for "perpetual access." The one-user-at-a-time restriction and restrictions on printing assured that these e-books would be little more useful than printed books, even though the e-books could be accessed online and even

though their contents could be searched. By 2002 netLibrary had burned through most of its \$109.8 million in venture capital, declared bankruptcy, and was sold to OCLC for \$10 million (Stutzman, 2002). NetLibrary continues under OCLC's wing. Its most notable success has been selling large collections of several thousand titles to SOLINET member libraries. NetLibrary's Reference Center offers multi-book searching in reference works from partner publishers.

Questia, the brainchild of a 27-year-old graduate of the Harvard Law School, launched its massive digitization project in 2000 (Goldberg, 2000). In contrast to netLibrary's strategy of marketing to libraries, Questia planned to sell personal subscriptions to students for access to its full collection for \$19.95 a month. Reportedly, its vision of quickly obtaining 100,000 subscribers fizzled; it was able to attract fewer than 5000 in its first 2 years. By 2002 its work force, once exceeding 200 employees, was down to 28; by late 2005 that had risen back to 70 (Fowler, 2002; Patel, 2005). Questia offered monthly, quarterly, or annual subscriptions; and had about 65,000 subscribers, including 300 schools paying a per-student fee (Patel, 2005). NetLibrary and Questia waved costly red flags in the publishing industry. Experimentation with different business models has kept the company in business; but Questia failed to realize its initial vision.

The most dramatic misstep in reference publishing, however, was *Encyclopaedia Britannica's* decision in October 1999 to make its contents available for free on the Web. Its new business model called for revenue to come from advertising. *Britannica's* experiment started poorly and ended badly. Worldwide demand by literally millions overwhelmed *Britannica's* servers for more than a week, and libraries and library consortia struggled to negotiate refunds on the remaining portion of their subscriptions to the online *Britannica*. By July 2001 *Britannica*, after reportedly reducing its editorial staff in the face of declining revenues, pulled the plug on free access, admitting that the advertising revenue strategy had failed. It returned to a subscription model, offering annual access to individuals for \$50. Libraries and library consortia renegotiated and reinstated their subscriptions. The popping of the Internet bubble torpedoed all of these ventures. That aside, they entered uncharted territory and based their businesses on overly optimistic assumptions (Johnsson, 2001).

From librarians' point of view, part of the problem with e-books until recently has been their completely derivative nature. They simply replicate print originals. They fail to take advantage of the ability to link to other electronic resources and, in the case of scholarly and other non-fiction books, do not update themselves over time. Even if netLibrary and Questia made both librarians and reference publishers gun-shy, everyone learned lessons

from those experiments. The biggest lesson for publishers has been the importance of transcending the traditional limitations of the single printed volume. For example, Greenwood Press, Oxford University Press, Gale, and others make it possible to search multiple works simultaneously. They have also established links among their e-reference books and enhanced the packages with useful features such as timelines, cut-and-paste article citations, multi-volume browsing, and links to vetted external resources. They have taken the monographic building blocks and created new, more complex structures. Current examples include the *Oxford Online Reference Premium Collection*, Greenwood's *World Culture Today* and *Daily Life Online* series, and Gale's *Literature Resource Center* and other resource centers. Reviewers, librarians, and users have embraced these versatile new products.

Yet publishers continue to produce printed reference books and librarians continue to purchase them. Reference librarians certainly have a fondness for them. With the exception of *Wilsonline* in 1985 and 2005's dual-format *Oxford Dictionary of National Biography*, RUSA's Dartmouth Medal award has honored print reference works (RUSA Awards, 2006). As students' expectations that they will get information online grow, as more online reference products make that more possible, the future of the printed reference book becomes a question mark. A 1997 test of the Web vs. a print reference collection determined that at the time the World Wide Web would "not answer all questions, but as a single source it is more powerful than any other tool" (Koutnik, 1997, p. 428). One wonders how much more power has shifted to that single source since 1997. A reference publisher's 2005 prediction that "the age of also will persist" holds true; but how much longer? (Morse, 2005).

Print reference collections remain, albeit used less and less. A bridge between the "also" of print and online is the *Reference Universe* index. Produced by Paratext Electronic Reference Publishing, it indexes more than 28,000 printed and online reference works. Because it indexes at the article level, such a tool has a place and a future even if reference publishers en masse expose their e-reference works' metadata so that Google Scholar can do the indexing. It is questionable whether Google Scholar would provide the same depth of indexing or capture information from the printed works.

In the print-only era, the librarian was the authority who guided users to those reference books best suited to an individual's information need. In the "age of also" the librarian and the self-confident user of online resources share this role. With *Wikipedia*, the users of reference works have taken some things into their own hands, acting as both users and creators of a worldwide free Web-based encyclopedia. *Wikipedia* describes itself as "The free encyclopedia that anyone can edit" and ... as 'an effort to create and distribute a

multilingual free encyclopedia of the highest possible quality to every single person on the planet in their own language.” (*Wikipedia*, 2006) It also forthrightly acknowledges that its “status as a reference work has been controversial since its open nature allows vandalism, inaccuracy, inconsistency, uneven quality, and unsubstantiated opinions. It has also been criticized for systemic bias, preference of consensus or popularity to credentials, and a perceived lack of accountability and authority when compared with traditional encyclopedias. But the scope and detail of its articles, its constant updates, and ease of accessing have made it a popular reference source for many” (ibid.). Indeed, it is a popular reference source for many people, both in the sense that it is frequently used and in the sense that it is accepted by many because it is frequently used.

Librarians are divided on its value, with good reason. Its article on hurricanes is worthy of any traditional encyclopedia staffed by professional editors who commission acknowledged authorities to write its articles (*Tropical Cyclone*, 2006). However to call *Wikipedia*’s “Digital Reference Services” article superficial is a charitable assessment (*Digital Reference Services*, 2005). One’s view of *Wikipedia* is almost a matter of faith. Those who believe that encyclopedias should be authoritative, will never be able to accept *Wikipedia*’s faith in the masses. Those, on the other hand, who place faith in the knowledge of the masses, will continue to place faith in *Wikipedia*. Stories in early 2006 revealed that staff of members of the United States Congress had altered *Wikipedia* to give articles about their bosses a more favorable spin. Propaganda failed to prevail in the cases uncovered. But how many cases of propaganda posing as encyclopedia articles does *Wikipedia* still harbor?

In late 2005 a highly publicized article in *Nature* compared factual accuracy in *Wikipedia* and *Britannica*. It reported, “Only eight serious errors, such as misinterpretations of important concepts, were detected in the pairs of articles reviewed, four from each encyclopedia. But reviewers also found many factual errors, omissions or misleading statements: 162 and 123 in *Wikipedia* and *Britannica*, respectively” (Giles, 2005). Were factual accuracy the only criterion by which to judge encyclopedias, it would be a draw. But additional criteria apply. Berinstein (2006) has produced the best comparison of the two, finding strengths and limitations in both.

The wiki is being used for other reference works, for example, *Wiktionary*, *Wikispecies*, and *Wikiquote*. It is sure to be used for more; however the anyone-can-contribute, anyone-can-edit ethos of *Wikipedia* won’t necessarily prevail in all future wiki-based reference works.

Ferment and experimentation in reference publishing will continue in “the age of also” until it evolves into the age of something else.

IX. Instruction

Instruction, by whatever name—library instruction, bibliographic instructions, information literacy, and information fluency—is such a large topic in academic reference service that it deserves an in-depth article unto itself. It is one aspect of reference service in which the roles of the librarian as teacher and the user as student have been stable. While Campbell's pithy "Some [reference librarians] swear by bibliographic instruction; others swear at it" oversimplifies disagreement among librarians about the role and value of instruction, no other issue in reference librarianship rouses such strong feelings. Even as recently as the 2006 ALA Annual Conference, the ACRL president's program, "The Emperor Has No Clothes: Be It Resolved That Information Literacy Is a Fad and a Waste of Librarians' Time and Talent," debated its value.

The debate has done less to change minds than to affirm convictions. Several articles brought that debate public into the record. In a 1984 forum six participants answered the question "Why have a bibliographic or library instruction program?" It also gave each one the opportunity to comment through a blind process on the others' responses (Why Bi or Li, 1984). This one-sided forum affirmed from various points of view (e.g., liberal arts college, research university) the importance of instruction. That same year, however, Stoa (1984) argued that research processes used by scholars and the library research skills librarians teach students differ enough to call into question the value of instruction unless it is closely tied to course work and faculty expectations of students.

Six years later Bessler asked rhetorically "Do Library Patrons Know What's Good for Them?" She concluded that they do and, therefore, "Perhaps it's time for librarians to stop trying to teach patrons and to focus more effort on listening" (Bessler, 1990, p. 77). Invited respondents to her article expressed a range of opinions, from qualified agreement to spirited defenses of bibliographic instruction. That same year Eadie's "Immodest Proposals: User Instruction for Students Does Not Work" examined arguments in favor of instruction and found them unconvincing (Eadie, 1990). Many others found his argument unconvincing. The BI-L list was especially active just after Eadie's article appeared in *Library Journal*. Invited responses, originally presented at a program at the 1992 ALA Annual Conference, were published in *Research Strategies* that same year (MacAdam, 1992). Eadie (1992, p. 110) led off with commentary on his original remarks, noting that in the coming virtual library "group instruction is the wave of the past, and the reference desk as we know it will have to be transformed." His respondents, having had the benefits of the passage of time and opportunity for reflection, found

merit in many of Eadie's particular criticisms of the ineffectiveness of particular types of programs but identified flaws in his argument. A near consensus formed that bibliographic instruction needed rethinking and revamping in an academic world in which more electronic information was changing user behaviors and expectations, and in which a more diverse student body required varied approaches, some of them sometimes remedial as a result of weakened school libraries.

Eadie and Bessler both implied a separateness between reference service and bibliographic instruction. In some libraries, organization structures with separate reference and instruction departments implied the same. As Eadie intuited in 1992, technology offered opportunities to bring them together. Ohio State had already developed its electronic Gateway to Information. Gateway provided information on a variety of things, including search strategy; but its strength was providing information on basic and frequently asked issues about the library. Users took to it and as a result the library "no longer need[s] library tours, general orientation workshops, printed handouts, or reference librarians for many of their basic questions" (Roecker, 1992, pp. 113–114). Ford's vision was becoming reality. Shortly thereafter the Web eclipsed home grown systems such as OSU's Gateway, allowing libraries lacking the resources Ohio State marshaled to create Gateway to create gateways for their users.

The advent of the Web, however, greatly accelerated a trend well underway. The 1976 reference transaction scenario above includes instruction—instruction in many mechanics of using the *MLA International Bibliography* and a local tool for journals holding information. "How-to" was an unavoidable emphasis in instruction, either group or individual, so long as students needed to use complicated print reference works. As users began to do their own CD-ROM searches, there was still ample opportunity to teach things such as the how-to of using the search interface. They also offered opportunities to teach concepts, such as the role of controlled vocabularies in information access. As users independently generated printouts of citations far more voluminous than they were wont to record laboriously by hand when using printed indexes, opportunities for teaching a range of information literacy concepts rather than mechanics—particularly about the need to evaluate information and applicable evaluative criteria—grew. This was implicit in OSU's Gateway and Rettig identified it as common ground for instruction and reference (Rettig, 1995). It also fit well with the broader concept of information literacy, which Breivik differentiated from bibliographic instruction, saying that bibliographic instruction "focus[es] on teaching things to people while information literacy ... focuses on student empowerment to do independent, self-directed research" (Breivik, 1999).

Librarians have given this broader concept of information literacy a great deal of attention. The concept of information literacy antedates the Web. It was well established by the time the *American Library Association Presidential Committee on Information Literacy: Final Report* (American Library Association Presidential Committee, 1989) was issued on January 10, 1989 after 2 years of work. That report, and Breivik and Gee's *Information Literacy: Revolution in the Library* firmly established the term and the broader concept it represents (Breivik and Gee, 1989).

Instruction and information literacy have long had an institutional base. ACRL's Instruction Section has convened three "Think Tanks" to identify issues and set an agenda for instruction in academic libraries. The first was held in 1981, the second in 1989, and the third in 1999. Think Tank III in 1999 began with a small group presenting papers during a full day session at that year's ALA Annual Conference. "Later that year, during the months of October and November, the Instruction Section presented a 'virtual' think tank experience that made use of a variety of web-based communication technologies, including threaded discussion forums and real-time electronic discussion rooms. This online forum allowed participants to view in-process draft copies of the think tank papers and leave questions and comments for the authors and other forum visitors" (Think tank III, 2005).

Equally important in influence has been the California State University's (CSU) Information Competence Work Group established in 1995 to develop an information competence program for the CSU (Information Competence, 2002). CSU campuses received funding to pursue a number of local information competency projects. In time the university established a list of core competencies and then sought a way to assess students' information competency (California State University Work Group on Information Competence). In collaboration with the Educational Testing Service and others it developed the ICT literacy assessment, "a comprehensive test of Information and Communication Technology proficiency that uses scenario-based tasks to measure both cognitive and technical skills." (ICT literacy assessment) This test has yet to gain widespread acceptance. Nevertheless it is a valuable trailblazer, bringing a degree of standardization that hundreds of local efforts can learn from and emulate.

ACRL has also developed competency standards. In 2000 it issued "Information Literacy Competency Standards for Higher Education" (Association of College and Research Libraries, 2000) and followed that in 2001 with "Objectives for Information Literacy Instruction: A Model Statement for Academic Librarians" (Association of College and Research Libraries, 2001).

Local information literacy programs draw on these national documents for ideas and use them to advance information literacy programs within an

institution. Those programs, however, are planned and carried out locally. In the last three decades they have reflected some of the broader trends in reference service. They have evolved from paper workbooks and lectures to online tests and interactive learning exercises in which the learners play a larger role. At least one program is poised to shift control from the librarian to the student. In 2005 the Institute of Museum and Library Services awarded a grant to James Madison University to develop computer games through which students will learn information literacy concepts and skills.

The information–instruction debate may continue as a theoretical discussion. However in practice it is a rare academic library that does not have an instructional program. These vary in vigor and effectiveness. But all strive to enhance student’s learning and their ability to explore the record of knowledge in and beyond their libraries.

X. The Future

What roles will reference librarians play in the future? They will continue to help users connect with information that they can use in their studies, work, and lives. They will adopt new technologies and techniques to carry out that mission. The New Media Consortium’s 2006 *Horizon Report* identifies emerging technologies that will affect higher education ([Horizon Report, 2006](#)). Social computing tools such as wikis and collaborative writing software are already in heavy use by students comfortable with tools such as Flickr and Facebook. How can reference librarians effectively participate in these new online societies? The iPod is all but ubiquitous among college students. How do podcasting and Webcasting fit into reference service? The cell phone is ubiquitous among students. They exchange text messages. They will (if they don’t already) want to interact with a reference librarian through cell phone text messages. They can subscribe to commercial services that deliver weather, sports, and other information to their cell phones. What sort of information from libraries’ information resources will students want delivered to their phones, either on demand or by RSS subscription? Gaming is huge among students. James Madison University is capitalizing on this. What other opportunities does gaming offer to libraries? The *Horizon Report* discusses context-aware environments and devices in terms of classrooms that sense the presence of a professor and students, and know what equipment to turn on for those present. What opportunities will these offer to reference librarians in helping users navigate through library buildings or as they approach information service points? The answers to these questions are not clear. It is clear, however that amidst this uncertainty lie opportunities.

Emerging and not-yet-developed technologies promise to continue the trend of placing the user at the center of his or her information universe, exercising significant control over what information enters that universe and how it is used. Reference librarians will continue to adapt to changing user behaviors and expectations, to adopt useful new technologies, and to add value to information seekers' experience by helping them find what they need and can use in the complex larger shared information universe.

XI. Coda: A Representative Instant Messaging Reference Transaction circa 2006

Student (3:15:27 PM): hellow
Student (3:15:41 PM): i have a question for you, if you are available
Student (3:16:23 PM): where can i find information about the demographics
 of argentina?
Librarian (3:17:21 PM): Give me a minute to look for some databases or web
 sites.
Student (3:17:29 PM): okay thank you :-)
Librarian (3:18:03 PM): I guess I need to know what sort of specific
 information you need.
Student (3:19:36 PM): wellll ...
Student (3:19:46 PM): things like the income, occupation ...
Student (3:20:01 PM): education, age, gender breakdowns
Student (3:20:31 PM): things that would be on the US census, except that
 the information is about Argentina
Librarian (3:24:54 PM): Sorry for the delay, I've got two people at the desk
 asking questions. Just a moment ...
Student (3:25:08 PM): okay :-)
Librarian (3:27:11 PM): I'm back. I'm checking to see if an almanac would
 have any of that information
Librarian (3:28:28 PM): Are you in your dorm room or here in the library?
Student (3:28:41 PM): apartment
Librarian (3:30:17 PM): So you would want something online. I think you
 could try Europa World which has some statistics.
Student (3:30:29 PM): okay
Librarian (3:30:43 PM): Let me check a few more places.
Librarian (3:33:17 PM): I haven't checked this site, but on the Government
 Information page, there is a link to "Country
 Information". That link takes you to some other

sources. Try those. If you still cannot find the demographics you need, you might have to talk to George Cheney, the gov't information librarian.

Student (3:33:33 PM): okay

Student (3:33:38 PM): thank you for all your help

Librarian (3:33:55 PM): I hope you find the information you need.

Student (3:34:09 PM): thank you, have a great day!

Librarian (3:34:18 PM): You're welcome!

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Progress in Health Sciences Librarianship: 1970—2005

Keith W. Cogdill

I. Introduction

This chapter reviews significant advances in health sciences librarianship, highlighting developments between 1970 and 2005. During this time *Advances in Librarianship* published two chapters that dealt with health sciences librarianship. The first appeared in 1971 with volume two. Written by David Bishop (1971), then at the University of Arizona, it focused on developments in the 1960s and provided a review of the MEDLARS (Medical Literature Analysis and Retrieval System) system, the beginnings of the regional medical library (RML) program and advances in library services and information resources. The second chapter devoted to health sciences libraries appeared in the ninth volume of *Advances in Librarianship*. In it Donald Hendricks (1979) from the University of New Orleans highlighted collaborative programs among health sciences libraries, the growing reliance on computer applications, professional development programs, clinical medical librarian services and the accomplishments of the Medical Library Association (MLA).

As with the two previous reviews of health sciences librarianship, this chapter focuses on developments in the United States in a specific period of time, many of which were led by the National Library of Medicine (NLM). Although this chapter limits its focus to developments between 1970 and 2005, it begins with a brief review of two key developments in the 1960s that had profound impacts on the field in the following 35 years. The first was NLM's development of electronic bibliographic resources. The second was the Medical Library Assistance Act (MLAA), passed in October 1965, and the subsequent development of the RML program, the antecedent of the National Network of Libraries of Medicine (NN/LM). MEDLARS led to the development of one of the most significant online bibliographic databases in the health sciences, and the NN/LM program has fostered many advances in collaboration and resource sharing among health sciences libraries in the

United States. Other major trends noted in this chapter include the development of new forms of information resources such as factual databases, systematic reviews and resources focusing on the health information needs of the general public. This chapter also highlights new information services provided by health sciences librarians, including clinical information interventions.

Libraries are now leveraging developments in the field of medical informatics by promoting the integration of knowledge-based resources with clinical information systems. This chapter closes with a review of health sciences libraries' growing involvement in outreach to communities and their role in the elimination of health disparities.

A. MEDLARS and MEDLINE

Under the leadership of Director Frank B. Rogers, NLM began automating the development of its bibliographic resources in the 1960s. The MEDLARS system began in 1964 with the use of a computer application to generate the printed *Index Medicus*. The following year NLM began providing training to a limited number of librarians from the United States and the international MEDLARS centers interested in learning to execute batch searches of the MEDLARS system using punch cards (Humphreys, 2002). Beginning in 1970 MEDLARS was used to generate the printed *Abridged Index Medicus*, a subset of *Index Medicus* content with entries for articles from key health sciences journal titles. In 1971 NLM made the tapes with MEDLARS records available by subscription (Miles, 1982). Later in 1971 NLM's Lister Hill Center made *Abridged Index Medicus* available through the teletypewriter exchange (TWX) network using the ELHILL command language. This made the data available from more than 40,000 terminals across the United States. The TWX network had been used to transmit interlibrary loan requests among libraries across the country. NLM's success in making MEDLARS available online was due in part to the work of Irwin Piser and others at the State University of New York (SUNY) system who, since December of 1968, had experimented with remote access to the data (McCarn, 1970).

B. MLAA of 1965 and NLM's RML Program

The foundation for much of NLM's involvement with other health sciences libraries was laid in the years leading up to those addressed in this chapter, with the MLAA of 1965 and the beginning of the NN/LM. This activity was supported primarily with the additional funding provided as a result of MLAA. In the period 1965–1970, NLM distributed \$40.8 million to health

sciences libraries in the United States. The relative scale of this funding is underscored by noting that NLM's total budget in 1964, just before the MLAA funding program began, was only \$4 million. MLAA funds were used for the construction and renovation of health sciences libraries, for the acquisition of key resources by health sciences libraries, training in health sciences librarianship, and research and development projects related to health sciences information. Approximately 12% of MLAA funds expended between 1965 and 1970 were also used for the development of NLM's RMLs. The first library serving as an RML was the Countway Library at Harvard University, beginning in 1967 (Cummings and Corning, 1971).

Resource sharing was among the principal motivating factors leading to the development of the RMLs. With large health sciences libraries serving as RMLs in what were originally 11 regions, NLM was able to reduce its interlibrary loan activities to fulfilling requests for materials not available from other libraries in the network. Before the RML program began in 1967 NLM fulfilled approximately 175,000 interlibrary loan requests annually. Three years later, with the first RMLs beginning their service, this fell to approximately 100,000 requests per year. In addition to interlibrary loan service, the RMLs served as MEDLARS search centers and provided reference, consultation and training for health professionals and librarians in their regions (Cummings and Corning, 1971). A total of 11 institutions served as RMLs until 1982 when the number of regions was reduced to seven (Bunting, 1987). The number of regions subsequently increased to eight with the separation of the New England Region and the Middle Atlantic Region.

The dramatic increase in funding available to health sciences libraries with MLAA was echoed in the late 1990s with the doubling of the National Institutes of Health (NIH) budget (Brainard et al., 2001). This increase in funding supported NLM's expansion of its mission to include service beyond health professionals and health sciences libraries to include the general public (National Library of Medicine, 1999).

II. Information Resources

The 35 years since 1970 have seen a significant expansion in the number and variety of information resources available to health professionals and the general public. In 1970 the key resources for accessing the health literature were the printed *Index Medicus* and *Excerpta Medica*. Interactive online access to the content of these indexes in the form of MEDLINE and EMBASE lay just around the corner. The decades following 1970 saw significant growth in these and other health-related bibliographic databases that became available.

Several factual databases, including the TOXNET (Toxicology Data Network) family of databases, emerged as a result of what was originally known as the Toxicology Information Program at NLM. Through the 1980s access to these databases was available primarily through mediated searches performed by library personnel who had access to online accounts and who were familiar with online command languages. Systems that supported searching directly by end users appeared in the 1980s, with librarians adopting the roles of trainer and expert searcher.

With the growth in the size of bibliographic databases, the importance of limiting search retrieval became critical. Search “hedges” or filters emerged as key tools for effective searches, reflected in the “clinical queries” and other filters available today in NLM’s PubMed system. The wide array of often conflicting information available also led to the need for systematic reviews and practice guidelines to support evidence-based decisions. Although its principles were not new, the phrase “evidence-based medicine” made its first appearance in the literature in 1992 with an article by Guyatt and other members of the “Evidence-Based Medicine Working Group” at McMaster University (Guyatt et al., 1992). The development of the World Wide Web in the 1990s led NLM to recognize the need to assist the general public in evaluating the plethora of health information available online. This led to the development of MedlinePlus which premiered in October 1998 and which continues to evolve, as noted below, with the addition of information about health services available in local communities across the United States.

A. Bibliographic Databases

Bibliographic databases have grown tremendously with the burgeoning amount of life sciences literature published since the databases came online in the early 1970s. The flagship databases in health care remain MEDLINE and EMBASE. BIOSIS remains an essential resource for preclinical research and drug development. CINAHL is a welcome addition, focusing on the literatures of nursing and allied health. A variety of approaches to indexing have been used, with significant developments in the controlled vocabularies used to index EMBASE and BIOSIS records.

With a name signifying “MEDLARS online,” MEDLINE became available for online interactive searches in October 1971. As noted previously, MEDLINE extended the success of the MEDLARS system which was originally developed to automate the production of the printed *Index Medicus*. Since it first appeared, MEDLINE has grown significantly in size as well as numbers of searches and users. When it came online in 1971, MEDLINE

consisted of just over one million records from the indexing of approximately 2200 journals. It now includes more than 14 million records of articles from more than 4800 biomedical journal titles. MEDLINE includes records of publications from roughly 1966 to the present, with more than half a million records now added annually.

The growth in the number of MEDLINE users and searches may be attributed to improvements in its ease of access. Through most of its first three decades, MEDLINE was only available online through payment of a nominal fee. Initial access was through searches performed through the use of TWX network terminals. Distributed access to MEDLINE was significantly influenced by the work of Irwin Piser and others at the SUNY, who had demonstrated the proof-of-concept for distributed access to MEDLARS data through terminals in four cities: Albany, Buffalo, Rochester and Syracuse. SUNY's distributed access system began in December 1968 and laid the groundwork for expanded efforts by NLM's Lister Hill Center for Biomedical Communications (McCarn, 1970).

Direct online searches of MEDLINE by end users became possible in 1986 with the release of the Grateful Med software, developed by NLM's Lister Hill Center for Biomedical Communications. Also in the 1980s CD-ROM subscriptions to MEDLINE first appeared. At the time these were released, there were significant concerns in the health sciences library community related to NLM's providing direct access to its databases for health professionals and other end users. Responses to the release of Grateful Med included a concern that NLM had not articulated the value of hospital and other health sciences librarians as expert searches, complementing the searches that could be performed by end users (Humphreys, 2002; White, 1991).

A significant milestone in MEDLINE's history occurred on June 26, 1997 when NLM made it available free of charge through Internet interfaces. In 1996 NLM had launched a Web-based version of its Grateful Med software. Earlier in 1997 the National Center for Biotechnology Information (NCBI), a component of NLM, had released PubMed, a bibliographic component of its Entrez system which also includes protein and gene sequence databases. A notable feature of PubMed is its use of automatic term mapping, which relies on the Unified Medical Language System (UMLS) to support free-text searches.

Searches of MEDLINE in 1996 through Internet Grateful Med were performed at a rate of approximately 600,000 per year (Garnett, 1996). With the availability of free searches and the release of PubMed the following year, the number of searches increased more than 10-fold to seven million per year (Zipser, 1998). Today more than 600 million searches are performed in PubMed/MEDLINE each year, a remarkable increase from the 22,000

searches executed in the MEDLARS system in 1970 (Cummings and Corning, 1971; Steinbrook, 2006).

In December 2004 NLM terminated the printing of *Index Medicus*, which had been published for 125 years. The number of subscribers to this resource had fallen to 155 in 2003 (National Library of Medicine, 2004). The termination of the printed *Index Medicus* and the steady growth of PubMed/MEDLINE searches fulfilled the transformation, begun four decades earlier, in the methods used to disseminate bibliographic information in the health sciences. This transformation continues with the conversion of historic printed materials into Internet-accessible electronic resources.

The importance of access to the older literature was underscored with the death in June 2001 of Ellen Roche, a healthy 24-year-old volunteer in an NIH-sponsored clinical trial at Johns Hopkins University. Ms. Roche had volunteered to take part in a study of the pathophysiology of asthma. In order to provoke a mild asthma attack, the healthy participants in this study inhaled hexamethonium, a drug that had been used as an antihypertensive agent in the 1950s and 1960s. Following her inhalation of hexamethonium Ms. Roche developed a cough, and her condition deteriorated until her death approximately 1 month after entering the study. The federal Office for Human Research Protections (OHRP) investigated the study and 6 weeks following the death of Ms. Roche suspended all federally sponsored research projects at Johns Hopkins and affiliated institutions. The suspension was lifted after quick corrective action was taken by the university. The central concern in the hexamethonium study was the failure to uncover reports of its toxicity available in the journal literature from the 1950s (Savulescu and Spriggs, 2002).

Online access to records of biomedical journal articles published from 1950 to 1965 is now available through NLM's OLDMEDLINE database, accessible as part of the PubMed system. OLDMEDLINE includes approximately 1,760,000 records and complements the MEDLINE database, which provides records published in *Index Medicus* from 1966 onward.

Begun in 1947 as a set of eight "abstract journals" through a collaboration of three Dutch physicians, *Excerpta Medica* now indexes the literature in 42 medical specialties. EMBASE, the electronic equivalent of *Excerpta Medica*, came online through Dialog in 1974. Two years previously it had been acquired by Elsevier. EMBASE now has more than 10 million records and serves as an important index of the biomedical literature, with particularly strong coverage of pharmacology and the European literature. The majority of EMBASE records are of journal articles, but 5% are records of conference proceedings, technical reports and monographs (Dialog, 2005a). A study in 1991 found that 51% of EMBASE titles are also indexed in

MEDLINE, underscoring the importance of searching both databases if comprehensive coverage is needed (Mychko-Megrin, 1991).

In 1991 EMBASE introduced the EMTREE Thesaurus as its controlled vocabulary. Previously, the Master List of Medical Indexing Terms (MALI-MET) had been used (Boorkman *et al.*, 2004). The EMTREE Thesaurus includes approximately 46,000 “preferred” terms as well as close to 200,000 “synonyms,” including proprietary drug names, MeSH terms and obsolete EMTREE terms. Somewhat comparable to MeSH subheadings, EMTREE terms can be qualified with “drug links” or “disease links” (Dialog, 2005a).

Originally a non-profit organization founded in 1926 but acquired by Thomson in January 2004, BIOSIS is headquartered in Philadelphia. The BIOSIS Previews database is the electronic equivalent of the printed *Biological Abstracts* and *Biological Abstracts/Reports, Reviews and Meetings*, with coverage dating from 1969. Today BIOSIS Previews includes more than 14 million records, including records of articles indexed from more than 5000 journal titles. Other publication types represented include conference papers, monographs and US patents (Dialog, 2005b). With broad coverage of the life sciences, BIOSIS Previews is routinely used in health sciences settings for research related to environmental health, preclinical sciences and drug development.

BIOSIS makes its Vocabulary Guide available as part of the larger *BIOSIS Search Guide*. The Vocabulary Guide lists approximately 20,000 “key terms” selected on the basis of their frequency in the database. Since 1993 BIOSIS has relied on “relational indexing” which uses links as qualifying concepts. BIOSIS Previews searchers may also take advantage of the database’s 168 “major concepts,” which can be exploded to retrieve more specific concepts. The Vocabulary Guide also includes concepts codes and biosystematic codes (BIOSIS, 2002).

The Cumulative Index to Nursing and Allied Health Literature was originally published from 1956 to 1976 as the Cumulative Index to Nursing Literature. In 2003 it was acquired by EBSCO Publishing. Its electronic equivalent, the CINAHL database, covers the Nursing and Allied Health Literature since 1982, with over one million records of journal articles as well as conference papers, nursing dissertations, books and educational software. CINAHL indexes roughly 1600 journal titles. The database also includes more than 22,000 full-text records of articles from selected-state nursing journals as well as newsletter articles, research instruments and government publications. Indexing of CINAHL records relies on the set of almost 12,000 CINAHL subject headings, approximately 70% of which are also MeSH terms. Like MeSH, CINAHL subject headings are updated annually, are

hierarchically organized with broader terms that can be exploded, and may be qualified with subheadings (CINAHL, 2005).

B. Systematic Reviews and Other EBM Resources

The idea that clinical decisions should be made on the basis of the best available evidence is not new. This simple principle is at the heart of what has become known as the evidence-based medicine (EBM) movement. With origins at McMaster University in the early 1990s, EBM was hailed in *New York Times* magazine in 2001 as one of the most influential ideas of the year (Haynes, 2002). EBM has spawned parallel frameworks in other disciplines, including evidence-based nursing, evidence-based public health and evidence-based librarianship. The emphasis in all evidence-based movements is on making decisions that are consistent with the best evidence available, rather than primarily on a practitioner's personal experience.

In the face of what can be an unmanageable amount of often contradictory information in the literature, EBM proponents suggest a five-step process for reaching clinical decisions that are based on the best evidence available:

1. *Define the question.* The first step in the practice of EBM is to articulate a clinically oriented, focused question. Such a question includes data about the patient or population, an intervention or exposure, measurable outcomes and, optionally, a comparison (Richardson *et al.*, 1995).
2. *Collect the evidence.* The second step is to search for relevant evidence, typically through searches of knowledge-based resources such as bibliographic databases. PubMed provides a set of "clinical queries" that allow searchers to enter concepts and apply quality filters to retrieve records of controlled clinical trials and other rigorously designed studies. Other bibliographic resources that may be searched as part of gathering evidence include databases of systematic reviews, such as the Cochrane Library described below.
3. *Evaluate the evidence.* Critical appraisal of the gathered evidence is the next step, with attention given to the strength of the research design used in the reported studies. The relative strength of various study designs has been depicted as a pyramid with *in vitro* and animal studies toward the base and randomized-controlled trials and systematic reviews at the apex. Levels of evidence can also be based on guidelines such as those provided by the US Preventive Services Task Force (Harris *et al.*, 2001):

- I Evidence from a minimum of one randomized-controlled trial.
 - II-1 Evidence from controlled trials that were well designed but did not include randomization.
 - II-2 Evidence from cohort- or case-control analytic studies.
 - II-3 Evidence obtained from comparisons made between times or places with or without the intervention.
 - III Opinions of respected experts.
4. *Integrate the evidence with patient- or community-specific data to reach decisions.* Consideration of patient-specific data and the integration of this data with the previously gathered and evaluated evidence constitute the fourth step in the EBM framework. Patient-specific data may include the patient's clinical condition as well as other factors such as her history, preferences related to care and spiritual beliefs. Practitioners of evidence-based public health may integrate evidence with population-specific data to reach a decision impacting a particular community.
5. *Review the process for possible improvements.* The final step entails reflecting on the process in terms of identifying opportunities for improving its practice in the future. These opportunities may relate to resources and methods for searching the available evidence, domains in which health sciences librarians possess expertise (Guyatt and Rennie, 2001).

Critics of EBM note that it is often impractical and may not be cost-effective to delay clinical decisions until the best available evidence can be retrieved, evaluated and integrated with patient-specific data. Others note that EBM devalues a clinician's personal experience, and that decisions routinely must be made in the absence of evidence. Newly emergent problems, such as the SARS (severe acute respiratory syndrome) epidemic of 2003, require decisions in the absence of previous relevant research. Finally, many routine clinical practices such as blood transfusions have not been the subject of randomized-controlled clinical trials due to ethical concerns related to withholding treatment (Timmermans and Mauck, 2005).

EBM has gained wide acceptance over the past two decades, and a host of new information resources have emerged to support its practice. Chief among these are systematic reviews, publications that focus on specific clinical problems and that integrate findings from multiple primary sources. Unlike traditional narrative reviews of the literature, systematic reviews provide specific criteria for how primary studies are identified and evaluated. Meta-analyses are a type of systematic review that pool data from multiple primary sources with the intent of performing new analyses of the aggregated data.

Archie Cochrane (1909–1988), a Scottish epidemiologist, pointed to the need for systematic reviews with the observation that, "It is surely a great

criticism of our profession that we have not organized a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomized controlled trials” (Cochrane, 1979). Cochrane’s 1972 book, *Effectiveness and Efficiency: Random Reflections on Health Services*, underscored the importance of randomized-controlled trials in evaluating the effectiveness of treatments and called for an international registry of trials.

Established in Oxford in 1993, 5 years after Cochrane’s death, the Cochrane Collaboration (www.cochrane.org) is now an international, coordinated effort to generate and disseminate systematic reviews. Divided into more than 40 review groups, participants in the Cochrane Collaboration work together to identify randomized-controlled trials and to create records in the Cochrane Controlled Trials Register. Participants in review groups also evaluate the results of studies on the basis of evidence-based criteria and synthesize the findings in systematic reviews. The full text of these reviews is made available through the Cochrane Database of Systematic Reviews, the principal product of the Cochrane Collaboration.

Practice guidelines are now commonly developed and used with the intent of improving the quality and consistency of care, balancing costs and outcomes and ensuring legal protection. Like systematic reviews, practice guidelines may be evidence based. While many guidelines are based solely on the consensus of experts, evidence-based practice guidelines rely on a systematic search of the available evidence and an evaluation of the strength of the evidence. The specific recommendations included in an evidence-based practice guidelines are weighted on the basis of the strength of their supporting evidence. Although they have been criticized as “cookie-cutter” medicine, practice guidelines have been produced by government agencies, professional associations, health care organizations and disease-specific advocacy groups (Wilson *et al.*, 1995). NLM maintains a collection of full-text guidelines as part of the PubMed “Bookshelf” (www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat), and the Agency for Healthcare Research and Quality (AHRQ) sponsors the National Guideline Clearinghouse at <http://guidelines.gov>.

C. Factual Databases

A host of databases provide factual information in the health sciences, key resources for health sciences librarians in addition to bibliographic databases. Databases of toxicology and environmental health information developed at NLM as part of its Specialized Information Services (SIS) division were among the first factual biomedical databases to become available online. Today other factual databases are available that provide information about

clinical trials, health services research projects and health-related research instruments and datasets.

In 1966 the President's Science Advisory Committee (PSAC) submitted a report entitled *Handling Toxicological Information*, which concluded that "there exists an urgent need for a much more coordinated and more complete computer-based file of toxicological information than any currently available and, further, that access to this file must be more generally available to all those legitimately needing such information" (PSAC, 1966). This led to the creation on January 1, 1967 of the Toxicology Information Program at NLM. Environmental health was included as part of the program's mission in the mid-1990s, resulting in its being renamed as the Toxicology and Environmental Health Information Program (TEHIP). A host of databases and other information resources are now maintained as part of the TEHIP program, a part of NLM's SIS division. Collectively known as the Toxicology Data Network (TOXNET, toxnet.nlm.nih.gov), these resources include the Hazardous Substances Data Bank (HSDB), the Toxic Chemical Release Inventory (TRI) and, more recently developed, the Household Products Database and WISER.

HSDB is among the key resources maintained as part of the TEHIP program. Each HSDB record provides extensive, scientifically reviewed information about a toxic or potentially toxic chemical. The 4900 records in HSDB provide information about safety, toxicity, disposal, emergency handling and regulatory requirements. The information provided in each record is drawn from the journal literature, government publications and special reports. TRI provides records about the release of over 650 chemicals and chemical categories. Data about these releases are submitted by industrial facilities to the Environmental Protection Agency (EPA) in compliance with the Emergency Planning and Community Right-to-Know Act of 1986, passed in the wake of the disaster in Bhopal, India, in which an accidental release of methyl isocyanate caused 3800 deaths and permanent injuries for several thousand more. As a result of this act, reporting is required in the United States for releases into the air, soil or water as well as for the transfer of toxic or potentially toxic materials to waste sites (Environmental Protection Agency, 2000). NLM has enhanced access to the TRI data with a Web-based GIS system, TOXMAP (toxmap.nlm.nih.gov). Launched in 2004, TOXMAP allows users to access TRI data in graphical form with online maps. Launched in 2003, the Household Products Database (householdproducts.nlm.nih.gov) contains records that provide information about the health effects of substances in more than 5000 products commonly used in residential settings. The record for each product includes its ingredients as well as information about its safe handling, disposal and possible health

effects. WISER (the Wireless Information System for Emergency Responders) premiered in 2003 as a PDA (Personal Digital Assistants) application to aid first responders in the management of hazardous material incidents. WISER provides information about chemical identification, physical properties and containment recommendations. WebWISER, a Web-based version of the application available at webwiser.nlm.nih.gov, was launched in 2005. In addition to these resources, TOXNET includes bibliographic databases related to toxicology, bibliographies covering toxicology and environmental health topics, online tutorials and other resources intended for use by the general public as well as toxicologists and health professionals.

The **Food and Drug Administration Modernization Act of November 1997** required that the Department of Health and Human Services, through NIH, establish a registry of both federally and industry-sponsored clinical trials “of experimental treatments for serious or life-threatening diseases or conditions.” ClinicalTrials.gov, launched by NLM’s Lister Hill Center on February 29, 2000, fulfills this congressional mandate with more than 22,000 records of trials sponsored by NIH, other agencies and the pharmaceutical industry (Zarin *et al.*, 2005). Each record provides information about the trial’s purpose, its current status in terms of recruiting participants, the criteria for participation, the location(s) where it is being conducted, contact information to assist those interested in enrolling as well as information about the trial’s design and methods. ClinicalTrials.gov records also include links to PubMed and MedlinePlus for additional information about the condition or potential therapy under investigation.

HSRproj (www.nlm.nih.gov/hsrproj) is maintained through a collaboration between AcademyHealth and the Cecil G. Sheps Center at the University of North Carolina, with funding from NLM’s National Information Center on Health Services Research and Health Care Technology (NICHSR). HSRproj records provide information about health services research projects before their results can be made available in the published literature. Projects represented with records in HSRproj include those funded through federal grants or contracts as well as those sponsored privately through foundations. Each of the more than 6500 records in HSRproj provides information about the project’s sponsoring agency, principal investigator, beginning and ending years, and study design. Records are indexed with both MeSH terms and, if sponsored by NIH, with CRISP keywords (Auston, 2005).

Health Services and Sciences Research Resources (HSRR, www.nlm.nih.gov/nichsr/hsrr_search), also developed through NLM’s NICHSR, provides information about research instruments and data sets of interest to health services researchers, social scientists and public health professionals. It includes records of more than 500 data sets, 100 instruments and 20 software

applications. HSRR records provide brief descriptions of these resources relevant to population-based research and, when available, provide links to the data providers. HSRR records also include links to preformulated PubMed strategies to support the retrieval of literature that relied on the data set or instrument.

D. Consumer Health Information

A number of studies over the past 35 years have noted the demand for health information resources and services among patients, their families and the general public. A recent survey concluded that eight in ten Internet users in the United States have looked for health information online (Fox, 2005). Another survey found that one in four Americans (26%) has looked online for information about prescription drugs (Fox, 2004). Based on a review of previous studies of health-related requests in public libraries, Deering and Harris (1996) conclude that as many as 52 million such requests occur in public libraries each year.

A host of consumer health information resources is now available to support the decisions patients make about their care in partnership with the health professionals serving them. These resources have supported the transformation of the patient-provider relationship into a decision-making partnership (Kassirer, 2000). In addition to resources with information about diseases, conditions and treatments, there are now resources that support consumer's choice of health professionals and health services and organizations (Cogdill, 2000). Many resources now also attempt to provide health information that is sensitive to specific cultures and communities, such as Web-based portals with links to health information tailored to the needs, interests, beliefs and practices of minority populations and specific age groups.

The library community is responding to the needs of consumers with health information services provided by public libraries, health-specific libraries for consumers such as the Planetree libraries, and special collections in hospitals and academic health sciences libraries that target consumers' needs (Hollander, 2000; Larue, 2004; Spatz, 2000; Wood *et al.*, 2000). Meeting consumers' health information needs has also been the goal of many partnerships formed between public and health sciences libraries, a strategy suggested in 1955 by Jacqueline Chambers from what was then the Armed Forces Medical Library. She noted that, "It is important that public and medical libraries cooperate with one another wherever this is feasible, and it is to their mutual advantage to divide the responsibilities which should be met" (Chambers, 1955, p. 260). In the late 1970s a handful of projects funded by Library Services and Construction Act (LSCA) Title 1 grants

fostered collaborations between public and health sciences libraries (Hollander, 1996). One of these, the Consumer Health Information Network (CHIN) project in Cambridge, Massachusetts, led to a collaboration between Mount Auburn Hospital and six public libraries. This collaboration entailed training of public library staff, cooperative collection development, interlibrary loans and collaborative reference service (Gartenfeld, 1978).

In the mid- to late-1990s a host of consumer-oriented health information Web sites emerged. Among these was NLM's MedlinePlus, launched in October 1998. The sustained development of MedlinePlus since its launch has been a reflection of NLM's expanded mission to include promoting access to health information for consumers as well as health professionals. This expanded mission was approved by NLM's Board of Regents during its meeting in May 1999 (National Library of Medicine, 1999). When it launched in 1998 MedlinePlus had 22 health topic pages with links to consumer-oriented Web sites providing authoritative content such as those maintained by the institutes and centers at NIH. The original health topic pages also included preformulated PubMed search strategies (Miller *et al.*, 2000). More than 700 health topic pages are now available in MedlinePlus, and it also provides drug and natural product information, medical dictionaries, videos of surgical procedures, and access to data from the American Hospital Association's directory of hospitals and other health services directories, as well as current health-related news.

The health information available from MedlinePlus is now being supplemented with information about health services available in specific communities across the United States. As a result of a growing number of "MedlinePlus Go Local" projects, a user can easily navigate from a health topic page to a directory of related health services in her community. With partial support provided through the NN/LM, Go Local projects have now been completed in Alabama, Indiana, Maryland, Massachusetts, Missouri, North Carolina, Texas Utah, Wyoming and the Four Corners region. Twelve more Go Local projects are currently in development (National Library of Medicine, 2006).

A growing number of Web sites aim to present health information in ways that are responsive to the needs, beliefs and practices of specific populations and communities. TribalConnections.org, funded in part by the Gates Foundation and the NN/LM, focuses on Native American clinicians and includes content provided by native health professionals. NLM's SIS Division is also sponsoring the development of population-focused Web portals, with sites now available that focus on Asian Americans, Native Americans and residents of the Arctic region. SIS has also developed multiple "scenes" within its Toxtown site (toxtown.nlm.nih.gov) to provide

toxicology and environmental health information using a graphically rich interface. Scenes available in Toxtown now include a representative town, farm and US/Mexico border community. Among resources for specific age groups, NIHSeniorHealth.gov was developed through a partnership between NLM and the National Institute on Aging. It provides links to health information from authoritative sources on topics of interest to seniors, with enlarged text and audio content available. Developed by the Centers for Disease Control and Prevention, “BAM! Body and Mind” (<http://www.bam.gov>) is a site providing health information of interest to children ages 9–13.

E. Electronic Publishing

The proportion of journal publishers making the full text of their articles available online has increased rapidly since the mid-1990s. It has been estimated that three-quarters of all scholarly journals are now available electronically, though many require a payment or registration as a condition of access (Cox and Cox, 2003; Watson, 2003). In order to preserve the content of electronic journals in a consistent format, NLM’s NCBI developed PubMed Central, which launched in February 2000 with content from the *Proceedings of the National Academy of Sciences, United States of America* and *Molecular Biology of the Cell*. In addition to promoting access to the life sciences literature, the aim of PubMed Central is to serve as a digital archive, a counterpart to the NLM’s collection of print journals. Although publishers have the option to embargo articles for a limited period of time following their publication, the goal of PubMed Central is to provide free and unrestricted access. PubMed Central now contains more than 350,000 articles from about 180 peer-reviewed journals. As of May 2, 2005, NIH has requested that investigators sponsored through NIH grants or contracts voluntarily submit an electronic copy of any article, upon its acceptance for publication, to PubMed Central: “Posting for public accessibility through [PubMed Central] is requested and strongly encouraged as soon as possible (and within 12 months of the publisher’s official date of final publication)” (Department of Health and Human Services, 2005). Response to the policy in the months following its announcement has been slow. It has been estimated that only 2–3% of all eligible articles have been submitted to PubMed Central since the policy took effect. Legislation has been introduced in Congress to modify the policy to require the submission of articles, with the possibility that failure to comply could result in loss of funding (Steinbrook, 2006).

Proponents of what has become known as the open access movement advocate for the immediate free and unrestricted access to journal articles, without the delay that is an option for publishers participating PubMed Central. Unlike traditional journals' reliance on subscription fees, the revenue for open access journals is from fees paid by authors. These fees may be paid by an author's institution or waived in the case of hardship or if the author is from a developing country. Harold Varmus, a former Director of NIH and Nobel laureate, has led the formation of a private, non-profit open access initiative named the Public Library of Science (PLOS). The first title released was *PLOS Biology* in October 2003. *PLOS Medicine* premiered in October 2004. Both are freely available on the Web, with authors paying a \$1500 fee per published article to cover the costs associated with managing peer review and technical editing (www.plos.org/about). BioMed Central, a commercial venture headquartered in the United Kingdom, publishes more than 130 journal titles following an open access model that relies on revenue from author fees, institutional membership fees, advertising and fees for value-added features such as reviews and commentaries. Articles from BioMed Central titles are available in PubMed Central, and NLM is now an institutional member of BioMed Central (www.biomedcentral.com/info/about; www.biomedcentral.com/inst/cou/840#members).

III. IT and Library Services

Advances in information technology (IT) since 1970 have led to significant changes in the nature of library services provided in health sciences settings. Reference assistance is now available through e-mail exchanges and through online chat sessions at many institutions, especially academic health sciences centers. Training on the selection and use of information resources is now available through online tutorials and has been integrated as part of the content of distance education courses provided online. Perhaps a more fundamental impact of IT on library services has been the recognition of librarians as expert searchers with the education and background needed to perform advanced searches and, in many cases, evaluate and synthesize the retrieval as part of the patient care provided by a clinical team. The ready availability of information online, with many publishers providing free full-text access, has enabled users to obtain much more information independent of library services than was possible three decades ago. This has prompted librarians to focus on communicating the value of their services in terms of specific contributions to the larger organization.

A. Online Reference

It is now commonplace for libraries to provide reference services through e-mail communication with users. OCLC's QuestionPoint is one product that has been used in health sciences settings to manage e-mail reference services (Markgren *et al.*, 2004). More than two-thirds of inquiries handled by NLM's Public Services Division in fiscal year 2004 were from off-site users, the vast majority received through e-mail (National Library of Medicine, 2005). Library staff at the University of California at Davis have reported their experience with providing reference service through online chat sessions (Jerant and Firestein, 2003). Online reference service provided asynchronously through e-mail or in "real time" through online chat sessions also offers the potential for collaboration among libraries (Chowdhury, 2002; Lindbloom, 2004).

B. Education Services

Scherrer and Jacobson (2002) note the decline of mediated searches in the 1980s, complemented by a steady increase in the number of training sessions provided at academic health sciences libraries in the 1990s. Education programs in hospital and academic health sciences libraries have evolved substantially beyond orientation sessions and search skills workshops. Librarians now routinely pursue opportunities such as liaison services and serving on curriculum committees in health professional degree programs. Librarians are also often called on to provide instruction related to the practice of EBM for medical students and residents. Instructional content developed by librarians has been made available in online formats, such as tutorials developed at Johns Hopkins University's Welch Library (Sheffield *et al.*, 2005) and the online tutorial on information management provided as part of the PHPartners.org site (<http://phpartners.org/tutorial>). NN/LM's National Training Center and Clearinghouse (<http://nmlm.gov/train>) also maintains a database of educational material that can be used for instruction on health information management.

Two major bodies in medical education have recently highlighted the importance of education in the area of information management. The report of the Association of American Medical Colleges' (AAMC's) Medical School Objectives Project, released in 1998, highlights the importance of instruction in the areas of informatics and information management, noting as one objective that, "the medical school must ensure that before graduation a student will have demonstrated ... the ability to retrieve (from electronic databases and other resources), manage and utilize biomedical information

for solving problems and making decisions that are relevant to the care of individual patients and populations” (Association of American Medical Colleges, 1998). In a similar vein, the Accreditation Council on Graduate Medical Education developed a set of general competencies for medical residents, announced in 1999. Related to practice-based learning, these competencies include searching for, evaluating and applying evidence from knowledge-based resources to patient care (Accreditation Council on Graduate Medical Education, 1999).

C. Clinical Information Interventions

In addition to a stronger focus on training, the “disintermediation” of information seeking brought about as a result end user searching technologies since the 1980s has also led librarians in health care settings to adopt new roles as part of a clinical team. The first “clinical medical librarian” service program was developed by Gertrude Lamb at the University of Missouri at Kansas City (Lamb, 1982). Davidoff and Florance significantly advanced the idea of clinical information interventions when they proposed the idea of an “informationist” who possesses the information management and subject area expertise needed to retrieve relevant information and evaluate and synthesize it in a way that supports decisions related to the care of specific patients. The idea of the informationist is “to make the critical link between the huge body of information hidden away in the medical literature and the information needed at the point of care” (Davidoff and Florance, 2000). This role has recently been expanded to include information interventions related to population health in the public health domain. The potential for expert search services to improve patient care has been suggested by studies that have compared the quality of the searches performed by end users and librarians (McKibbon and Walker-Dilks, 1995; Wildemuth and Moore, 1995).

D. Hospital Library Services

MLA’s Hospital Library Section promotes hospital librarianship in a variety of ways, perhaps most significantly with its development of the “Standards for Hospital Libraries.” Most recently updated in 2002, these standards outline the roles of libraries in health care organizations and highlight the link between knowledge-based information and specific functions of the hospital, including clinical care, patient education and continuing professional education. These standards are routinely used to support hospital librarians’ requests for additional institutional support. Evidence of what may be a decline in institutional support for hospital libraries in recent years

is the diminishing number of hospital librarians. In 1996 the Hospital Library Section of MLA had a peak of 1606 members. In 2002 the section's membership was reported to have fallen by about 20% (Wolf *et al.*, 2002).

Hospital librarians' interest in ensuring access to knowledge-based information resources on the Web has led to conflicts related to institutional firewalls maintained by hospital IT staff. In the interest of the security of a hospital's network, its IT staff may limit access to Internet-based information resources. To address this challenge, the NN/LM appointed the Hospital Internet Access Task Force in May 2003 with the charge of articulating strategies for hospital libraries to promote access to Web-based resources from within their institutions while simultaneously collaborating with their IT colleagues to preserve the security of the hospital's network and computer-based resources. Based on extensive data collection, including interviews with 47 librarians, the majority of the task force's recommendations address issues related to communication and training (Holst, 2005). Also among the recommendations was the suggestion that technology-related standards be included in the hospital library standards maintained by MLA's Hospital Library Section.

E. Value and Contributions of Library Services

Responding to the apparent decline in the number of hospital libraries in the United States and the reported under-funding of many academic health sciences libraries, MLA sponsored a study of the value and contributions of library services. With reports published in 2002 and 2004, this study by Abels, Cogdill and Zach (2002, 2004) resulted in a taxonomy of library contributions to the organizational missions of hospitals and academic health sciences centers, known as Contributions of Library and Information Services (CLIS) taxonomy. This study also identified specific indicators a library may use to measure the contributions of its services to the mission of its larger organization. Building on the first report of the study by Abels, Cogdill and Zach, the health sciences library at Capital Health System in Trenton, New Jersey, gathered and analyzed data related to outcomes of library use and linked these outcomes to the mission of the hospital system (Cuddy, 2005).

Contributions to patient care are among the four mission-level elements of the CLIS taxonomy. Clear evidence of the potential contributions of library services to patient care came to light in the late 1980s and 1990s with studies of the impact of mediated searches. Among these, a study led by Marshall surveyed the recipients of mediated search services in hospital settings and found that 80% reported that they probably or definitely handled

some aspect of patient care differently as a result of the searches (Marshall, 1992).

Potential contributions associated with the library as place are also included in the CLIS taxonomy. Citing an earlier study of usage patterns of library buildings since 1995, Lindberg and Humphreys (2005) conclude that, "Despite ubiquitous access to electronic information ... the 'library as place' is still highly valued and heavily used ... Users flock to library buildings and spaces that are attractive, centrally located, technologically current, and arranged to meet the needs of groups as well as solitary users." Ludwig and Starr (2005) suggest that there will be growing divergence in how libraries as places are used, with institutional needs influencing their design.

IV. Collaboration and Resource Sharing

Examples of collaboration and resource sharing among health sciences libraries over the past three and a half decades are seen in the activities of the NN/LM, a program that came about as a result of the MLAA of 1965. Membership in the NN/LM is now made up of eight RMLs, about 140 resource libraries (primarily at academic health sciences centers), and more than 4700 primary access libraries (most in hospitals) as well as affiliate member institutions, including public libraries and community-based organizations with an interest in promoting access to health information. Since the creation of the first RML at Harvard's Countway Library in 1967, as noted previously, the number of regions served by RMLs has fluctuated with a current total of eight covering the United States and the US-affiliated territories. Among the practical motivations for beginning what was initially known as the RML program was a desire to distribute access to MEDLARS data tapes and to encourage interlibrary lending among other libraries, with NLM serving as a "library of last resort" for requests that cannot be filled from other collections (Cummings and Corning, 1971; Lacroix and Dutcher, 1989).

In 1985 NLM launched the free DOCLINE service for NN/LM member libraries to support the routing and referral of interlibrary loan requests. Today DOCLINE serves more than 3200 health sciences libraries in the United States, Canada and Mexico. Selected national libraries and major medical libraries in other countries are also now DOCLINE participants. In 2002 the University of Connecticut expanded its Electronic Fund Transfer System (EFTS, <https://efts.uchc.edu>) as a national initiative, under contract with NLM. EFTS serves as a billing system for interlibrary loans, eliminating the need for lenders to create invoices and for borrowers to write checks.

In addition to interlibrary lending, group purchases are another example of resource sharing in the library community. Since the mid-1990s several library consortia have been formed with the aim of negotiating licensing agreements with publishers. The growing popularity of group purchases has been due in part to significant increases in journal subscription costs as well as the growing complexities inherent in licenses for access to journals published in electronic form (Rowse, 2003). In 2002 the Ingenta Institute sponsored a study of consortial purchases among libraries. A survey conducted by Don King as part of the study found that negotiations can often last more than a year, with developing a customized license and securing the agreement of all consortium members requiring significant investments of time. The Ingenta study also found that consortial agreements have been easier for larger publishers to undertake, though smaller publishers are now forming multi-publisher consortia to allow them to undertake negotiations with library consortia (King and Xu, 2003).

Permission to share the content of electronic journals through interlibrary loans and with unaffiliated health professionals must typically be negotiated as part of a library's access license. To encourage and support libraries' negotiation of these terms, the NN/LM formed the E-Licensing Working Group in 2004. The Working Group has identified training opportunities related to the negotiation of "e-licenses" and has encouraged the sharing of model language that can be incorporated as part of license agreements, such as has been made available through Yale's Liblicense Web site (www.library.yale.edu/~license).

Health sciences libraries have also collaborated in the sharing of information about their collections, budgets, staff size and their clients' use of their resources and services. Since 1978 academic health sciences libraries in the United States and Canada have shared these data as part of a survey known as the *Association of Health Sciences Libraries Annual Statistics* (Shedlock and Byrd, 2003). Hospital libraries have similarly shared data as part of a more recent "benchmarking initiative" coordinated by members of MLA's Hospital Library Section (Rand and Dudden, 2002; Todd-Smith and Markwell, 2002).

V. Health Sciences Librarians' Education and Professional Development

Formal education in medical librarianship had its beginnings with a course on hospital librarianship provided in 1937 at the University of Minnesota

Library School. The Instructor, Thomas Fleming, offered a similar course on "Bibliographic and Reference Service in the Medical Sciences" at Columbia University in 1939 (Hill, 1972). As part of her 1946 MLA presidential address, Mary Louise Marshall advocated the establishment of standards and certification for the practice of medical librarianship. The first attempt at this began in 1949 with MLA's "Code for the Training and Certification of Medical Librarians." Bell's (1996) review of MLA's credentialing program covers the period 1949 through 1994 and highlights the creation of the Academy of Health Information Professionals in 1989 as well as the revision of that program in 1994. The Academy now includes more than 1300 members at five membership levels. MLA continues to support instruction on health sciences librarianship in graduate degree programs by making course syllabi available through its Web site at www.mlanet.org/education/libschools and through the activities of its Medical Library Education Section.

Released in 1991, MLA's *Platform for Change* identifies the competencies and educational needs of medical librarians. Developed by an MLA task force with Fred Roper as chair, *Platform for Change* represents a consensus statement about the knowledge and skills members of the profession need in order to fulfill their responsibilities (Roper and Mayfield, 1993). These include competencies grouped in seven broad domains:

1. Health sciences environment and information policies.
2. Management of information services.
3. Health sciences information services.
4. Health sciences resource management.
5. Information systems and technology.
6. Instructional support systems.
7. Research, analysis and interpretation.

Since its publication *Platform for Change* has significantly influenced the development of the Academy of Health Information Professionals as well as the content of continuing education classes provided through MLA.

An array of fellowship programs are now available to support health sciences librarians' efforts to gain additional expertise. One of the earliest of these programs, NLM's associate fellows program, began in 1957 and has fostered the training of more than 200 health sciences librarians, many of whom entered the program directly from graduate degree programs (Carle, 1995). NLM and the Association of Academic Health Sciences Libraries have also recently collaborated in a program that fosters year-long mentoring relationships between health sciences library directors and library staff at other institutions with an interest in leadership opportunities. Other

fellowship programs available through NLM include a week-long informatics program begun in 1992 and held in Woods Hole, Massachusetts.

Shortly before her death in 2002, Winifred Sewell created a foundation to sponsor health sciences librarians interested in attending health professional conferences such as the *Annual Meeting of the American Public Health Association* (www.sewellfund.org). With a similar goal of deepening librarians' understanding of the needs of those they serve, the Sewell Fund now also sponsors year-long fellowships for health sciences librarians interested in working more directly in the environments of researchers or health professionals.

VI. Informatics

Libraries are now taking advantage of the increasing prevalence of computer applications in health care settings to make knowledge-based resources more readily available at the point of care. NLM's Integrated Advanced Information Management Systems (IAIMS) grant program, begun in 1984, responded to a need articulated in a report by Matheson and Cooper that called for the integration of disparate information systems across health care environments, including an integration of clinical systems with the knowledge-based resources typically managed by libraries (Matheson and Cooper, 1982). Since the beginning of the program, IAIMS grants have been made to 50 organizations, with total funding in excess of \$58 million (Florance, 2005).

In addition to promoting the integration of knowledge-based resources with clinical information systems, library and information science researchers have also conducted numerous studies of the information-related behavior of health professionals and students in health professional programs. These studies have found that health professionals experience many information needs that remain unresolved at the conclusion of patient encounters (Covell *et al.*, 1985; Gorman and Helfand, 1995) and that level of education correlates positively with the frequency of information needs (Cogdill, 2003). A number of studies have also investigated the health information needs and information seeking of the general public (Calabretta, 2002). These studies of health professionals' and consumers' information-related behavior represent a growing body of social science research within informatics.

The general success of informatics as a discipline can be seen in physicians' now routine reliance on resources such as palm-top applications for drug information and clinical reference data. Systems to support prescription orders and data, many available with triggers or reminders to reduce the

frequency of errors, are also commonplace. Other tasks in the hospital environment now routinely benefit from computer support, including laboratory systems, and billing and financial management systems. The prevalence of these systems represents a significant advancement from the earliest information systems developed in a handful of hospitals in the 1960s and 1970s.

Several factors have led to the successes seen so far in the application of computers in health care. NLM's support of informatics training programs and the formation of professional associations devoted to informatics are among the most significant factors contributing to these successes. Since the early 1970s NLM has fostered the development of the academic field of medical informatics by awarding training grants to universities across the United States. The Stead Report, released in 1971 and named for its editor, Eugene Stead, pointed to the need for training programs addressing the use of computers in medicine (Stead, 1971). The maturation of informatics as a professional field reached a milestone in 1990 with the formation of the American Medical Informatics Association (AMIA). Commercial entities involved in clinical information systems have similarly come together as part of the Healthcare Information and Management Systems Society (HIMSS).

The widespread recognition of the potential for clinical information systems to improve health care was evident with the creation in 2004 of the Office of the National Coordinator of Health Information Technology (ONCHIT) in the Office of the Secretary of the Department of Health and Human Services. Public recognition of the potential value of clinical information systems was also evident with the 2004 release of Executive Order 13335, in which President George W. Bush called for the adoption of interoperable computer-based patient records within 10 years.

The development of interoperable hospital information systems to support the transfer of computer-based patient records among institutions remains a significant challenge. Led by the Regenstrief Institute, a partnership of 15 hospitals in the Indianapolis area has succeeded in developing and deploying such a system (McDonald *et al.*, 2005). The Veterans Health Information Systems and Technology Architecture (VISTA) is another example of the successful development of such a system, supporting the transfer of records and data among veterans' hospitals across the United States (Morgan, 2005). Other examples of such systems can be found in countries with centralized health services models (Doupi *et al.*, 2005). Shortliffe (2005) has noted that the fragmentation of the health care system in the United States has led to decisions about IT being made at the local level with local optimization as a goal. He notes that this has resulted in poor coordination and an absence of accepted standards.

A significant step toward the adoption of standards occurred when Congress authorized the [Commission on Systemic Interoperability \(2005\)](#) as part of the Medicare Modernization Act of 2003. The Commission's final report, released in October 2005, outlines a strategy for creating a network to support the exchange of health information, with attention given to the financial and medical costs as well as the benefits associated with such a network. This strategy builds on the success of efforts such as the interoperable systems at the Regenstrief Institute and other Indianapolis hospitals. It also offers direction toward what Bill Stead has envisioned as "regional IAIMS" (Stead, 1997).

VII. Health Information Outreach

In addition to making knowledge-based resources more readily available at the point of care, libraries have also focused on broadening access to health information resources among members of the larger communities they serve. NLM's support of health information outreach efforts can be traced to the DeBakey Report, released in 1989 and named for its editor, cardiologist Michael DeBakey, who had served as chair of the 1965 President's Commission on Heart Disease, Cancer and Stroke. The 1989 DeBakey Report built on the success of Grateful Med and Loansome Doc in meeting many of the information needs of health professionals, accomplished in partnership with NN/LM member libraries. A focus of the DeBakey Report was meeting the needs of health professionals unaffiliated with an institution providing library services, especially those practicing in rural and inner city communities. To achieve this goal it is recommended that RML staff be increased and that they act as a "field force" in promoting NLM's products and services and focus on providing information and services directly as well as through NN/LM member libraries (DeBakey, 1989).

Demonstrating Grateful Med and providing training on its use were the focus of many of NLM's earliest outreach projects. Between 1990 and 1993 NLM funded 58 Grateful Med projects led by libraries in academic health sciences centers, hospitals and other health care organizations. More than three-quarters of these projects focused on health professionals practicing in rural communities, and almost half focused on minority health professionals and those serving primarily minority populations. The training conducted as part of these projects reached more than 8000 participants (Wallingford *et al.*, 1996).

The expansion of NLM's mission in May 1999 to include the promotion of information access for the general public as well as health professionals

significantly influenced its outreach efforts. A consumer health outreach coordinator was added to the staff at each of the eight RMLs, and several projects were funded that focused on consumer's health information needs. To assist the planning of outreach projects, the NN/LM published *Measuring the Difference: Guide to Planning and Evaluating Health Information Outreach* in 2000. Written by Burroughs and Wood (2000) and available online at <http://n.nlm.gov/evaluation/guide>, this guide draws on principles from health education and other disciplines to provide guidance for librarians and others planning health information outreach projects. Also in 2000 NLM funded 53 projects through the NN/LM that focused improving consumers' access to health information in electronic form. Forty-two of these projects entailed institutional collaborations, many of which were between health sciences and public libraries. Approximately 13,750 individuals participated in the 820 training sessions conducted as part of these projects (Ruffin *et al.*, 2005).

NLM's efforts in outreach have continued to grow, with more than 1000 subcontracts and other awards funded through the NN/LM between 2001 and 2005. These have resulted in more than 8000 training sessions and other outreach activities that have reached more than 100,000 health professionals, librarians and members of the general public. Many of these projects focus on meeting the information needs of public health personnel and on efforts at eliminating health disparities.

Efforts to improve access to information among public health personnel were significantly influenced by a forum convened at NLM in April 2001. The forum's goal was to identify best practices and lessons learned from outreach to the public health workforce. Forum participants articulated lessons learned in four domains: assessing the information needs of public health workers; identifying project objectives and outcomes; developing partnerships and the sustainability of projects and fulfilling information needs through Web-based resources (Rambo *et al.*, 2001). Responding to the need for a Web portal with links to resources of interest to public health personnel, NLM has since collaborated with several other public health agencies and organizations to develop PHPartners.org (Banks *et al.*, 2005).

VIII. Conclusions

The past 35 years have seen remarkable transformations of health sciences libraries, both in terms of the resources they make available and the services they provide. Many of these developments can be traced to the development of MEDLARS in the 1960s and the MLAA of 1965. MEDLARS data became

widely available in the years between 1970 and 2005 with the arrival of MEDLINE as an online interactive system and the subsequent broadening of its user base when it became available free of charge through the Web-based PubMed system. A host of other health-related bibliographic and factual databases have since emerged as important complements to MEDLINE, and new resources such as systematic reviews and evidence-based practice guidelines are now available to help clinicians and consumers make sense of what can be a tremendous amount of often conflicting information.

The RML program that began with the MLAA of 1965 has succeeded in distributing the effort of resource sharing among the members of what is now the NN/LM. The collaborative relationships fostered through the NN/LM are now helping members address the challenges related to electronic licensing. These relationships have also fostered the formation of library consortia and facilitated group purchases of content in digital form. Building on its success in resource sharing, the NN/LM has also served as an infrastructure to support collaborations in health information outreach.

Looking to the future, the steady movement toward electronic publishing raises several questions and opportunities for health sciences libraries. As more publishers adopt an open access model, it is possible that libraries will have a more significant role in facilitating the online submission of reports and data by members of their institutions. It is also likely that libraries will continue to promote access to knowledge-based resources at the point of care, possibly integrating these resources with their institutions' clinical information systems. It can also be expected that many libraries, depending on the needs of their organizations, will continue to serve the important role of being a place. Many other institutions, however, are likely to abandon the idea of their library being primarily defined as a place in favor of its representing a professionally managed array of resources and services available at or close to the point of need. Regardless of the form information resources and services may take in the future, it is certain that professionally trained librarians will continue to be needed to promote information access and use across the organizations and communities they serve.

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Oral History: Prospects and A Retrospective

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I. Oral History Then and Now

In 1971 the second volume of *Advances in Librarianship* contained a chapter titled “Oral History: Problems and Prospects.” Written by Louis Starr, then director of the oral history program at Columbia University, it offered a wide-ranging assessment of a field of work that was just beginning to coalesce. The first national colloquium on oral history had been held only 5 years earlier, in 1966, and the term oral history had not achieved the popular distinction it enjoys today.

Organized collections of oral history existed in only a few places—among them Columbia, UCLA, and the University of California at Berkeley. But they were slow to gain recognition, and slower yet to gain institutional support and widespread credibility. Despite the leadership of such scholars as Allan Nevins, who began recording interviews in 1948 and tirelessly promoted it thereafter, oral history was viewed with a mixture of misunderstanding and skepticism for many years. By the time Starr wrote his chapter, however, the ranks of the skeptics were thinning while those of the practitioners were increasing rapidly throughout the United States.

It is interesting to review Starr’s chapter, much of which was—of necessity at that time—devoted to defining oral history and examining its claims to value as both a scholarly and a popular resource. I will refer to his comments as the occasion warrants, in particular his assessment of the future, as he perceived it from the vantage point of the early 1970s. But defending oral history is no longer necessary as even those not among its adherents seldom dispute its worth as this is written in 2006. And its greatly increased popularity, evident even to Starr in 1971, has long since made it a staple of library and archival collections around the globe.

Indeed it is the internationalization of oral history that is among the most telling measures of its increased visibility, popularity, and credibility.

I will deal with that phenomenon below. Within the United States oral history's rapid growth is reflected not only in the number of major institutions now involved in creating and holding oral history collections, but in the countless civic, community, church, and family oral history projects that seem to proliferate without check each year. While many of these do not produce products that find their way into catalogued collections, others do, filling shelves and challenging librarians and archivists at local public libraries and historical societies in every state.

Oral history's entry into the documentary mainstream has been far from smooth, complicated by the sheer realities of producing final products from recorded interviews, and the preservation challenges involved in dealing with inherently unstable media. These realities have not proved as daunting as one might expect to the practitioners, however, much as they concern librarians and archivists charged with ensuring the ongoing preservation and access to the oral histories they hold. Indeed issues relating to preservation and access pose perhaps the greatest challenges the field of oral history faces in the years to come. I shall deal with those issues a bit later in this chapter.

II. Defining the Term and the Work

The term "oral history" is now so commonly employed as to appear to have been in use forever. It is a relatively recent invention, however, and its imprecision and inadequacy have been noted and discussed for several decades. No better term has achieved widespread use, however, and by now the term is so firmly embedded and universally employed that it is unlikely to be replaced.

The generally accepted imprecision of the term "oral history" to describe both the process and the products of recorded interviews is very real, however, and the term itself has often created problems as the oral history movement organized and became global. It is a term that can easily be misinterpreted, and has at times proven confusing especially when employed in international settings in which oral tradition may play a key cultural role. That same reality has led to discussion within the United States as well, particularly with regard to the question of oral history's relationship to the oral traditions of American Indian communities.

Many writers—Starr included—have noted that an oral tradition is part of many cultures, thus granting today's oral history movement links to a long and illustrious past. The difficulty faced by modern oral historians as their work penetrated every corner of the globe lies in the fact that much oral tradition does not fall neatly within the definition of contemporary,

organized, oral history. How then should it be treated, and what is the relationship in fact. This issue became the first item of business when the International Council on Archives (ICA) created an oral history committee in 1992. As chair of that committee it fell to me to lead a discussion that benefited from the insight of committee members whose work encompassed not only the oral tradition of their homelands, which included Indonesia, Malaysia, and Tanzania, but also contemporary projects documenting civic and governmental affairs that were clearly recognizable as “oral history.”

At the ICA committee’s first meeting, held in 1993 in Washington, DC, this issue received a thorough review as we considered whether the name that had been assigned the committee at its creation the year before at the Montreal ICA Congress was sufficient or misleading. It is interesting to note that oral history as a term to describe a now-global movement had achieved such wide familiarity that the group was designated the ICA Committee on Oral History. This was done despite the fact that the committee, named at ICA’s Paris headquarters and sanctioned by its governing board—comprised largely of members from beyond North America—had been formed to address issues that involved oral documents held in archives and libraries worldwide.

Although edicts from the Paris office were generally regarded as sacrosanct, committee members voted to change the name to the ICA Committee on Oral Sources. This more inclusive title, it was hoped, would help bridge the divide between practitioners of modern oral history and those involved in the preservation of a variety of oral traditions. As a ploy to create a greater sense of awareness of the diversity of oral documents it worked, though the far larger task of serving both communities of interest from one platform remained a work in progress.

III. Evolution and Direction

The evolution of the oral history movement in the past thirty-plus years has generally followed the course laid out (unconsciously in part) by Allan Nevins. That is, interviews consist of organized conversations with people chosen for their insights on a variety of issues. The field of selection for narrators, however, has broadened considerably since Nevins’ time. It began to do so within the decade of the 1960s as the sensibilities of many new users of oral history techniques led them to reject the idea that oral history should focus largely on “living Americans who have led significant lives” (Starr, 1977, p. 277). A bottom-up mentality came to pervade much oral history production, and that focus remains much in evidence today. Any one attending one of the annual meetings of the Oral History Association (OHA)

would conclude that few contemporary interviews deal with people of the “significance” implied by Nevins.

This change in emphasis is hardly universal, of course, and many oral history interviews and projects continue to deal with both national and local movers and shakers. But is incontrovertible that much attention remains focused on interviews with ordinary people from a variety of backgrounds. From farmers to fishermen to new immigrants to residents of barrios and ghettos, this trend continues to be common, especially to oral historians based in academic institutions. “Giving voice to the voiceless” has become a rallying cry for much of this production, and it has added valuable insights that have filled many a gap in the documentation of contemporary life.

It is, however, important to remember that even the supposed “elites” may be relatively voiceless, though that is not always a popular reflection. I have frequently found that corporate executives whose decisions and points of view affect the lives of thousands of employees are seldom given the opportunity to explain their views in any depth. They may be quoted briefly in corporate press releases, but hardly ever are asked to further explain and explore their beliefs and their perspectives on the world around them. Surely balance is important, and one should take the time for such interviews to provide a greater and more accurate understanding of people whose actions are of critical importance in determining the course of events in a fast shrinking world.

There are other gaps in documentation, of course, and oral history is to some extent a major tool in addressing them (Fogerty, 1983, p. 148). As the 20th century progressed the volume of traditional, paper documentation increased exponentially. The advent of word processing and computers to store and generate information has not yet produced the much-heralded “paperless office.” Indeed, the volume of paper is greater now than ever before, though the content value of the paper—per pound—is significantly less than it was 50 years ago.

This coin has another side as well. While the quantity of paper documentation has greatly increased, it has been matched in part by dramatic changes in the way information is generated, stored, and made available. Much that used to be recorded as correspondence, with copies made for retention and reference, is now both generated and saved as electronic files, which may be—but often are not—retained for future use. This is true within organizations from government to corporations, and is true of family records as well. Even if these files are retained electronically, they are at considerable risk of everything from the failure of storage media to the expensive need to transfer them frequently to more advanced storage media to allow continued retrieval and use. Many organizations mandate the periodic destruction of e-mail messages, for instance, thus removing any possibility of future use.

IV. The Present and the Past

These realities have driven the use of oral history in certain contexts. I have found repeatedly in dealing with the documentation of corporations that oral history is a critical tool—both for filling gaps and for generating information that is available in depth nowhere else within the corporate records (Fogerty, 1997, p. 251). If one wants to understand the evolution of corporate culture, of marketing and product development, and of a myriad of other realities that have shaped American and world business, oral history becomes an imperative. I still recall with great clarity one of my first meetings with Earl Bakken, legendary founder of Medtronic, Inc., the world's largest maker of implantable medical devices. At that time I was engaged in trying to convince him of the need to establish a corporate archives to deal with Medtronic's records. He did not disagree, but had a very different view of the urgency necessary to capture the story of this fast changing and relatively new industry. He told me "The records are all very fine. But if you don't know how a product was really developed—who worked with whom, how refinements were produced, which ideas worked and which didn't and why—you are missing the core of the story. None of those pieces of information are written down," he said. "They are all in people's memories." The creator of the implantable heart pacemaker was right. The corporate history program at the Minnesota Historical Society is based on that home truth—that in people's minds lies far more information than is ever written down, and that the telling of it in their own words adds immeasurable color and interest and value to the historical record.

Implicit in that reality is the increased emphasis placed on the value of information relayed in the words of the people who hold it. The use of oral history allows personal experience, viewpoints, and insight to provide critical context for other records, and can create a record where none would otherwise exist. It gives voice to participants in real events, from grass roots political efforts to international negotiations.

If there are issues of balance in the field of oral history, they tend to revolve around its use to capture a view of past events, or to create a record of contemporary events as they unfold. Oral history was first employed to accomplish the first—and recording memories of events now past remains a staple of many oral history programs. Since oral history interviews can only be conducted with living narrators, there remains a sense of urgency to capture as many memories of selected events as possible before the chance for first person accounts is erased by time. Major projects involved in documenting the Holocaust and World War II are current examples of this race against time, and have both benefited and suffered from this tension. They

benefit by focusing attention and energy on events of undoubted importance that affected millions of people. Projects focusing on those events have also benefited by raising awareness of the rapidly declining number of narrators available to recount their experiences, and have thus succeeded in marshaling impressive resources to accelerate the creation of interviews.

The movement to create such projects has caused some to suffer as well from a mad rush to create interviews with any and every possible narrator, however inarticulate or repetitive that person may prove to be. That reality has produced a significant dilution of quality in such projects. Every person may indeed have a story, but many are inevitably repetitive and not all individuals are great storytellers. A mundane story in the hands of an articulate and lively narrator will always outrank in interest and use a more compelling story told by someone who simply cannot give it life.

On the other hand, there is a similar urgency to create interviews that document contemporary events, which Louis Starr himself once called “history while it’s hot.” This sort of interview creates a very different product than the retrospective, but one no less valuable if well done. One challenge in creating interviews on contemporary events is that both interviewer and narrator cannot help but be affected by the heat of the moment and the pace of events as they unfold. There is little chance to step back and gain balance, and in some instances little compunction to do so. As an analogy, such interviews are considerably closer to snapshots of a moment than to films that cover a period of time. Narrators can only comment on what they know and how they feel at the moment of the interview—without any opportunity for the perspective gained from the fact that events evolve over time and one’s views tend to evolve as well, influenced by later developments that cannot be foreseen.

V. A Case Study in the Oral History of Contemporary Events

I recall very well my first venture in creating an oral history project based on contemporary events. At that time the Minnesota Powerline Construction Oral History Project represented the Minnesota Historical Society’s largest single venture in the documentation of current events (Fogerty, 1985, p.77). The project began in October, 1977, and continued through December, 1979. A single researcher and interviewer was employed during the project’s 2-year duration. Edward P. Nelson performed all of the basic research, maintained project files, and conducted all of the interviews. He framed interview questions in consultation with me, and I participated in several interviews concerning electric utility operations.

Research for the Minnesota Powerline Construction Oral History Project began early in 1977, and included preliminary interviews with individuals on all sides of the issues. It also included review of local and regional newspapers and radio broadcasts for the preceding 2 years to provide background for the project and the interviewer. In addition, data was gathered from the Rural Electrification Administration and other federal agencies, from Minnesota state government, and from the utilities. Included were transcripts of public hearings, copies of relevant legislation, maps, and special reports. At the same time, project personnel were placed on the mailing lists of protest organization newsletters, and received notices of their meetings.

Narrators were carefully selected from long lists of those representing all major viewpoints, and the final group included farmers and townspeople from the affected areas, both opponents and proponents of the line; state officials from the Department of Natural Resources, the Minnesota Environmental Quality Board, and the Governor's Office; officers and board members of the cooperatives building the line as well as from retail electric cooperatives; a county sheriff; and several state legislators. The interviews varied with the nature of each narrator's involvement in the controversy, but all were correlated to provide a firm base for comparison of views and motivation.

A key challenge to those conducting any oral history project is especially relevant when documenting current events. That is the maintenance of some distance and objectivity on the part of the interviewer. It is fine for narrators to showcase the passion and beliefs that lead them to involvement in current events, but it is critical for interviewers to remember that they are facilitators, not participants. The interviewer who becomes a participant changes the entire dynamic of the interview, and greatly influences its quality and credibility.

The Powerline Oral History Project succeeded in large part because those operating it were outsiders, without a stake in the outcome and without evident bias. Maintaining objectivity is not simple, especially when one is documenting a highly emotional issue, but as emotions rise objectivity is all the more necessary to the maintenance of interview discipline. The careful structure and execution of the powerline project paid dividends, and by 1981 when the crisis was resolved it was already evident that the information available on tape would not have been preserved through any other means, and that it was gathered none too soon.

There is little doubt that oral histories documenting the past far outnumber those dealing with contemporary events. In part this reality is fed by the fact that perspective allows one to judge better what to document, and that people are, perhaps, inclined to discuss the past more readily than the present world that unfolds each day around them. The use of oral history to document the history of organizations (such as churches, schools, and

businesses) on the occasion of anniversaries is another factor, as is the ever-increasing interest in family history.

A further factor, however, may well be the difficulty interviewers face in separating themselves from the emotions that surround current events, and the very real considerations that are involved in undertaking interviews on highly charged issues of the moment. Some of the best oral history focused on the present is that documenting the current status of immigrant communities. Columbia has done superb work on this front in New York, as have the programs at UCLA and Baylor University among others.

VI. Oral History and Immigrant Communities

The creation of oral history interviews with recent immigrants is a particularly useful example of oral history's importance as a documentary tool. Libraries, museums, and historical societies hold much of our history—but they have been (and remain) largely devoted to the collection of “things.” Libraries collect books and related items, museums collect everything from furniture to clothing to art, and historical societies the diaries, letters, and photographs of individuals. Of course there is overlap among these institutions, but in main they are all collectors of items that have already been created.

This reality poses a major obstacle to the documentation of immigrant communities, since few of their members arrive in a new home supplied with the sort of things that form the traditional collections that libraries, museums, and historical societies have built up over time. And when they have had a few such items, they have not unnaturally been more interested in maintaining these items as keepsakes, rather than giving them up to institutions about which they know little.

Oral history has proven a great tool in the documentation of immigrants. Everyone has a story, and many are willing to tell their stories once they have become acclimated to a new country and understand the purpose of the interviews. The stories are immediate, and one does not need to wait for a second generation to create a history of each successive group to settle in a community. Indeed, oral history is especially well equipped to document generational differences in immigrant communities within only a few years of arrival. The Minnesota Historical Society has completed no fewer than five projects in cooperation with the Asian Indian community, and other projects with the Hmong, Somali, and Mexican communities in the state. The latest such project documents the experiences of members of the Tibetan community, now the second largest in the nation.

Oral history allows interaction with immigrant communities very soon after arrival, thus bringing staff of cultural and educational institutions together with community members, giving value to the immigrant experience and enriching the institutions as well. This sort of use provides one more explanation for the popularity of oral history as a documentary tool.

VII. The Construction of Oral History: Interviewers, Narrators, and Postproduction

Very few librarians or archivists are oral historians, and the reverse is true as well. To deal effectively with oral history in a library or archival environment, however, it is vitally important to understand its construction—the ways in which oral history interviews are generally created. This subject has generally been ignored—both by librarians and archivists who have preferred to treat interviews as collection items without reflection on their creation, and (unfortunately) by oral historians themselves who have often been content to treat interviews as complete the moment the recording session ends.

Neither view is helpful, since oral history interviews do not always stand well alone like published memoirs, and often need to be linked to related interviews to acquire added meaning and value. Just as the writing of a book is not really complete until it is edited, provided with illustrations, a title page and other additions that increase its value to users, the creation of an oral history interview is not actually complete until the finished transcript has rolled out of the local print shop. And it cannot effectively be used until it can be found—located in a library or archives catalog and thus made available to potential readers.

A. The Major Players

Oral history depends on two major players for its creation. Others may become involved in the process at various points in the creative process, but the interviewer and the narrator are the essential players.

1. Interviewers

The interviewer is one of only two major players in the creation of an oral history interview. The selection of an appropriate interviewer is a critical step in every oral history project, since that person will help shape the interview through the questions asked and the environment created as the interview progresses. An unskilled interviewer, or one who is mainly interested in

validating his or her own point of view, can destroy any potential oral history at its start. A skilled interviewer, careful to guide but never lead and to create a climate of comfort for the narrator, can greatly assist in the creation of an interview of lasting value.

Today the interviewers for major projects are often freelance professionals drawn from fields related to the subject of the interviews they conduct. Few oral history programs can afford to maintain full time oral historians who conduct every interview, and fewer yet have found in-house interviewers to be useful in conducting multiple projects. One reason for this development, which is a marked change from the much smaller world of oral history chronicled by Louis Starr in 1971, is the increased volume of oral history and the complexity of the subjects it embraces. It is difficult for even the best educated interviewer to become knowledgeable on every subject that might possibly warrant interviews. And it is expensive—and indeed largely impossible—for one interviewer to acquire the depth of knowledge necessary to conduct meaningful interviews on multiple subjects. It is often said that the most important questions an interviewer poses may be those that follow up a narrator's response with an inquiry for further information. It is difficult to spot the need for additional inquiry, much less to pose such a question, if one has little expertise in the subject at hand.

With quality in mind—as well as expediency—many oral history programs employ interviewers who are engaged for specific projects in which they have demonstrated expertise. The project *Pioneers of the Medical Device Industry in Minnesota* to which I have referred employed two interviewers with extensive knowledge of the development of heart pacemakers. The recent project on Tibetan immigration was directed by an individual who has studied Tibetan communities in Nepal and India, as well as in Tibet.

Of course, the vast majority of oral histories encountered by librarians and archivists are those undertaken by local organizations and run by volunteers. But those projects as well involve people with knowledge of the civic or community organization in question, who need only training in the basics to produce useful interviews.

2. Narrators

The other major player of course, is the narrator whose story forms the interview text. The selection of narrators is often the most interesting and contentious phase in project development. With few exceptions there are always more potential narrators than one can (or should) interview. Including some people and excluding others is a difficult but necessary part of the process. The completed field of narrators should offer a variety of perspectives that enrich the final product by their diversity.

One way in which to assess oral history interviews for acceptance into a library or archival collection is to review the descriptions of each interview and its narrator to ensure that there is both balance and substance in the project. Individual interviews can also be assessed by a simple review of content to ensure that they are worth the shelf space devoted to them. For instance, interview transcripts that reveal large blocks of text attributed to the interviewer, with relatively little attributed to the narrator, may safely be declined. If the narrator—who is, after all, the storyteller and focus of the interview—has little to say, or is prevented from saying it by a voluble interviewer, the value of the interview content is questionable.

B. Postproduction

One concern evident in 1971 that continues to cause concern today lies in the reality that the work of preparing oral history interviews for use does not end when the interview itself ends. Just as some interviews suffer from a lack of preparation on the part of the interviewer, many more suffer from a failure to deal with postproduction issues. This failure bedevils librarians and archivists when they are offered interviews for their collections. Postproduction involves several steps, each of which is necessary to ensure a useable product (Fogerty, 2006).

1. Transcription

Transcription of the interview is the most important element in the post-production process. It is critical to ensure that interviews are accessible to users, and that the narrators have a completed document to show for their efforts. While the tape or disk on which the interview is recorded remains the primary document, it is seldom used. The cumbersome work of searching audio files makes most users disinclined to follow that course. Production of a transcript provides users with a document that can be reviewed efficiently in either paper or electronic form. The fact that all transcripts have been produced electronically for many years means that a substantial volume of work is available in that format, although printed transcripts are more likely to be the medium in which most are accessed.

The creation of a transcript is usually more complicated than it might seem at first glance. The transcriber must be skilled at dealing with a wide variety of speech patterns, accents, and subject matter. And the completion of an initial transcript is only the first step. Editing is necessary to ensure that personal and place names are correctly given, and that the flavor of the narrator's speech is preserved while recognizing that some editing will probably be needed to ensure readability.

2. Binding

Librarians and archivists alike will prefer that each interview become a separate volume, printed, bound and with copyright and publication date plainly noted. While this adds an expense to the postproduction process, it also produces a far more attractive and useable tool, and one that will please the narrator as well as the eventual users. Many published transcripts include at least a photograph of the narrator, and frequently others that illustrate people, places, and events described in the interview. The ease with which photographs can be scanned for use (and thus returned to the narrator or other sources without expensive reproduction) makes their inclusion in the published work far more feasible than it was only a few years ago. Each transcript should also have the title page, copyright, and publication information so necessary to library and archival cataloging. Copyright is usually retained by the institution creating the interview.

3. Cataloging

Even the cataloging of oral histories has become simpler through standardization in recent years. The treatment of oral history interviews in library and archival catalogs was problematic for many years—a fact that dismayed those oral historians anxious to see their work made as easily accessible as any book. But without fixed rules for dealing with interviews and their multiple products—transcripts, audiotapes, and perhaps videotapes as well, library and archives catalog staff were often perplexed and arrived at widely differing solutions. To deal with these issues the OHA and the Society of American Archivists (SAA) created a project that eventually produced the *Oral History Cataloging Manual*. The use of this publication, created with extensive input from representatives of the American Library Association, Library of Congress, and the OHA and SAA, has greatly improved access to oral history interviews.

VIII. Paper and Electronic Versions

I have alluded to the fact that virtually all oral history transcripts exist in both paper and electronic form. While the printed, published version is the most frequently used, the explosive growth of the Internet has raised the ante for many institutions holding oral history collections. The reality that oral history transcripts can be easily made available through the Internet to users worldwide is enticing to many, as is the fact that the electronic versions offer

users the opportunity to conduct word searches that can highlight information and reduce research time.

The possibility of electronic access is not without its drawbacks, as one might expect. The truth is that few publishers choose to make full text of their copyrighted works available for free and unrestricted access in this manner. Oral history is no exception to this reality. The production of an interview, entailing research, travel, transcription, editing, and publication represents a significant investment, and few institutions are willing to provide their oral history products without some control over the use and reproduction of these products. There is also the relationship with the narrator to be considered. Not all people are comfortable with the idea that their interview transcripts will be accessible to absolutely anyone in quite so public and unfettered a forum as the Internet. In an age of concern over privacy and identity theft, these concerns are understandable and must be addressed. The creation of a few businesses that broker the use of transcripts, books, and other publications is one solution in the making, for they establish the identity of users through their payment for access to publications, and thus ensure serious rather than casual or frivolous use.

While the advent of the electronic age has created as well as solved problems in oral history transcript preparation, in general the changes have been highly beneficial to oral history. Louis Starr could not have foreseen the dramatic reduction in transcript production costs that word processing has made possible. In his day, which I remember only too well, transcripts were laboriously prepared on typewriters, thus ensuring that each successive edit would produce a seemingly endless process that required the retyping of countless pages and indeed entire volumes. Electronic transcription, and the ease of incorporating edits and indeed the reformatting of entire documents, has revolutionized transcript production.

The printing and publishing of oral history transcripts has similarly been transformed. It is now possible, for instance, to create a PDF (Portable Document Format) file that freezes the entire transcript, from front cover to back cover, in a file that can be easily sent to the printer as an e-mail attachment. Such files contain everything from the title and copyright pages, all of the illustrations, to the entire text of the interview—all encased in a format that allows the printer, with ease and little chance of mistake, to print and bind a specified number of copies on whatever paper stock has been chosen by the sender.

Such innovations, together with the ease of scanning photographs and other illustrations, have greatly expanded the ability of an oral history program to produce high-quality transcripts that please narrators, users, and the librarians and archivists who must catalog them. This revolution in

transcript publication has been accompanied by a concurrent decrease in the expense of doing so. This combination of increased publication options with decreased expense has enabled oral history programs everywhere to expand both their production and their reach.

IX. Funding Oral History

While speaking of expense, it would be remiss not to deal with the issue of finance—a topic that Starr noted with mingled gratitude to the donors who gave life to Columbia's oral history office, and despair at the difficulty he (and Nevins before him) found in attracting such support. I wish very much that I might announce that the dramatic reduction in transcript preparation had been accompanied by a similarly dramatic increase in funding for oral history programs. Unfortunately that is not the case. While the options for funding oral history have undoubtedly increased, many programs still exist with less than adequate institutional support, living from grant-funded project to grant funded-project. Fundraising is a fact of life for oral historians, including those working at the largest and best-known programs.

That said, there can be no doubt that oral history does attract considerable interest in many quarters, and thus a reasonably large pool of potential donors to tap. Much of this funding is based on appeals to individuals and to private foundations, based on their interest in the subject matter of specific oral history projects. Acquiring funding in this manner is time consuming at best, and often an onerous burden on staff members whose time is already spread thinly over a variety of undertakings. It is reality, however, and has probably made many oral historians as resource-conscious as any group of professionals.

As someone who has been involved in the production of oral history for more than 30 years I am often asked how and where some individual or group might acquire the funding to launch a project. Each inquiry is clearly made with the hope that anyone who has managed programs for three decades must have found the perfect source for funding. Alas that I have to dash those hopes. My advice at all times is to cast a cold, professional eye over the prospective project, gauging its likely interest to potential funding sources. Most oral history is inherently local, and thus it is always best to begin at home—in the locality likely to contain the largest possible number of funding options. Since few oral historians are trained fundraisers, this advice is seldom welcome. Most would like to believe that there is some benevolent federal or national source that could obviate the need to visit local donors and convince them, eye to eye, to fund one's project. That is the most likely

scenario for success, however, and thus the one most successful programs follow in the end.

Following that course may be time consumptive, but the rewards of matching a useful project with an interested donor is rewarding. And in doing so one has often created not only funding for the project at hand, but a donor with interest in funding future projects as well. Recent fundraising for several Minnesota Historical Society projects yielded a case in point. I had hardly begun the process of seeking funding for our latest such projects, with the Tibetan and Hmong communities, than the bank with which I was working on a separate event, expressed interest and later funded both projects. Such happy marriages of interest and opportunity do not always occur, but the knowledge that funding is always needed makes one far more aware of the landscape of opportunity.

Issues involved in the creation of oral history, including funding, ethics, transcription, editing, and publication have led to the formation of a number of regional, national, and international organizations within the past 30 years. In the United States the largest and most successful is the national OHA.

A. The OHA

In 1971 the OHA in the United States was in its infancy. It was already active, having issued a brief set of guidelines that Starr reproduced at the conclusion of his piece. Since that time the OHA has grown and prospered, and today includes more than 1100 members who hail from all 50 states and 32 foreign countries. The most recent annual conference, held in Providence, Rhode Island, brought together more than 600 individuals from across the United States as well as others from Mexico, Canada, New Zealand, Israel, the United Kingdom, Germany, India, and the United Arab Emirates.

The OHA publishes a respected journal, the *Oral History Review*, twice each year, and a quarterly newsletter. It has also created a series of publications on subjects ranging from legal issues to the use of oral history in schools, to the widely distributed *Evaluation Guidelines*. The latter is an 18-page publication that replaces the brief guidelines Louis Starr included in his 1971 chapter. To include the evaluation guidelines of today would be impossible in this space. Its length testifies to the increased complexities that face oral historians today, as well as to the reality that the explosive growth of oral history over the past 35 years has brought with it—as in so many other fields—considerations that could not have been forecast from that earlier vantage point.

The discussions that produced these documents were often lengthy and intense, as the participants wrestled with evolving issues of legality,

copyright, access, use, narrator's rights, and a plethora of related concerns. The profession has done remarkable work in crafting guidelines that speak to oral history programs of all sizes and levels of complexity, in terms that are applicable to each.

The OHA has accomplished all this despite remaining an organization largely run by dedicated volunteers, elected by the membership. It does now boast a central office, headquartered at Dickinson College in Carlisle, Pennsylvania, and led by a professional manager. Beyond that, however, it remains very much a creature of its membership, and as such responsive to the evolving role of oral history in all the locales in which it is created.

X. Navigating the Digital Ocean

This is not a forum in which to deliver detailed technical advice. There are many options for exploring the technical possibilities involved in recording oral history in the digital age. The profession has come a long way from 1971, when the postwar revolution that brought magnetic tape transformed the interviewing process and vastly expanded the opportunities for recording oral history. Wire recorders rapidly gave way to magnetic tape, and the tape itself rapidly improved in terms of performance, clarity, and longevity. Reel to reel tape gave way in its turn to high-quality cassette tape, which remains a staple of oral history recording to the present.

Digital recording equipment has been available for some time, and as is usual with innovations has dropped in both price and complexity in recent years. One difficulty in dealing with digital equipment is quite simply the variety of options and the relative speed of change that renders expensive recording equipment obsolete in short order. It is reminiscent of the early days of personal computers, when frequent major improvements in reliability, compatibility, and storage volume rendered recent models nearly obsolete and made each purchase of equipment a leap of faith.

The same is true at this writing of digital recording equipment, both audio and video. As with computers, the advances will eventually subside to a manageable level, and the prices and complexity will undoubtedly continue to subside as well. That said, the digital age does present oral historians—and the librarians and archivists who must deal with the products of oral history—with significant challenges. For many libraries, archives, and oral history programs that do not have access to giant servers with extensive backup, the fact that both the audio and text files of an interview are downloaded for storage in electronic form is not necessarily a guarantee of permanence. Many programs have taken to generating paper files, creating

compact disks with interview text, illustrations, and even audio, and even creating magnetic tape copies for insurance. The investment made in creating an interview—from research through interviewing, transcription, editing, and publication—is substantial, and few are willing to trust digital files as their only storage medium at this time. Too many people have experienced computer failure and the corruption of data from a variety of external and internal problems to trust their files to that medium alone.

Even a brief review of the last 40 years would give one pause in predicting the technical realities of oral history recording for the future. But magnetic tape and associated recording equipment did reach a long period of relative stability, and it seems likely that digital recording will eventually achieve a similar reality.

XI. Audio vs. Video

This is perhaps the best point at which to note in passing the seemingly eternal debate over the relative advantages (and disadvantages) of audio vs. video recording (Charlton, 1984, p. 228). Those who find that audio recording allows a more intimate and personal relationship with the narrator are at odds with those who find the visual image of a narrator to be central to the interview and its eventual products. And then there are those, like me, who employ both at various times and find both useful tools in creating oral history.

The advent of reasonably priced video recording equipment made widespread use of it in oral history a possibility, and gave rise to considerations Louis Starr could not have foreseen. The fact that video production values demand the presence of at least a camera operator, and usually a sound engineer as well, means that the interview setting is no longer composed of interviewer and narrator alone. Some view this as an intrusion that effectively destroys intimacy and conversation, while others see it as a challenge easily overcome by a skilled interviewer. That video is not useful in every interview seems too obvious to need repetition.

Taking everything into account, the use of video should be undertaken only when it brings something unique to the project. The most thoughtful and appropriate process for creating video history is one I have dubbed the “Perlis Plan” in tribute to Vivian Perlis of Yale University. A pioneer in defining the use of video in oral history, Perlis discarded the idea of simply turning the camera on a seated narrator and letting the tape run. Instead, she correctly noted that what users wanted was to see the things the narrator described, or better still, to see the narrator doing something rather than talking about it. Video footage of a farmer using his land and showing the

accommodations he has made to balance production and ecology, for example, offers a great deal of visual information to supplement the interview text.

A critical consideration in the production of video oral history is the fact that, especially with background or illustrative material, one is creating raw footage for possible future use. Unlike the details of audio and videotape in which the narrator appears directly, background footage is created largely on the speculation that it will prove valuable to future users. It should be *informed* speculation, of course, based on a genuine understanding of how such material is likely to be used in television and film production. If carefully produced, background footage may have residual value that outweighs that from the associated interviews. The Minnesota Historical Society has found that footage of dawn breaking over a northern lake, people settling in to campsites, and children playing in the headwaters of the Mississippi River has definite value to television production companies for whom the choice of sending a crew to create such images is far more expensive than licensing existing material.

These considerations are highly important when assessing both the value videotape may add to oral history, and the archival and preservation realities that will be faced when the video—as well as the audio—tape finds its way into the permanent collection. It is the latter consideration that is of concern to the librarians and archivists charged with preserving the material in their charge for future, as well as present, use. That videotape—in any of its various formats, including digital—is hardly permanent is no revelation—or ought not to be. (High-quality audiotape has a much longer shelf life, but cannot be presumed eternal either.) That said, video production has a very definite place in oral history, and in the highly visual age in which we live one would be foolish indeed not to carefully incorporate it into any oral history program.

XII. The Present and the Future

Assessing the present state of oral history is a necessary exercise to define a basis for evaluating progress and for informed speculation on the future. Today oral history thrives on the steadily increasing interest in its products. Stories, both individual and collective, continue to resonate with creators and users alike. Many users, from scholars, to journalists, family historians and those involved in civic and community organizations, students, teachers, novelists and even playwrights, demonstrate sustained and growing interest in incorporating oral history interviews in their work.

One example from my own experience will serve to illustrate the fascination with oral history that is one of its greatest strengths. History Day—the national program that connects students and teachers to historical

sources in a national competition—is a major program in Minnesota. I have noticed the wide use of oral history by students engaged in History Day projects, and I queried the director of the state program on this. I was delighted, of course, but also curious. His answer was simple and direct. “Students,” he said, “enjoy the fact that an oral history interview connects them directly with the narrator. No one stands between them—between the student and the narrator’s words. No one is there to tell the student what the narrator meant, or to summarize, or alter in any way the actual statements made by the narrator. The students get to see it all, and form their own conclusions. They love that direct connection.” That, perhaps, is one of the most powerful aspects of oral history and a key reason for its continually growing popularity. It connects us directly to one another in a very special way.

The present is thus secure, with oral history occupying a position of increasing influence. The number of diaries kept and letters written has been in steep decline for decades, hurried on by the advent of e-mail and the demand for instant communication. This reality has greatly impacted traditional methods of documenting both individual and organizational history. Oral history, as noted above, also allows earlier and more frequent interaction with constituencies such as immigrants and those involved in emerging social and political movements.

Predicting the future is both tantalizing and daunting. Much has happened since Louis Starr attempted a bit of prediction in 1971, and it is humbling to realize that his predictions were rather limited and did not, despite his great vision and leadership, nearly anticipate the explosive growth of oral history as a documentary medium, much less the changes in the technologies of recording and delivery that have altered the landscape so greatly. Indeed, though he did correctly note that growth was likely, his major preoccupation was with use—which does illustrate his and Columbia’s correct emphasis on the preparation of a viable final product and its delivery to as many users as possible. The innovation he touted was micropublication, which did, for a short while, offer some alleviation of the difficulties oral history programs have always faced in making their products widely available. A version of that effort is currently underway, using digital technology far removed from cumbersome microfilm and fiche. But Columbia’s pioneering effort pointed the way, though Starr would undoubtedly be vexed by the time it has taken to make progress.

When I look at the current and immediate future as it involves the creation and use of oral history, I see several realities:

- Oral history will continue to grow and to become ever more international. This reality is already playing out around us, and I can see no end to the trend. Oral history offers a concrete and viable process for creating highly

personal documents drawn from the experiences of an endlessly diverse pool of narrators. The very fact of its inclusiveness—limited only by the imaginations and resources of its creators—ensures its viability and its increasing reach. The mobility of society today, with global shifts in populations and economies, strongly indicates continued relevance for oral history in documenting these rapid changes.

- Technology will drive part of this growth as well, as it is increasingly possible to package existing and newly created interviews in imaginative ways that combine audio, video, image, and text files.
- Technology will also bedevil oral historians, as it does those in many other fields. There will be periods of rapid innovation and change, followed by periods of relative stability. We currently deal with the former, as the options available for digital recording, storage, and use for oral history in all formats continue to increase at a bewildering pace. Such an environment demands a steady hand and a coldhearted appraisal of the actual value offered to an oral history program by each of the many technical options available. It is not necessary to adopt every innovation as it appears, and indeed it is both shortsighted and simple minded to do so. Every adoption of a specific technology should be predicated on an assessment of exactly how it enhances a program's ability to create, store, and deliver oral history products.
- Reaching acceptable accommodation for issues of preservation, access, narrator rights, and control will continue to require a delicate balancing act. The Internet has created a broad highway for international access to oral history documents, which offers tremendous possibilities. But the personal rights of narrators cannot be lost in the rush to create universal access. Without narrators there would be no oral history, and narrators must be able to trust that their oral history documents will be treated with respect.

XIII. Conclusion

Oral history is here to stay. Oral historians, and the librarians and archivists who must deal with making oral history accessible, will continue to grapple with issues of the technology available for both recording and delivery. But progress already made in dealing with such issues gives one the confidence to believe that the progress will continue.

The pace of globalization and standardization has heightened awareness of individual desires to speak, to be remembered, to assert identity and to create meaning. Oral history is a critical tool that allows people to speak for themselves, thus carving out a space in which individual expression can become part of the historical record.

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Library Buildings at the Threshold of Change

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I. The Continuing Vigor of Library Building Construction

In November 2001, Scott Carlson, in the *Chronicle of Higher Education* wrote an article on library use titled “The deserted library: As students work online, reading rooms empty out—leading some campuses to add Starbucks” (Carlson, 2001). The essence of this chapter is that many librarians, facing dramatic declines in library gate counts resulting from the wealth of electronic resources accessible remotely, were beginning to move away from traditional conceptions of the library as primarily a repository for print collections. Carlson describes the “tough sell” that the Georgia College and State University in Milledgeville had experienced when planning a \$19.5 million library addition in the mid-1990s. In response librarians had begun “fighting back” with “plush chairs, double-mocha lattes, book groups, author readings.” Still, no one knew whether these stratagems would enhance learning or bring its readers back.

Shortly before, David Kaser in his review of Terry Webb’s *Building Libraries for the 21st Century* wrote, “... seven years ago, I suggested that future library buildings were likely to be less monumental and more modest in their design than they had been in the past. I also opined that as librarians became increasingly able to accomplish their requisite functions, through processes born not of their five-millennia-old traditional temple and palace loci but rather in such less presumptuous spaces as electronic laboratories, workshops, garrets, and even garages, they would increasingly be allowed to do their work in less palatial spaces”. Kaser goes on to say, “if such a time is ever to come, it certainly has not shown itself yet. As palatial as any library buildings of antiquity are those new ones that greet the 21st century in such far-flung ports of call as Paris, Chicago, Shanghai, and London” (Kaser, 2001, pp. 276–277).

Although the change has been incremental, libraries have been quietly transformed while the forecasters of its demise were looking the other way. Libraries have not only added cafes, comfortable seating, elegant furniture, and stunning design, but, as James G. Neal observed, they have also become “far more progressive and far more dynamic inside, in terms of social space, academic space, and learning space” (Carlson, 2005).

In spite of concerns that libraries, particularly academic libraries would eventually become relics of the past, renovation, reconfiguration, and new construction have been sustained with unprecedented vigor, aided in the United States by low interest rates and a favorable economic climate. In the 2003 report of the Council on Library and Information Resources, *Libraries Designed for Learning*, Scott Bennett summarizes data on academic libraries appearing in *Library Journal* for the period 1992–2001. The 10-year total for this period shows 379 library building projects having a value of almost four and one-half billion dollars. The total gross square feet amounted to 28,735,488 with a total book capacity of 145,000,000. The number of total gross square feet added for new buildings (excluding renovations) was 1,308,715 (Bennett, 2003, p. 46).

The building boom was not confined only to academic libraries. For the same period cited by Bennett, Richard Hall provides data on new public library buildings in the December 2004 *Library Journal* (Hall, 2004). The spending for community libraries exceeded the 1 billion dollar mark in 2003–2004, with two libraries, the combined San Jose Public Library/San Jose State University (SJSJ) project and the Seattle Public Library Central Library accounting for 27% of these expenditures. The construction of large, monumental, central libraries is part of a two-decade long trend that included construction of the Dallas Public Library (Architects: Fisher and Spillman, 1982), the Chicago Public Library (Architects: Hammond, Beeby, and Babka, Inc., 1991), the Denver Public Library (Architects: Michael Graves and Klipp Colussy Jenks DuBois) and the Phoenix Public Library (Architect: William P. Bruder with Wendell Burnette, 1995), the San Francisco Public Library (Architect: James Ingo Freed and Cathy Simon, 1996), and the Salt Lake Public Library (Architects: Moshe Safdie and Associates, Inc., 2003) A large public library is now likely to have soaring atria, auditoriums, cafes, gift shops and bookstores, meeting rooms, interior gardens, fountains, sculptures, art galleries and installations of art in public spaces, children’s rooms and teen centers, on-site parking, generous numbers of computers with access to the Internet, and spaces devoted to regional history and to the ethnic communities that contributed to that history.

Recently attention has been paid to the concept of “library as place.” In February 2005, the Council on Library and Information Resources released

the report, "Library as place: Rethinking roles, rethinking space." In it architect Geoffrey T. Freeman repeats the adage that the library is often seen as the heart of an academic institution and "has served as a visual anchor for the surrounding buildings on campus" (Freeman, 2005, p. 1). Writers about libraries continue to describe them in terms of their symbolism for academic or learning missions. Libraries housed in large and impressive buildings still convey status and prestige, and they speak to many enduring values in American society, and, in public libraries, to opportunities for entertainment and self-improvement. The language and imagery of the commons, now permeates writing about the library. It is space that is held collectively by the community served, where people can see others and be seen, and where they can engage in contemplation or purposive activity, either individually or collectively.

Review of library building issues of *American Libraries* and of *Library Journal* display dozens of images of libraries, public and academic, small and large, with a dazzling array of shapes, colors, textures, in beautifully landscaped settings. In the following chapter, representative projects in a number of different categories have been identified and described, beginning with three urban libraries, the Kansas City Public Library, the Dr. Martin Luther King, Jr. Library in San Jose, California, and the Salt Lake Public Library. Note also is taken of the San Antonio Central Library.

Much construction has centered on inner-city buildings, and these have led to revitalization of the areas surrounding them. There is a growing awareness that the vitality of a community as well as its economic success hinges on the creation of great public spaces, places where citizens can "mingle, meander, and meditate, as well as ... access information" (Block, 2003). Consistent with the idea of placing libraries close to centers of community activities was the October 23, 2000 opening of the Glendale Branch Library of the Indianapolis Public Library. This 29,000 square foot branch contains a coffee shop, exhibits for children, and, "child-friendly computers." It is the first public library to open a full-service branch in a shopping mall.

A. Kansas City Public Library

In 2004 Kansas City Public Library completed a stunning renovation of a classically styled bank building (Architects: HNTB). The renovation of a former First National Bank building has led to a building boom in the downtown area. Starting from the creation of a development corporation sponsored by the City's Downtown Council and its partners, \$15 million was raised from a general obligation bond issue for the library and its surrounding neighborhood. As of June 1, 2005, over \$3 billion in new construction

and rehabilitation was planned or under construction in the greater downtown and urban core. The old bank's vault has been converted to a 30-person theater for the screening of videos and movies. The large lobby has been restored to its 1925 appearance with 12 white plaster columns, filigreed ceiling, bronze chandeliers and window casements. Other features include a grand reading room flooded by natural light from skylights. An auditorium on the top level looks out on an outdoor terrace (<http://www.kclibrary.org/about/locations.cfm?locID=2>).

B. Seattle Public Library

One of the most monumental of recent public projects was the May 2004 opening of the \$165.5 million, 363,000 square foot Seattle Public Library (Architects: Rem Koolhaas and the Office for Metropolitan Architecture (OMA)). At the time, former New York Times architecture critic Herbert Muschamp wrote, "In more than 30 years of writing about architecture, this is the most exciting new building it has been my honor to review," and he devotes his entire column to describing its virtues (Muschamp, 2004). Among the library's unusual features is a books spiral (perhaps more accurately, a "helix") that extends through four floors and holds the nonfiction collection, a series of five "platforms," each devoted to a program cluster, a diagonal grid system for protection against earthquake and wind damage, and glass embedded with metal mesh to reduce heat and glare. Radio Frequency Identification technology (RFID) is used for circulation control and to sort books returned to the library. An automated conveyor routes these items to a sorting area near the library's loading dock. The collection currently numbers around 1 million volumes, and the building has the capacity to hold 1.45 million. In addition, the library can demonstrate a commitment to sustainable (or "green") design, and identifies itself as observing the Sustainable Building Policy of the City of Seattle. Among the large-scale goals of the policy are the creation of healthy work environments for staff and visitors and for protecting the region's environmental resources. The building has received "silver certification" from the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program, a system described later in this chapter.

Further comment was made by New York *Times* columnist Nicolai Ouroussoff in December 2004 on the role that architecture can play in "public welfare." Of Seattle's library, he wrote, "The result is a relief from the mind-numbingly dull space of most recent libraries. One of the most important buildings completed in the United States in more than a decade, it proves that even bureaucrats are not immune to the power of the

imagination, no small feat in an era of shrinking government and diminished expectations.” Ouroussoff encapsulates a view of the library’s appearance: “Wrapped in a taut skin of crisscrossing steel braces and diamond-shaped windows, its exterior lurches and pulls in different directions as if contorted by invisible forces. Inside, the building’s various zones—the books stacks, meeting rooms, and administrative offices—are housed in horizontal slabs sandwiched between layers of public space. The books, for example, are in a four-story slab that conjures both a sanctuary for their preservation and a vault for their permanent entombment. A portion of the lobby peels away to reveal a small theater whose cascading concrete interior evokes the Odessa steps in Eisenstein’s *Battleship Potemkin*” (Ouroussoff, 2004). An encyclopedic summary of the Library’s features, including information about its incorporation of sustainable design features that is, site selection, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design process may be found at www.spl.org/default.asp?pageID=branch_central_about&branchID=1. The extensive economic benefits assessment undertaken by the library may be found at www.spl.org/pdfs/SPLCentral_Library_Economic_Impacts.pdf

C. Dr. Martin Luther King Jr. Library, San Jose

A hybrid library, serving both a state university and a community is the Dr. Martin Luther King, Jr. Library, the central facility for the City of San Jose, California and for SJSU, which opened in August 2003 (Architect: Carrier Johnson). Two articles describe the new library well, “The San Jose model” (Berry, 2004) and “Space designed for lifelong learning: the Dr. Martin Luther King Jr. joint-use library” (Peterson, 2005). The \$177.5 million project encloses an area of 475,000 square foot and rises eight floors including mezzanine and lower level. The building houses 1.3 million volumes and contains a Teen Center, a children’s services center, an Educational Resource Center “to enhance pre-K-12 learning,” and an Adaptive Technology Center for university students. There are two entrances, one facing the city and one facing the campus, with a “grand promenade” connecting the two. Foot traffic from the two communities is around 12,000 people each day. An atrium “extends eight stories about the grand promenade on the ground floor and floods the library with natural light” (Peterson, p. 57). Artwork is placed throughout the building. Users may take food and covered drinks into the first four floors. These floors hold the “active library space” of the building. Special collections for the community and the university and the main research spaces are located on the fifth floor, and include the Ira F. Brilliant Center for Beethoven Studies. The SJSU circulating collection and reader

areas are located on floors six through eight. A “Grand Reading Room,” located on floor eight and designated a quiet area, permits views of the city, the campus, and surrounding hills. There are four computer laboratories for “information competence” training for all users of the library. There are also classrooms for “tutoring, literacy activities, training in Internet usage and resources, and homework help” (Peterson, p. 60). A library that neither agency could have achieved on its own has been created through the merging of the budgets of each. Multifunctional and practical as this combined facility may be, a popular web site contains users’ complaints that the combination of heavy use and large atrium combine to make the building a noisy place to read and study (<http://www.insiderpages.com/profiles/DrMartinLutherKingJrLibrary-nzuvXboSg2vg7sTimhH3w/>).

D. Salt Lake Public Library, Salt Lake, Utah

A third major public library project is the Salt Lake Public Library (Architects: Moshe Safdie and Associates, Inc., 2003), representing a municipal effort to link central library functions with commercial and public activities (www.slcp.lib.ut.us/details.jsp?parent_id=14&page_id=5). This six-story 240,000 square foot building boasts a public plaza, with ground level shops and services, reading galleries above, and a 300-seat auditorium. It has features that a user would find in upscale shopping malls, a rooftop garden accessible by elevator or via a “walkable wall,” spiraling fireplaces on four floors that give the appearance of a column of flame, a terrace with waterfalls adjacent to the Children’s Library, a canteen designed to appeal to teens, a café adjacent to the browsing library, and a large public space for civic events. Large expanses of light flood the interior, and a curving “glass lens” provides views of the city and the Wasatch Mountains beyond. Glass with high ultraviolet (UV) ratings, indirect lighting, and design features are used to prevent harm to materials and to reduce glare.

The test of the functional efficiency of these buildings may take many years, and, where there are large expenditures of public funds, there are always going to be critics of how that money was spent. Sometimes the unanticipated success of a new building brings its own series of problems, ones that were not expected using projections based on former patterns of use. Most new libraries report dramatic increases in their use. An account by Craig Zapatos, Central Library Administrator of the San Antonio [Texas] public library illustrates the point. The 240,000 square foot central library (Architects: Ricardo Legorreta in partnership with Sprinkle Robey Architects and Johnson-Dempsey & Associates, 1995) has an auditorium, exhibit space, and four outdoor terraces, one with fountain and two reflecting pools. The

considerable success of the facility led Zapatos to conclude that the library could have utilized a much larger auditorium and that more space could have been set aside for caterers to prepare for events and for staff to lay out exhibitions held in the building (Zapatos, 2000, p. 52).

II. How Changing Functions are Influencing Academic Library Design

Public libraries have been redefining their roles as centers of civic life and doing so by extending the range of services they provide to diverse clientele. Similarly, academic libraries in large research institutions have been striving to create new ways to meet their academic mission. That mission is one of supporting instructional programs through collections and electronic resources, of offering instruction in the use of these resources, and in preserving rare and unique materials for future generations.

In the face of this challenge is also the perception that new patterns of learning are emerging on college campuses and that students are becoming partners with faculty in the creation of new knowledge. In so doing students are moving, or being moved, toward group projects with other students, are reaching across traditional disciplines toward interaction with students from different areas of study, and are becoming increasingly sophisticated in the use of computers to complete these projects. A consequence of this reliance on technology is that many libraries are sending less heavily used portions of their collections to storage. They do this not only in order to provide more room for technology-intensive activity but to create opportunities for students to interact with each other in meaningful ways and, ever a goal, to offer attractive spaces for study. A university library completed in 1993 that anticipated many of the features now seen as indispensable in more recent buildings is at Indiana University–Purdue University Indianapolis (IUPUI). Constructed with the assistance of a \$12 million donation from the Lilly Endowment and \$6 million raised from the Indianapolis community, the total project cost was \$32 million (Architect: Edward Larrabee Barnes and Gajinder Singh).

It has a conventional modular design built with weight-bearing columns on 33' centers, and, according to library director David Lewis, "tremendous wiring infrastructure." As a consequence renovations have been relatively easy. Containing a 100-seat auditorium and extensive networking capability, the library is distinctive for the possibility of placing high-density shelving throughout its building. In the early 1990s it was one of the first libraries to provide enough computers to permit users to do things other than access the

library's databases (e.g., word processing). "Rooms envisioned for specific operations changed their purposes before we ever moved into the building. Other areas have been reconfigured, an action made easier because of the considerable use of paneled (landscaped) offices for support staff rather than the use of walls" (Fischler, 2000, p. 147). In 2006 David Lewis noted that conceptually and in order to respond to changing patterns of instruction, the reference function needs to be expanded to include other academic support units. A writing center, staffed by English department tutors, will be moving onto the second floor, creating collaborative spaces. Other planned changes include reconfiguring security to permit the building to be open 24/7 with minimal staff during periods of very low use. One million people pass through the library's doors every year.

III. The Information Commons

Much attention has been paid in recent years to the creation of service areas known as "information commons." The goal of the information commons is to link traditional library reference services with computer workstations well-equipped with a range of software that includes, for example, Word, Excel, Access, Statistical Package for the Social Sciences (SPSS), PowerPoint, and Photoshop, and also to offer access to scanning equipment. Knowledgeable personnel, whether librarians or technology staff, work with students in solving traditional library research problems and in providing computer technology support. Workstations allow for multiple users as well as students working alone. Collaborative-learning rooms are often located nearby. These rooms in some cases are equipped with interactive whiteboards, projectors, and laptop drops. Electronic classrooms in the library learning commons permit librarians to assume a greater role in the educational process. Nicholas Burckel, Dean of Libraries at Marquette University writes, "... the service concept of an information commons extends the library's role beyond access to appropriate content by including computer support for manipulating that information and assistance in disseminating new research" (Burckel, 2006). One of the first information commons was established at the University of Southern California's Leavey Library (Architects: Shepley, Bulfinch, Richardson & Abbot (1994)) with 24-hour, 6-day a week access, and many others have been created as part of new construction or included in library renovations. A recent example is Marquette University's \$55 million Raynor Library, opening in August 2003. Raynor Library (Architects: Shepley, Bulfinch, Richardson & Abbott) is sited across the street from the University's old Memorial Library and is joined to it by an enclosed

pedestrian bridge. Memorial Library houses the majority of the library's print collections. The bridge was turned into a functioning room by the addition of a café and comfortable seating for around 100. Raynor could be described as the digital arm of the library system, providing an information commons that is accessible 24 hours daily during the school term. Two mirrored interior staircases provide a sweeping view of the information commons. The two levels joined by these staircases are the service centers of the building. Group study rooms, the University's Writing Center, and computer clusters are located on the second level, while circulation, the information commons, the reference collection, and browsing collection are located on the first. Library administration, special collections and archives, and the Center for Teaching and Learning are on the third level. The lower, belowground, level houses microforms, reserves, media services, and a small conference space for extracurricular academic functions. Three equal-sized rooms can be converted to one small and one large room. There are five breakout rooms for small group discussion that can also be used as group study spaces. There are two rooms for computer-equipped instruction.

Architecturally, Raynor Library has low-profile raised floors throughout the building. It has no interior load-bearing walls, and all partitions are erected on top of the raised floors. Power and data lines run underneath the floor, and carpet tiles permit easy access to them.

The Writing Center, a separately administrated unit of the university that assists students in improving their writing skills and in creating Web pages, by being incorporated into library space, puts its services at the center of student academic activity. The Center for Teaching and Learning, a unit that assists teachers to become more effective through the use of technology, is also brought within the social and academic fabric promoted by Raynor Library.

Another Shepley Bulfinch Richardson and Abbott (SBRA) college library that also emphasizes the new approach to serving student needs through technology is the Ames Library at Illinois Wesleyan, opening in January 2002. It features "pull-up" floors for easy access to electrical and computer cables, group study rooms, three project rooms with networked computers, projection screens and other multimedia technology; more than 100 computer workstations; 400 open network connections for laptop computer; and an instruction laboratory to help students and faculty members learn to make the best use of the electronic resources. An auditorium is used for a wide range of purposes, departmental colloquia, campus speakers, workshops, and meetings of student groups. A rooftop garden above the auditorium is still in development and is seen as a good space that should be made available to students on fine days. A virtual tour of Ames Library

emphasizes access to its 24-station information commons on the first floor with an information desk immediately adjacent. A striking rotunda located at the center of the building rises to the second floor. The open area beneath it has proved spectacularly successful as a meeting place for students. The library surveyed students prior to beginning the design process, and as a result created a building with generous and comfortable seating in spaces very much like living rooms, often decorated with student art. A 2003 *Chicago Tribune* article quotes Illinois Wesleyan president Minor Myers Jr. as saying he was led to SBRA as architects, because the firm was “doing the most interesting libraries” (Stanek, 2003). And indeed among other new library projects undertaken by the firm are Dartmouth’s Berry–Baker Library and Middlebury’s main library, making SBRA one of the dominant firms in the field today.

Some public university library projects have also included new buildings of substantial size. The University of Nevada, Las Vegas (UNLV) opened its \$55.3 million, 302,000 square foot Lied Library (Architects: Welles–Pugsley Architects and Leo A. Daley) in January 2001. A five-story atrium soars above a well-equipped information commons located near the library’s entrances. Large reading rooms adjacent to bookstacks on the third and fourth levels overlook the atrium. Screened to meet local fire codes, they also reduce noise transmission. The first, second, and fifth levels are open to the atrium. An information commons is located at the base of the atrium. Canopies above commons workstations contain task lighting, protect the users from objects that may fall from above, and are equipped with sprinklers. An unusual feature of the Lied Library’s design is that an automated storage and retrieval system has been placed on-site to one side of the atrium. The system is separated from the rest of the library by a two-story curtain wall for screening the noise of its operation. The purpose of making the retrieval system visible in operation was to “demystify its workings and gain user acceptance” (Haslam, 2002, p. 73).

IV. Undergraduate Libraries

Although the construction of undergraduate libraries has gone out of style, Wayne State University (WSU) completed its David Adamany Undergraduate Library in September 1997. Wayne State is described as a “National Research University with an urban teaching mission” (Sutton, 2000). Although “information commons” is not used in the description of its undergraduate library, the organization and services very much reflect an interest in helping create “information literate” graduates. At the time of

opening, the building contained three instructional computer laboratories, four seminar rooms, and an Office for Teaching and Learning to assist faculty in “integrating technology in their classroom teaching” (Sutton, 2000, p. 143). The collection was capped at 100,000 volumes. A 24-hour Extended Study Center, a “Community Room” for colloquia, seminars, and student groups, and 32 “collaborative study rooms of varying sizes” supported group study and projects. As in the Raynor Library, the University’s Writing Center was relocated to the Adamany Library. Also the campus Computing and Information Technology division closed two student-computing laboratories for relocation in the new library. The indispensable atrium served as a site for weekly cultural performances, and a second, smaller atrium, contained large-screen television monitors tuned to current events channels. The Honors Program has been relocated into the building, an advantageous move in the administration’s view, because it brings students into the building. The small print serials collection was reconfigured throughout the building, leading to a shift in emphasis toward electronic resources. Like many of the new academic libraries described in this essay, open areas were placed centrally with a minimum of walls and with offices on the perimeter.

The Office for Teaching and Learning subsequently was moved to the Purdy/Kresge Library (the primary research library for the social sciences, humanities, arts, education, and business) at WSU, uniting services of the Library Computing and Media Services, University Computing, and photo services in a single location. A library coffee shop failed following the opening of a commercial vendor 2-minute’s walk from Adamany. The coffee shop space may soon be leased to an on-site computer repair operation. A commercially operated bookstore on the south end of the first floor closed when the bookstore built a new facility two blocks from the library near a busy intersection and close to campus parking. The Academic Success Center, whose clientele is undergraduates, includes Academic Success, Educational Accessibility Services, Study Abroad, and University Advising. Because of their new proximity, Information Services and Academic Success staffs now communicate more often, leading to greater emphasis by both on information literacy. The weekly cultural performances have been discontinued in the atrium. The computer laboratory operates on a 24-hour basis and has the software most commonly needed by undergraduates as well as special purpose hardware. Reference services are near, but not yet on a 24-hour basis, while information technology (IT) staff is available at virtually all hours. A first-floor auditorium with instruction and study rooms on the upper floors also contribute very much the sense that the entire Adamany Library functions as a “learning commons.”

By early 2006, the library had proved to be overwhelmingly popular with the undergraduates for whom it was planned. Gate counts have remained at around 1.3 million entries per year with as many as 10,000 per day.

A. An Undergraduate Library Renovation

Another example of support for undergraduate libraries is found at the University of North Carolina at Chapel Hill. The University secured funding through a November 2000 higher education bond issue to support the renovation of the Robert B. House Undergraduate Library. Describing the 1968 building as “hopelessly outdated,” the University completely gutted the old structure and created a library with, among other things, nine group study rooms, over 100 public computer stations, a computer laboratory with 65 computers, “equipment and software to offer advanced services to students working on Web pages, and other digital applications, film and video screening rooms, e-mail and computer laptop support, and a new Media Resources Center to replace its Non-print unit” (<http://www.lib.unc.edu/ultrans/questions.html>). Perhaps, needless to say, a new atrium rising over the high-traffic area near the entrance provides a welcoming space, and care has been taken to limit noise transmission to work areas on the upper level. Generous use of wood paneling gives the renovated building great warmth. The Library’s web site contains the layout of the renovated building and a large number of photographs documenting the construction phase and the finished project (<http://www.lib.unc.edu/ultrans/>).

Large library systems with many sites continue to rely on undergraduate libraries to provide access to well-defined literatures. However, they are likely to find it increasingly advantageous to consolidate services in order to reduce operating costs, especially as electronic resources render the need for multiple copies of a title unnecessary. The University of Texas Libraries in Austin recently announced that it would disperse the 90,000 volumes in its undergraduate library to other university collections. The area cleared will provide space for a “24-hour electronic information commons” (Blumenthal, 2005). Fred Heath, Vice Provost of the University of Texas Libraries in Austin in this article is quoted as saying, “In this information-seeking America, I can’t think of anyone who would elect to build a books-only library.” Taking the place of books is a set of “software suites,” “modes with computers where students can work collaboratively at all hours—an expanded center for writing instruction, and a center for computer training, technical assistance, and repair.”

B. Major Renovations

Many universities have undertaken large-scale renovations of older buildings and have, thereby, preserved either major campus landmarks or buildings of architectural significance. These have included the renovation of Columbia University's Butler Library, the University of Chicago's Regenstein Library, Harvard University's Widener Library, and Yale University's Sterling Memorial Library. Underlying some of these renovations was the desire to restore great old buildings to their former magnificence. An objective common to all was the improvement of HVAC systems to create an environment more friendly to the preservation of book collections than the uncontrolled environments of the past. Renovation of Regenstein Library, the newest of the buildings (Architect: Skidmore, Owings, and Merrill, 1970), is described more properly as a "reconfiguration," an attempt to realign its organization of collections and system of services to the changes brought about by technology. Like many buildings of its period, computer technology was recognized as a factor in building planning, but it was based on a centralized, mainframe model. Distributed computing and the need for extensive cabling were not foreseen. The reconfiguration strove to bring the building's systems into alignment with the new realities. Geoffrey T. Freeman of SBRA writes, "Over the years, the Regenstein Library of the University of Chicago developed as a subject specific model of a research library. Its collection, too, had exceeded the bounds of its support. In a similar process (to that used with Butler Library at Columbia University) we began to address how people used information before we could understand what consolidation could take place. We created a hierarchy of zones moving up the building, allowing a more effective level of service and efficient use of staff without sacrificing the collections that remain the essence of the institution's research focus. Collections will continue to evolve, but not at the expense of providing services and an environment for learning. While the library remains a preserver of information, it is assuming the greater role of generator, exchanger, and server of information" (Freeman, 2000, p. 171).

Columbia described its project as a "refurbishment," and a goal was to "to bring back the splendid feel Butler Library had when it opened ..." (Jones, 1999, p. 24). Data jacks were installed in recognition of the universal reliance on computer technology, lighting systems retrofitted to utilize energy-efficient, long-life lamps, and ways to meet new code standards for such features as building railings were found.

Yale's Sterling Memorial Library (Architect: James Gamble Rogers, 1931) suffered greatly over the years from the effects of aging on roofs, masonry, plumbing, and electrical systems, and high priority was placed

initially on overhauling the Stack Tower to improve the preservation environment for books and periodicals (Architect: SBRA). Ongoing renovations included the construction of a new music library within an unused light court, a creative use of space that did not require investment in a separate facility nor use scarce property on its urban campus (<http://www.library.yale.edu/news/renovationscope.html>).

Harvard University completed a \$97 million renovation of its Widener Library in October 2004 (Architect: Horace Trumbauer, 1915; Renovation Architect: Einhorn Yaffee Prescott). The project included replacement of its HVAC systems with the goal of creating a 68°F humidity-controlled climate in the stacks, and upgraded lighting and fire suppression systems. The most visible alteration was the enclosure of two light courts adjacent to the main reading room to create two new reading rooms and the restoration of the huge, barrel-vaulted Loker Reading Room (<http://www.news.harvard.edu/gazette/2004/09.30/13-widener.html>). All this was accomplished while observing the somewhat unusual and definitely constraining stipulation of the donor that the building's footprint could not be altered.

The Morgan Library, one of America's great private libraries is currently undergoing its own renovation, due to be completed in spring 2006. Described as an "expansion" and "integration" of the "campus,"—the renovation is being undertaken by architect Renzo Piano. The Morgan, too, will now have an auditorium for artistic performances (music, dramatic readings, lectures) and an expansion underground that will increase space available to the library by one-third (<http://www.morganlibrary.org/expansion/overview.asp>).

V. Branch, Divisional, and Special Collections Libraries

Many of the bond issues that supported the construction of new central libraries also benefited their local branches. If academe is rethinking its commitment to undergraduate libraries, it is having no difficulty supporting construction for specialized divisions. Yale's multi-level Irving S. Gilmore Music Library has already been mentioned. A 60-foot vaulted glass ceiling rises above the main floor. In order to control noise that would be generated in such a large space, the architects employed carpet floor, upholstered seating, and, in the ceiling, an "acoustically insulated metal deck" (http://www.sbra.com/html/kc/education/edu_case1.html).

In November 2001, Princeton University announced that Frank Gehry would design a new, \$60 million science library with funding from trustee, Peter B. Lewis (Arenson, 2001). The new library will bring together a

number of now separately housed science collections. Project designer Craig Webb, quoted by Thomas de Monchaux, calls the new library “our own version of Collegiate Gothic.” According to Webb, the 85,000 square foot library will be “the heart of the scattered science campus—a new kind of building combining access to information with public space” (Monchaux, 2003). The short article makes it clear that the science library, slated for completion in 2007, will have the distinctive use of stainless steel that has made Gehry an internationally recognized architect. The University’s *Weekly Bulletin* reported that the “bold, curved shapes that seem to defy gravity are evident in the design of the science library. Initial plans show a central tower ... surrounded by two wings, all faced with metal and glass ... What comes out of the ground and into the air is a series of spaces that are surrounded by smaller cubicles or rooms that are either offices or study areas or small conference areas, where people who are doing research will work and meet together” (Stevens, 2002, p. 7). Associate University Librarian Dorothy Pearson adds that the library will not be especially oriented to digital collections, and that all book collections will be publicly accessible.

The enduring value assigned to rare book, manuscripts, archives, and special collections is testified by the sustained construction of a number of libraries dedicated to such resources, many of them belowground. Yale University’s Beinecke Rare Book and Manuscript Library, completed in 1963 (<http://www.library.yale.edu/beinecke/>), received critical acclaim for its stunning Skidmore, Owings and Merrill design. Its unusual veined Vermont marble exterior panels and two-story aboveground glass tower offer display for 180,000 volumes, while the real business of the library is conducted in the underground reading room, staff offices, and capacious stacks. The belowground construction was a concern to Ellsworth Mason in his detailed critique of the building (Mason, 1980). Now over 40 years old, the building has held up well, although an updating of systems will probably be necessary before long. The University has been able to undertake preventive maintenance, replacing the drains around the sculpture garden, resurfacing and redesigning the plaza, and installing a snowmelt system to deal with heavy snowfalls. Over the years, the use of heavy equipment to remove snow caused the pavers to break and shift, damaging the membrane below the surface.

The Beinecke Library did a major installation of compact shelving in the basement stack area in 1998. In one part of the basement area, one level of a (short) three-floor stack area was removed and a new floor aligned with the main office level. Compact shelving was then installed in the resulting two levels as well as in the main basement book stacks. Shelving capacity was nearly doubled, in spite of removing one entire level.

The University of Minnesota opened its Elmer L. Andersen Library (Architects: Stageberg Beyer Sachs, Inc.) in April 2000. Located on the west bank of the university's Minneapolis campus to house archives, manuscripts, and unique research materials, the library has a conventional building aboveground of 80,000 square foot with a spacious, welcoming atrium. Belowground are two caverns mined from the sandstone and shale bluffs of the Mississippi River. Each cavern is two stories high and the length of two football fields, and prefabricated concrete storage buildings have been constructed within the caverns that are encased in a continuous rubber membrane. The first cavern houses materials from the University's collections while the second is a storage facility for materials from other libraries in the state. A system of pumps and drains has been designed to protect against flooding. The stable, belowground environment is naturally cooled at 57°F with 70% relative humidity. Within the storage chambers the temperature is easily maintained at 62°F and 50% humidity (Kelsey, 2003).

Cornell University opened its Carl A. Kroch Library, a three-story underground building, in August 1992 to house the university's archives and rare and fragile materials in its Division of Rare and Manuscript Collections (Architect: SBRA). In addition to reading and reference rooms, the Library has two classrooms and an exhibition gallery. A large atrium introduces natural light through four skylights to study areas below (<http://rnc.library.cornell.edu/about/about.html>).

The University of Virginia's Albert and Shirley Small Special Collections Library opened in November 2004 (Architect: Hartman-Cox). The two-floor underground library shares space with the Mary and David Harrison Institute for American History, Literature and Culture (<http://www.lib.virginia.edu/small/>). The desire to place the library and institute in a central location and close to Alderman Library led to the decision to go underground. There is an aboveground portion of the building that houses the Harrison Institute and includes three exhibit galleries, two seminar rooms, and studies for visiting scholars. Two skylights illuminate the public areas, and two, the office areas. The spacious staircase provides additional lighting and serves as a point of welcome for visitors who can immediately grasp the layout of the building from it. A 200-seat auditorium is belowground. The "double-hulled" construction has proved secure against some very heavy rainfalls and violent weather. The perimeter has a pathway ringing the inhabitable space, for emergency exit and to protect against infiltration by water. The collections are protected by a dry-pipe sprinkler system. Library and Institute director and associate university librarian Hoke Perkins says that the design aids the library's public mission, and that the availability of auditorium and seminar rooms for campus users has provided a neutral space

for collaborative projects of university departments. The spaces are also well used for seminars, paper presentations, and conferences. In addition, the new facility has proved attractive to donors, and several major gifts have been received since it opened.

The trend toward providing these new facilities with generous exhibition space, seminar rooms, and auditoriums, and to link them, as in Virginia's case, with research centers is indicative of the trend toward creating a library that is an active source of education for its clientele, a trend that is reflected in new municipal libraries as well. Atriums or generous use of light wells have now become almost a necessity for these underground facilities to provide welcome natural light and to dispel the sense of those working in them for prolonged periods that they are confined to a silo.

VI. Offsite Storage

Libraries, both public and academic, are increasingly utilizing remote storage facilities to house their ever-growing physical collections and to clear space for information commons, group study, and comfortable seating. Many of these are simply warehouses with conventional stack systems (or in some cases, no shelving at all) and very little or no temperature and humidity control. High-density storage within libraries has been commonplace for many years, but Harvard developed the current approach to high-density off-site storage, with storage of volumes by size, low temperatures, 30' foot high-shelving racks, and a client-owner model where costs are born by users (Graham, 2001, p. 10). Properly designed storage facilities are excellent vehicles for book preservation—they are cool or cold, they are dark, they have controlled humidity and in many cases systems for removing pollutants from the air, they do not expose the books stored in them to careless handling, almost all have sprinkler and alarm systems, and they place their mechanical and HVAC systems in locations where malfunction will not expose materials to damage. In addition, economies of scale can be achieved through the creation of jointly operated and funded facilities. The logistics of creating and managing these facilities are daunting, but were thoroughly explored in 2001 (Nitecki and Kendrick, 2001). As of April 2001, Lane and Dill (2001, p. 87) list 19 facilities operating on the "Harvard Model," with three additional facilities in design or construction, all opening in 2002. Columbia University, the New York Public Library, and Princeton University joined to create the Research Collections and Preservation Consortium (or ReCAP), opening a 70,000 square foot facility with a capacity of 6 million volumes. The facility consists of three, windowless modules, and

materials are housed with provision for the eventual construction of fifteen modules with a capacity of 37.5 millions volumes. Books are retrieved and delivered daily by facility staff. Indiana University Bloomington Libraries opened the Ruth Lilly Auxiliary Library Facility (ALF), containing a preservation laboratory, a book freezer for treatment of water-damaged materials, and a vault with a capacity of 2,800,000 volumes. A description of the facility including a pictorial tour may be found at <http://www.libraries.iub.edu/index.php?pageId=541>

One of the most ambitious off-site storage projects has been undertaken by the Library of Congress (LC) In May 2005 LC dedicated the second of 13 projected storage modules at Ft. George G. Meade in Anne Arundel County, Maryland (Architect: Einhorn Yaffee Prescott). Planning calls for the construction of a new module every 2 years. Located on a 100-acre site transferred to the Architect of the Capitol in 1989, the Library's portion of the site covers a total area of nearly 40,000 square feet. Temperature and humidity controls keep the modules in a 50°F and 30% humidity environment. Materials are kept in lidded boxes and further protected through an HVAC system that filters out particulate matter and air pollutants. The storage areas are illuminated by low-intensity UV-free sodium vapor lamps. The site is provided with a 500,000-gallon storage tank and pumping system that serves the sprinkler system. This system will meet the needs of all the planned storage modules and can function even with the loss of electrical power. Sprinklers are wet-pipe and are located in the ceiling as well as throughout the shelving units. Each head is equipped with a guard that protects against accidental release, and smoke detectors function as back-up. The Ft. Meade fire services team can respond within 3–5 minutes, presumably before the release of the sprinkler heads at 155°. Modified Raymond Corporation forklifts are used to retrieve the boxes from the 30' high-shelving units. The planned third-phase construction will contain four cold vaults: 3 at 35°F and 1 at 25°F to ensure the proper storage and preservation for items such as microform masters, photographs and other formats that benefit from a colder environment than that found in the modules (Enos et al., 2005; Fineberg, 2002).

In July 2005 the University of Chicago announced a \$42 million expansion of its Regenstein Library with a high-density automated shelving system, reading/consultation spaces for inspecting the retrieved items, and a conservation library. Regenstein has always been seen as a faculty-centered library, and ensuring that the faculty would have rapid access to most of the monograph collection led to a decision to house many of its journals in the adjacent storage facility. Retrieval time for requested items is estimated to be at 5 minutes (Schonwald, 2005). Other automated systems include those at

California State University Northridge, Sonoma State University (<http://mike.passwall.com/ars/>), Valparaiso University, and, as noted earlier, UNLV.

VII. Sustainable Design

When Northwestern University planned its Seeley G. Mudd Library for Science and Engineering (Architect: Skidmore, Owings, and Merrill, 1977), concerns about energy conservation surfaced as a priority in the building's construction. The design under consideration was "el-shaped" with large expanses of glass and a climate-controlled environment. Late in the design process, the University administration decided that all new campus construction would be equipped with operable sash. Members of the planning committee objected, arguing that had that requirement been known earlier, the design team would have been asked to design a different kind of building, for example a tall thin building instead of a short, thick one. The requirement was met by installing small, key-operated casement windows on each floor and at floor-level around the building's perimeter. The functional utility of these windows was slight, and their placement on all three floors was an invitation to bypass the library's exit control system. In the library's nearly 30-year history, they have not been used.

Since the time of the science–engineering library's construction, concern for conserving the earth's resources, for improving energy efficiency, and for promoting concepts of sustainable design have grown in importance. The USGBC, a coalition of leaders from the building industry, government and other organizations, promotes environmentally responsible buildings (<http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>). These are buildings that serve the needs of people, do not waste natural resources, and do not damage the environment. The USGBC has developed the LEED program that establishes performance goals in five environmental categories: site development, water savings, energy efficiency, materials selection, and indoor environmental quality. LEED has four certification levels: platinum, gold, silver, and certified, platinum being the highest rating. Rising energy costs are leading many people to think more seriously about constructing buildings that are energy efficient (Fleishman, 2005), and the factors that make for sustainable libraries are no different than those needed for any other building, "light, air quality and temperature control, and energy efficiency (Weiner and Boyden, 2001).

The West Valley Branch of the San Jose Public Libraries achieved the first LEED certification by a library (Architect: Rob Wellington Quigley). Opening in May 2003, "The facility features the preservation of mature

redwood trees, a drought-tolerant landscape, and a mix of carefully shaded windows with clerestory windows and skylights” (http://www.sjlibrary.org/about/news/story_04-03-03.htm). The Eugene, Oregon, Library, which opened in December 2002 features “state-of-the-art” ventilation and lighting systems, reliance on natural light, energy-efficient motors, and carpeting made from recycled materials (New Eugene Library, 2003). Two other libraries implementing sustainable design are the Oak Library (California) and the Ann Arbor (Michigan) District Library. The William J. Clinton Presidential Library received “silver” LEED certification for using flooring made of recycled tires, and, in other sections, of bamboo, a renewable resource (Rousseau, 2005). Recycled aluminum, largely from soda cans, is used on some ceilings, and solar panels have been placed on the roof. The new Seattle Public Library also received LEED silver certification (www.spl.org/default.asp?pageID=branch_central_sustainable&branchID=1).

Although environmentally friendly buildings may cost more initially, their reduced operating costs over time may make such an investment worthwhile, provided that they are kept in use long enough to offset the initial cost. Libraries with their extended lifetimes are good candidates for employing sustainable design. Alexander P. Lamis (Architects: Robert A. M. Stern) suggests that building planners consider the options of adaptive reuse of older buildings (cheaper than starting from scratch), of siting a building to take advantage of wind patterns and sun location, and planning landscaping that does not require heavy upkeep, including lawns that require less-frequent or no watering (Lamis, 2003). New materials now on the market are not heavily reliant on wood products, and many building components have recycled content. The use of bamboo such as used in the Clinton Presidential Library, is a popular choice, because it is durable and easily renewable. A drawback to bamboo is that its principal growing areas are China and Asia, and the cost of transport may offset the gains in sustainability.

The use of wood need not be ruled out in buildings attempting to meet sustainable design standards. Indeed, the color, graining, and versatility of wood make it perennially popular as a material for furniture and in decorative and structural design features. The PEFC Council (Programme for the Endorsement of Forest Certification schemes) is a non-governmental organization that “promotes sustainably managed forests through independent third-party certification” (http://www.pefc.org/internet/html/about_pefc.htm). Use of wood from certified producers is a desirable goal for those seeking to incorporate sustainable design features in their libraries. For its new library (Architect: Gwathmey Siegel & Associates Architects LLC), Middlebury College contracted for approximately 55,000 board feet of sugar maple and

beech, of which 75–80% was green certified, the remainder coming from managed Vermont woodlands (Higher Education News Service, 2003). A central feature of the new library is an open rotunda offering a full view of the library's interior as well as the surrounding landscape (<http://www.leekennedy.com/Precon/Middlebury.htm>).

Attention to good air quality is essential, because most people spend 90% of their time indoors, and many buildings have high carbon dioxide content. In addition, airborne pollutants can seriously shorten the life of paper. Although variations in temperature and humidity can be harmful to books, flexibility in the standards for HVAC operation can result in lower costs of operation. Lower energy costs can also be achieved by using raised flooring that forces ventilation through floor, because the entire space does not have to be cooled and warmed. However, dust can gather in these cavities and compromise their effectiveness. Periodic maintenance improves efficiency. Geothermal exchange heat pumps take advantage of the constant temperature of the earth below the frost line and can be used for heating and cooling. A relatively large field is required for the successful operation of these pumps and a long life predicted for the system is needed in order to recover the costs of installation.

Other resource saving measures are also possible. Low-flow toilets reduce water usage, and the Seattle Public Library has even installed “waterless” urinals. The development of low-voltage light-emitting diodes (LEDs) that produce a white light acceptable to readers holds the potential to reduce electrical requirements substantially. A white light that can be produced at low cost and without operating temperatures that require extensive cooling systems will be a major contribution to sustainable design. LED's can produce more light, last longer, and at less cost than incandescent light, and could reduce US energy consumption by 29% by 2025 (Salisbury, 2005).

Curtain walls like those seen in the Seattle and Salt Lake City public libraries are more expensive to construct than masonry walls, yet the views they afford of city and landscape can be inducements to use the library and are popular with users. Many of the great libraries of the past century were constructed with large windows to take advantage of natural light, and they remain impressive. The great reading room of the New York Public Library comes immediately to mind. No one then paid much attention to the destructive effects of light on paper. Modern library buildings are often designed with large floor areas near the center of their buildings to permit flexibility in collection layout. Removal of books and periodicals from proximity to windows results in less direct damage to paper. Glass can now be manufactured that screens out damaging UV light and as well as other wavelengths. But these buildings are locked-in to high-energy usage to

control their totally artificial environments (Lamis, 2003, p. 36). Some designers are finding guidance in older design masterpieces. The design of the library at Mt. Angel Abbey (Architect: Alvar Alto, 1970) provides enough natural light to operate during the day without additional electric light, even though Oregon's climate produces an abundance of cloudy days. Architect Nathan Good believes that study of existing buildings like Mt. Angel Abbey Library "can provide valuable insights on how we can improve future buildings designs with regard to daylighting" (Good, 2001). Thoughtful use of screening can also be used to control intensity of natural light. Adelphi University's Swirbul Library (Architect: Richard Neutra, 1963) was built with electrically controlled louvers on the south wall of the second (top) floor, and the Phoenix [Arizona] Central Library (Architect: William P. Bruder) employs shade sails on its north face (Edwards, 2000, p. 167).

Other measures can also contribute to the energy efficiency of a building. Screening by deciduous trees can shade a facility in summer, and increase the availability of natural light in winter. Depending on the climate, highly reflective roofs can lower cooling costs.

In 1965, Keyes Metcalf, as referenced by Kaser (1988), identified four problems that he saw as persistent violations of sound library design: irregular shapes; interior or exterior courts, monumentality, or too much or too little glass. Over time, library architecture critic David Kaser continued to rely on Metcalf's list in his assessments of a building's functionality (Kaser, 1997). Indeed, incorporation of these elements into library buildings often result in added construction costs, greater energy consumption, and added maintenance.

Atriums require large fans for heating and cooling as well as to meet code requirements for the evacuation of smoke in the case of fire. They have been seen as generators of noise in high traffic areas, although screening will reduce or eliminate that problem. And, as McCabe notes, "The days of considering glass as a hard surface reverberating noise are gone. Now we must consider the beneficial aspects of glass usage in library environments. It is not just to see through anymore" (McCabe, 2003, p. 207).

Not all atriums function to bring people together. Stewart Brand faults I. M. Pei's Wiesner Building (also known as the Media Laboratory) for cutting people off from each other, complaining that "researchers can go for weeks in the building without ever seeing each other casually" (Brand, 1994, p. 52).

Atriums have high appeal, and they introduce natural light in locations that cannot be reached by windows. They can bring people together in visually attractive areas, and they provide venues for social events, performances, and exhibitions. A happy collateral benefit is that these spaces can generate additional income for the institution. Doubtless their value as symbols of welcome in a new age will continue.

VIII. Safety and Security

Increased concerns for the safety and security, both of book collections and of a building's occupants, have prompted most organizations, including libraries, to prepare or update their disaster preparedness plans. The states of California and Washington have taken steps to provide structural bracing in libraries. The recently completed multi-year renovation of the University of Washington's Suzzallo Library was prompted in part because of the threat of seismic activity (<http://www.lib.washington.edu/about/suzzren/>). All new buildings are equipped with systems for fire detection and some for water infiltration. Emergency evacuation plans ensure that a building's occupants can leave a building in the quickest and most efficient way. Sprinkler systems are increasingly used in storage facilities as well as main facilities. Librarians have traditionally been reluctant to employ sprinkler systems, but there is now the realization that wet books can be frozen (and recovered), while charred books cannot. In developing these plans there is often an assumption that municipal or institutional fire personnel will be on hand to respond quickly and to contain the fire soon after the alarm system has been activated.

Wet sprinkler systems will release water locally when temperatures at the sprinkler heads reach a pre-determined temperature. The temperature of activation varies with the type of material under protection, and water is always in the system. Dry systems contain pressured gas, and the system is only filled with water when one of the sprinkler heads is opened. These are used where temperatures can dip below freezing or in archives and rare books areas. They are slower to activate and can result in greater damage as a result. Pre-action systems often are activated by a combination of sensors, such as a smoke or heat. A pre-action valve is opened, sometimes manually controlled, but water is still not released until the sprinkler head is opened by heat. Pre-action systems are used where avoidance of accidental discharge is very important. Gaseous systems are sometimes used to protect rare and valuable materials, for example, as used by the Newberry Library in Chicago, but extreme care has to be taken to ensure that personnel are not trapped in these facilities when they are activated. In these cases also manual operation is often required in order to ensure that staff are evacuated.

Several recent events serve as reminders that disasters can occur any time and anywhere, sometimes on an unanticipated scale. On April 29, 1986, the largest library fire in US history destroyed valuable collections in the Los Angeles Public Library; 400,000 volumes were destroyed, and significant portions of the remaining collections suffered smoke and water damage. A restored and renovated library did not open again until October 1993. On January 17, 1994, the Oviatt Library at California State University

Northridge suffered damage to the original reinforced concrete floor building and severe damage to two earthquake resistant wings leading to their eventual demolition. The library's automated retrieval system was undamaged, but rainwater entering the damaged facility led to destruction of materials from mold. Reconstruction took six and one half years (library.csun.edu/mfinley/quake.html#photolist). On November 12, 2004 ten inches of rain fell in the Manoa Valley near Waikiki, resulting in as much as 8 feet of water flooding the University's of Hawaii's main research library. On July 23, 2003 an arsonist set a fire at the University of Georgia's main library annex, causing an estimated \$1.5 million damage to federal depository documents, computers, and microfiche.

The levees breached by Katrina, the hurricane that devastated the City of New Orleans and much of the Gulf coast in 2005, flooded the basement of Tulane University's Howard-Tilton Memorial Library and the older Jones Hall building across the street. Eight feet of water flooded Howard-Tilton, devastating the Music, Government Documents, and Microform collections. Building mechanicals, electricals, and HVAC systems were a complete loss. Four and a half feet of water flooded Jones Hall across the street where archives collections were stored. The Library had an emergency plan that was 2 years in the making. The plan was scrapped before it could be implemented, having been based on the assumption that library staff had places to go to (and return from) in an emergency. The Tulane administration had an existing contract with the German firm Belfor, and as soon as personnel could be moved into the city, materials were salvaged for freezing. The materials in the flooded basement were kept under water for many weeks before they could be loaded into freeze-dry trucks and moved to processing facilities in Ft. Worth and Memphis. Many of the shelves in the flooded basement collapsed, damaging much of the government documents collection. Although progress will be intermittent and halting, the recent history of disasters of scale are leading to thoughtful consideration of how to provide coordinated responses that take into consideration threats that derive from local environmental circumstances.

IX. Conclusion

The last decade has seen a sustained development in library construction, as repositories for the printed word, as technologically advanced laboratories carrying out sophisticated digitization, preservation, and conservation projects, and as centers of social, civic, artistic, and intellectual activity. The impact of technology on patterns of library use is reflected in these new

constructions and renovations, and many conventional distinctions have diminished viability. The ability to function both as a public library and as a library for an academic community is demonstrated by the new library serving the San Jose Public Library and SJSJ, and some public and community college libraries have also merged (Simon, 2004). Cooperative ventures between public and academic libraries in collections development, management, and storage are attractive methods of pooling resources for common ends. The established practice of designing libraries with predetermined spatial configurations is disappearing. Catalog departments no longer need to be close to now vanished card catalogs. Technical services no longer needs even to be in the library. Circulation departments continue to be located close to entrances, but the introduction of sensor systems that permit loan and return throughout a building, and that can track status and location of materials anywhere within a library or even a campus will free them of that requirement. Reference and information service staffs are moving closer spatially to the information commons, but 24/7 service is possible without there being a need for a physical presence at all. The removal of books from the University of Texas's undergraduate library in favor of an information commons leads to the question of whether, strictly speaking, this facility remains a library except in name. In the sciences, engineering, and health sciences, the majority of the journal literature is online.

But construction has remained vigorous, and libraries both public and academic are seen as vital linchpins in maintaining the social bond that unites their communities. Old libraries, many of considerable architectural significance have been renovated, and, in the public sphere, monumental new libraries have been constructed, both by governments and by municipalities. As books have been removed to storage sites, the reintroduction of other community spaces within libraries—auditoriums, galleries, boutiques and food services—has strengthened their roles as centers of civic life. There has also been a change in the ways that institutions go about planning their new or renovated facilities. Thirty years ago, planning teams were comprised of library director, architect, and library board or faculty committee. Librarians may or may not have been included. Libraries now employ focus groups, user surveys, and assessment packages like LibQUAL+ to determine the needs and interests of their clientele. They develop strategic plans and mission statements to help guide the design process, and they include the architectural team, space planning consultants, and computer systems staff at various stages, including the assessment of outcomes after the project is completed. Concerns for safety and disaster planning have risen in importance, and many organizations are now devoting themselves to the management of energy resources, and sustainable design offers one avenue for achieving that end.

The Americans with Disabilities Act has led to greater attention to improving access by people with disabilities and most libraries now provide ramps, specialized lifts, wheelchair accessible restrooms, and aisles wide enough for wheelchair navigation. The awareness of the damaging effects of high temperature, extremes of humidity, mold, and light have resulted in the introduction of sophisticated environmental controls. Not only are there efforts to house paper collections in environments more conducive to their preservation, many are being removed to special-purpose facilities, or removed altogether to minimally staffed storage facilities whose activity is solely devoted to the mechanics of shelving and retrieval.

However these forces play out in the coming decades, basic questions about the effectiveness of the buildings that have been created always need to be asked: Do they serve the needs for which they were constructed? Can the spaces within them be adapted to respond to changes in use and technology? Do the roofs leak? Does the HVAC system maintain control of the environment to the degree desired? Does the system of lighting provide good illumination under the conditions predicted and in an economical way? Is the siting appropriate, both in terms of the relationship to buildings nearby and in the effective use of natural light? Do the offices require custom-designed furniture? Can the building be modified, added to, renovated in ways that are in harmony with the original spirit of design? Can novel mechanical features like louvered shades be kept in good working order at reasonable expense? These are difficult questions to answer, and, often are answered only after the initial euphoria of working in bright new surroundings has worn off.

Since the publication of T. D. Webb's *Building Libraries for the 21st century*, another library intended to rival the most famous library in antiquity has been completed, the Bibliotheca Alexandrina (Architects: Snohetta/Hamza Consortium), opening in October 2002 in Alexandria, Egypt, with a built area of 484,000 square foot. Adding to the list of monumental libraries treated by Webb, the aspirations of the library are to re-establish Alexandria as a center of culture and learning (<http://www.bibalex.org/English/index.aspx>). Its monumental exterior resembles a large disk rising on the shores of the Mediterranean, inclined against the surrounding landscape, and symbolically representing the image of the sun. Exterior walls are incised with letters from the world's alphabets. Beneath the canted roof is a main reading area holding eight terraces, each devoted to a different subject area. Computer modeling was used for the placement of glazed roof panels to permit entry of natural light while avoiding direct sunlight (http://www.akdn.org/agency/akaa/ninthcycle/page_01txt.htm). In order to achieve a less overwhelming scale, four levels have been placed belowground, and

seven are above. The library also contains three museums, a planetarium, an ALEXploratorium for children's exhibitions, two permanent exhibitions, six art galleries for temporary exhibitions, a conference center, seven research institutes, and a cafeteria.

Much of the building is surrounded by a reflecting pool, protected by a large diaphragm wall. One description of this wall states that, "The sub-structure of the library is the most innovative part of the project. The half submersion of the building 18 meters belowground on a site close to the sea raised serious structural problems. Its circular diaphragm wall is considered the largest in the world, with a diameter of 160 meters and a height of 35 meters. The foundations are unique in that they were designed as tension piles with a heavy raft foundation on the south side and as compression piles to take the weight of the north side" (http://www.akdn.org/agency/akaa/ninthcycle/page_01txt.htm).

Many great library buildings are built to house great collections. In this case, the great collections will have to follow the building. With a capacity of 4 million volumes, the library at opening housed just 250,000 books, many from donations (Wakin, 2002).

Nonetheless, the library is built adjacent to an existing conference center and near the campus of Alexandria University, and it has proved to be a popular tourist destination and a resource for the University's students.

In the introduction to his useful volume, Webb responds to David Kaser's assertion that "the most efficient shape for library operations ... is almost always a simple rectangle," by writing, "but without some engaging internal unity, or some decorative relief, we would find even highly functional or minimal architecture to be stark and barely tolerable. We crave visual interest ... Perhaps the origin of the architectural arts—and perhaps of all art—can be found in a human desire to escape visual tedium or to infuse in human creation the diversity and visual interest inherent in nature. Moreover, there seems to be a persistent need to express library significance that exceeds the desire for pure functionality in library design. Even in the contemporary era, there remains much more to the library form than mere function" (Webb, 2000, p. 7).

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Tailoring Services to Different User Groups

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The Burden of Being Special: Adding Clarity about Communicating to Researching and Serving Users, Special and Otherwise

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I. Given a “Special” Population by Any Other Name¹

The idea of adapting and designing services and products to serve “special” needs either for the public good or for commercial purposes is fundamentally an idea anchored in US history. At root, it is a simple idea, albeit expressed in widely varying vocabularies across disciplines and professions. In the parlance of social work, public education, and public librarianship, for example, the idea has been repeatedly advanced over the years as a well-meaning reaching out to meet the needs of subpopulations not readily addressed by available service designs. In the parlance of the commercial sector, the idea has focused on market segmentation, dividing the population into finer and

¹This chapter is one of the outcomes from the project “Sense-making the information confluence: The whys and hows of college and university user satisficing of information needs.” Funded by the Institute of Museum and Library Services, Ohio State University, and the Online Computer Library Center, the project was implemented by Brenda Dervin (Professor of Communication and Joan N. Huber Fellow of Social and Behavioral Science, Ohio State University) as Principal Investigator; and Lynn Silipigni Connaway (OCLC Consulting Research Scientist III) and Chandra Prahba (OCLC Research Scientist), as Co-Investigators. More information can be obtained at <http://imlsosuoclcproject.jcomm.ohio-state.edu/>. The authors thank Karen Fisher and the ASIST Special Interest Group on Information Needs, Seeking, and Use which focused its *5th Annual Research Symposium* on the topic “*Connecting Research and Practice: Special Populations*.” The senior author’s keynote at that symposium served as impetus for this chapter. A power-point of that presentation is available from the author at: dervin.1@osu.edu

finer subgroups for the purposes of marketing products and services. One of the most recent labels for these activities has been marketing to audience “niches” in which the audience is identified “... as a certain definable market segment with demographic characteristics that make it attractive to advertisers.” (Fejes and Lennon, 2000, p. 37).

In the context of library and information services, the mandate to serve the needs of “special” populations has a particularly long tradition. While the idea has an incipient history dating back at least as far as Thomas Jefferson’s musings about the masses (Jefferson, 2005), in actuality the driving social force that led to increasing emphasis on special populations was the great immigrations that brought diverse groups to US shores. This was followed in turn by other social forces, each of which affected the vocabularies used for defining and pointing to special populations. The world wars, fall of colonial powers, rise of mass media, calls for more participatory governments, and most recently, the rapid emergence of world wide webs of electronic networks have impelled a breaking apart of traditional identity anchors amid massive population migrations. These migrations have been both geographic (i.e., movements of people across national borders) and psychic (i.e., movements in how peoples think about themselves and their identities generated by diverse contact and the rise of the media). At one and the same time we have seen the rise of demands for equitable access to privileges and resources with a simultaneous demand for recognition of unique and often changing identities. In a very important sense, every individual and every subgroup may potentially demand today to be seen as special far beyond the confines of their traditional social circles. We have arrived at a time when what is seen as “special” is rapidly changing and hence elusive.

Librarianship has traditionally been at the forefront of the call to address “special” needs (Johnson and Rossiter, 1986). Orange and Osborne (2004) noted, for example, that the American Library Association lobbied in the early 20th century on behalf of support for service to immigrants, rural communities, prison populations, and other challenged groups. The library profession, not surprisingly, has given strong support to programs that address the literacy and information needs of these and other socially marginalized peoples (Battles, 2003; Harris, 1995).

Historically, “special” user populations have been defined in a variety of ways. For example, services have focused on the needs of persons identified as “the disabled and handicapped,” “adult illiterates,” “migrants,” and “the urban poor.” In the 1970s, the term “urban residents” became a euphemistic catch-all phrase referring to low-income urban minorities. More recently, in the 1990s, the service focus on population subgroups has evolved into the use

of such terms as: “unserved,” “underserved,” “marginalized,” “vulnerable,” “physically challenged,” and “culturally different.” Most recently, the terms have been transformed again from focusing on marginality, difference, or what some philosophers call “otherness” (e.g., Riggins, 1997; Shuman, 2005) to uniquenesses usually defined in a host of different contextually or situationally anchored ways (Fisher *et al.*, 2005). “Community based” has become, for example, a term used today to capture a variety of meanings of “special.”

Despite this evolution over time, there remain a number of fundamental contradictions to the foundational reasoning behind the mandate to serve “special” needs. On one side of these contradictions is the idea that special services and products will be and can be invented to meet special needs. With the advance of new electronic technologies, there has been a marked increase in efforts toward this end—designing services and systems especially to meet the needs of particular populations. One manifestation of this trend has been the call for “just for me” services. Kuhlthau and Tama (2001) usefully define this as a call for designing systems to provide a wider range of access points for specific users. Many information seekers now are able to travel the globe via the Internet looking for “just for me” inputs. The evidence shows that these users are demanding more and more adaptations to their particular needs (Bruce, 2002; Dervin and Foreman-Wernet, 2003).

Certainly, there are many examples of systems providing useful services to meet targeted individualized needs. The difficulty, however, is that in the framework of our current ways of thinking about users, these specialized targeted services are expensive to design and maintain. Our primary way of designing services for meeting highly individualized user needs is by dividing users into subgroups based on demographic, domain focus, and task conditions, and then looking at information seeking and use behavior within these subgroups. In recent literature, every possible subgroup is potentially identified as “special” with ever finer and finer designation of subgroup attributes. We move in the literature, for example, from studies of the poor to poor women, to poor Hispanic women, to poor Hispanic women facing postpartum depression. Or, we move from scientists to chemists, to chemists writing dissertations, to female chemists writing dissertations.

Each of these characteristics and arrays of characteristics become an entry point for looking at a user group as “special.” The difficulty, however, is that the subgroup analysis approach is virtually our only current approach for attempting to understand users in more individualized ways. As an approach, when extrapolated to all the needs it must fill, it quickly becomes impractical. For example, a specialized information service might require as many as 18,750 different system designs to accommodate the combined potential

characteristics of its user population described by just seven different attributes, each with different numbers of categories (e.g., five categories of ethnicity, two genders, five social classes, five levels of education, three variables of urbanity, five task situations, and five knowledge domains). But, prediction research based on subgroup categorizations suggests that seven such attributes is not near enough to yield predictions to serve as the basis for designing services to effectively meet individual needs. Add only four additional categories with four values each and the system demands increase to almost five million.

On the one hand, thus, the subgroup approach to serving users has a long- and well-meaning history. On the other, as an approach to moving toward meeting highly individualized user needs the approach falls apart because of the sheer magnitude of its demands. And, ironically, at the same time, communication research suggests that the subgroup approach to system design and service is inherently non-communicative. Because of this, the approach is challenged by inherent constraints on the extent to which it can explain what is happening during actual moments of use of library and information systems and services (and, in fact, as the literature suggests, most service systems in society). Researchers who take this position argue that we can—and must—find ways of understanding user information seeking and use anchored in communicative activity rather than in group membership categories (Dervin and Foreman-Wernet, 2003).

It is this tension between the dominant acceptance of subgroup approaches to understanding users and the communication limitations of these approaches which is the primary focus of this chapter. Essentially, it is fair to say that attempts to focus on user groups can be seen as a ricochet through a variety of alternatives all essentially anchored in different subgroup approaches. While there is high agreement on the value of working toward service and system designs that are highly user individualized, there are a great many contradictory positions about how to achieve this end. As a result, our understanding of how to do this is palpably incomplete.

Further, a major barrier is that our attention to the design of responsive and adaptive services and systems is clouded by contradictory assumptions which make us too often unable to genuinely hear what users have to say about their needs. Baer (1996) made this point, for example, when researching the health service needs of Hispanics. He noted that the major gap between users and systems is not that different populations of users differ from each other. Rather, the major gap is between experts and users because expert understandings of the world are alien to everyday experience, and consequently, experts are unable to engage non-experts in dialogs without forcing non-experts to define themselves in terms of how experts see the

world. In general, there is a well-documented divide in perspectives between experts and non-experts in virtually every service field (Dervin and Foreman-Wernet, 2003).

Kazmer (2004, 2005) has been researching this same point and has shown that even librarians behave differently in meeting their own information needs than their professional education deems appropriate. Hersberger (2002/2003) provided another example when her interviews with homeless persons found some of them scolding experts for thinking them information poor "... just cause I don't have much money." Krosnick (1999) and Yankelovich (1996, 1999), considered among the foremost leaders in public opinion research, supported the point when they suggested that traditional system-oriented close-ended approaches to survey research cannot adequately hear what publics have to say. The writings of Shuman (2005) and Dervin and Foreman-Wernet (2003) suggest the difficulty is not confined to quantitative approaches to thinking about users but extends to any intersection between expert power and users/audiences positioned by experts as the "other."

This rupture between users and experts is well documented across fields. A major source of this rupture is that historically, and still dominantly, the intention in targeting special populations is not the invention of products and services to serve special needs. Rather, it is the successful marketing of products and services we have already invented so that specified populations will reach out for and recognize the value of these products and services and, hence, the value of our institutional existences. In looking at special needs in this way, librarianship is no different than other fields and professions. The same contradiction pervades, for example, the literatures of health and mass communication, international development, journalism, education, and public health (Dervin and Foreman-Wernet, 2003).

Essentially, most of our historic societal attention to "special" needs has been embedded in rhetorics of persuasion. We want those "special" people to pay attention to us—our products, our services, our information, our education, our systems—on our terms and see the value we offer. Standing between us and "them" is this "phenomenological" inconvenience—"they" do not see the world our way and somehow we must translate our value into terms they will appreciate. In this sense, the attention to marketing "niches" and "special" populations are reflections of each other.

But there is another side to this story. In actuality, the impulses that have driven attention to special needs in service professions have usually had far more than marketing intentions. Marketing focuses on delivering audiences to commodities, and as long as sufficient numbers of audience members consume the commodities, the marketing effort is considered successful.

There is little concern placed on whether a particular individual is reached. Further, marketing is well documented as being unsuccessful in “producing” tough behavioral changes, except at enormous cost and with extraordinary communication redundancy (Dervin and Foreman-Wernet, 2003).

In effect, marketing is a very different communication mandate than delivering effective service to meet individual needs. A great deal of research (Dervin, 2001; Rice and Atkin, 2003) have documented this fundamental point about communication even as we persist in designing systems and services that ignore the point. Yet, the dominant stereotypes based on population subgroup memberships that drive most of our understandings of communication come from the rhetorics of persuasion and not the rhetorics of interpretive or communicative sharing. While most service professionals’ attention to special needs have been well-meaning, service professions—including library and information system service—remain constrained by their approaches to defining “special.” As a result, attempts to communicate with those who are defined as “special” are for the most part non-communicative and unable to be responsive. In addition, approaches to researching special populations usually embed within them these very same constraints. In essence, normatively across all the applied social sciences we research users/audiences non-communicatively and we design systems and services that are themselves inherently non-communicative. In these systems, research has shown that it is one-on-one practitioners who bear the burden of attempting to bridge these communication gaps. Users also bear the burden as they exhibit what we experts too often term trial-and-error random learning behavior but user studies show are users attempting to get from systems value on their own terms.

A special irony is that new electronic technologies allow us to design information products and services more flexibly and more responsively than ever before possible. We have a glimmer of recognition that we can do more than merely package what we do now in ways that we think serve “special” or highly individualized needs. Rather, we can create services and products that are genuinely responsive. On the one hand, there is clear evidence that librarians and other professionals see that potential. On the other hand, all the service professions remain constrained by inhibiting views of communication. These views of communication inhibit the potential for responsive service because they are not based on principles of responsivity. Rather, they are based on the idea that we can design services in advance based on predicting subgroup characteristics.

The purpose of this chapter is to explore this essential contradiction and its implication for librarianship both as professional practice and for the design and implementation of library and information systems. This chapter

draws on two major sources: a number of already published and extensive literature reviews, and a survey of recent research and commentary in library and information science focusing on the needs of special populations. In addition, communication research regarding the requisites of effective and efficient approaches to respond to individual needs also informs this chapter.² Literature on the needs of special populations is highly detailed and its review is not the intention of this chapter. Rather, the purpose is to examine what library and information science practitioners and researchers—as well as practitioners and researchers in all service-oriented fields—are doing when we think about users as divided into groups, each of which is potentially definable as special.

II. A Catalogue of Special Populations

Well-meaning researchers and practitioners have particular interests in unique populations. They have many different rationales, all of which center ultimately on providing better service and designing better systems to meet human needs. There are a host of examples. Virtually every researcher focusing on a particular population argues the necessity of doing so based on one or more of the following reasons. Researchers and practitioners are mandated, it is argued, to learn more about “special” populations in order to: empathize with and thus serve particular groups better; make the acquisition and organization of information more efficient and effective; bridge gaps between institutions and those who do not trust them or feel welcome in them; prevent or alleviate the risks, injustices, challenges that particular

²Our review of the LIS literature systematically attended to the years 2002 to present for *Journal of the American Society for Information Science and Technology*, *Library Quarterly*, *D-Lib*, and *Proceedings of the 2005 Annual Meeting of the American Society for Information Science and Technology*. This search was supplemented with searches on the databases LibLit, ISI, and Academic Search Premiere using the keywords: special, target, underserved, minority, niche, and user. In addition, at the 2005 ASIST meeting the Special Interest Group on Information Needs, Seeking, and Use focused its *5th Annual Research Symposium* on the topic “*Connecting Research and Practice: Special Populations*.” In all, 44 proposals were received for nominations for particular “special” populations. This set of proposals has also informed this review. Finally, a series of comprehensive reviews completed for related projects provide an additional foundation of 400 references which inform this chapter. These include: a review of the literatures on information seeking and use comparing attentions in library and information science to those in communication, particularly in the context of providing health information (Dervin, 2001); the notes and references supporting the proposal originally submitted for the project described in Endnote 1; and papers reviewing the struggles attending to users in other domains (Dervin and Foreman-Wernet, 2003).

populations face; assure information becomes a public good for the many rather than the few; reduce institutional and societal costs seen as caused by particular subgroup ignorances; enable user-oriented design; address the unique information seeking and using capacities of particular groups; aid societal caretakers in caring for others; acculturate newcomers to society; allow societal experts to work more effectively and efficiently; and, assist citizens with the full range of their everyday information seeking needs, including uses for family, community, work, and leisure.

In the past, the idea of a special population was reserved in particular for those marginalized in some way (Johnson and Rossiter, 1986). Now "... there are as many potential 'targeted groups' as there are roles that people play in their lives." (Panz, 1989, p. 152). The complexity of the current state of attention shows in Table 1 in which the attributes designating target groups are arrayed with the same kind of seeming randomness of attention and cacophony of uniquenesses that marks this body of literature as well as the literatures of the applied social sciences generally (Dervin, 2003a, b; Dervin and Foreman-Wernet, 2003; Feynman, 1999; Flyvbjerg, 2001; Olaisen, 1996; Vakkari, 1997).

We have not cited specific references in Table 1 because an examination of the references at the end of the chapter shows self-evident attention to special target groups in chapter titles. Abbas (2005), for example, focuses on middle school children; Agada (1999) on inner-city gatekeepers; Allen (2001) on refugees and asylum seekers; Armstrong *et al.* (2000) on low-income South King County residents. The essential characteristic of these attentions to "special" groups is that they all start by naming the attributes which make the group "special." The attributes are not themselves studied as such but rather are assumed to be held constant as the group is examined for their information seeking and using behaviors.

Table 1 maps this literature in two dimensions. The first dimension focuses on how researchers have organized their attentions to special populations in terms of the essential characteristics of users or essential characteristics of situations users are assumed to be in that makes them "special." The second dimension focuses on the particular research attributes used to describe either the user or the user-in-situation. This way of looking at fundamental foci in academic writings is drawn from the work of Richard F. Carter (2003) and in particular his early model of an iconic picturing language for the purpose of concentrating on the essence of conceptual ideas (Dervin, 1975/2002). Purposively, in Table 1, there is no coherent conceptualization across the columns other than the column headers. The design of Table 1 is intended to reflect how the subgroup approach when viewed across all subgroup attentions yields a cacophony of potential attentions.

Table 1

A Mapping with Examples of the Three Dominant Ways Recent LIS Research Has Focused on Defining “Special” Populations

(A) Demographic attributes of the user	(B) Knowledge domains in which user is seeking and using information	(C) Everyday information need situation or task faced by the user
Income level	Social science	School project
Income source	Physical science	Food production
Urbanity	Women’s studies	Casual and serious leisure
Education	Natural science	Risks and disasters
Age	Knowledge work	Consumer activities
Generation cohort	Chemistry	Tourism
Ethnicity	Computer science	Community relationships
Mental/physical disabilities		
Sexuality	Software engineering	Employment
Gender	Accounting	Education
Mobility	Astronomy	Scholarly work
Social class	Journalism	Parent–child relationships
Employment	Law	Aged parents
Language spoken	History	Patient care and instruction
Race	Music	Arts administration
Immigration status	Medical practice	Chronic disease management
Place of birth	Librarianship	Bibliography development

There are numerous other potential ways of organizing these entities and attributes but Table 1 will suffice for the points we wish to make here. Table 1 displays the entity–attribute combinations defining “special” populations in the three ways we see as dominating the literature. One approach focuses on users as described or characterized by relatively stable demographic attributes, usually considering one or two attributes at a time (e.g., low-income or low-income African-American). The second foci on users as doing their information seeking and use inside a knowledge domain which is itself described or characterized by a relatively stable across the time–space attribute—the identification of the knowledge domain (e.g., social sciences, chemistry). The third foci on the user is a more situated way of identifying the generalized project or task on which the user is seen as working (e.g.,

patient care and instruction, aging parents, bibliography development, scholarly work).

We have purposefully listed each array of attributes as nouns rather than verbs in Table 1 even though there is an important thrust in some of the user literature that calls for attending to process stages and to information seeking and using activities. While we agree this is a vitally important thrust in the literature, in actuality, it can be seen only in the beginning stages of conceptual development. As yet a body of systematic comparison does not allow us to navigate between the host of slightly overlapping but still very different approaches and theories applied to context- and process-oriented study of information seeking and use (Fisher *et al.*, 2005). Even more serious is the fact that process- and activity-oriented emphases have not yet been formalized and rarely serve as primary entry points for consideration of the mandates to serve special populations. This issue will be discussed below, within the explanation of the three components of the mapping presented in Table 1.

A. Demographic Attributes of the User

The user and the attributes being applied to define the user as special are traditionally defined and much-used demographic characteristics: for example, income, urbanity, age, education, ethnicity, gender, social class, mental/physical disabilities, employment, race, immigration status, and place of birth (Barash and Jackson, 1996; Boisse, 1996; Carlson, 2000; Dinerman and Hudock, 1995; Metoyer-Duran, 1991; Norton and Kovalik, 1992). Studies in this group focus on the information behaviors of, for example, low-income residents (Armstrong *et al.*, 2000; Chatman, 1991; Hersberger, 2002/2003); youth (Abbas, 2005; Druin, 2005; Large *et al.*, 2004; Shenton and Dixon, 2004, 2005); gays and lesbians (Creelman and Harris, 1990; Stenback and Schrader, 1999; Whitt, 1993); generation Y youth (Cooper, 2002; Silverstein *et al.*, 2005; Weiler, 2005); Native Americans (Siegel *et al.*, 2005); Hispanics (Bala and Adkins, 2004; Guerena and Erazo, 2000); and the elderly (Detlefsen, 2004; Wicks, 2004). Frequently, a number of intersecting demographic attributes are used in the definitional entry, for example: recent Hmong and other refugee immigrants (Allen *et al.*, 2004; Fisher, 2004); low-income African-Americans (Agada, 1999; Spink and Cole, 2001); older African-American women seeking health information (Gollop, 1997); or women in general seeking health information (Warner and Procaccino, 2004).

What is special about the user in all these conceptualizations is that the user has one or more relatively enduring characteristics as a member of a particular demographic group. While a great many different dimensions of

the user's characteristics, situations, and life in general are often also attended to, the driving definitional entry is demography.

B. Knowledge Domain in Which User Operates

Being a student or expert in a particular knowledge domain is another way in which some users are defined as special. Traditionally and to this day, this is one of the dominant entry points in user studies because of the obvious link between knowledge domains and the organization and distribution of information resources. Historically, populations addressed in this way were not seen as "special" in the library and information science or communication literatures. However, recent literature is applying the word "special" to virtually any subpopulation. There were, for example, nominations for attentions to users identified by domain at the 2005 ASIST special populations symposium.³

Numerous studies have been conducted looking at the needs of users within specific-knowledge domains. Ellis *et al.* (1993) noted, for example, that information seeking behavior research has been gathered about scientists since the 1940s. Some recent examples include: scientists in general (Tenopir *et al.*, 2003); astronomers (Tenopir *et al.*, 2005); chemists (Davis, 2004; Flaxbart, 2001); atmospheric scientists (Hallmark, 2003); social scientists (Meho and Tibbo, 2003); physical vs. social scientists (Ellis *et al.*, 1993); historians (Duff and Johnson, 2002); genealogists (Duff, 2003); women's study scholars (Westbrook, 2003); and scholars and faculty in a variety of domains or disciplines (Cole and Kuhlthau, 2000; Foster and Gibbons, 2005; Rose, 2002; Whitmire, 2002; Wildemuth, 2004).

C. Everyday Information Need Situations Faced by the User in Work, Family, and Life

Users seen as facing particular everyday tasks or demands is the third framework used to define special populations. This approach is an extension of the approach described above with the difference that now the information domain does not fall tidily into what has been traditionally defined as knowledge domains. Rather, the user is seen as existing inside a situation which focuses on a particular task or demand (e.g., scholarly work, bibliography development). In this framework, researchers define users situationally in terms of the primary tasks or functions in a particular situational

³Ibid.: Note 3.

condition which characterizes the user's state of being in some way. This attention to situation is not inherently communicative, however. Rather, this attention to situation is expert driven: a particular task situation is defined as having an a priori set of functions and users are studied vis-à-vis these functions.

A major group of studies have included attention to professional and occupational expert groups who have specific jobs to perform. For example, software engineers and computer scientists in industry vs. the academy (Freund *et al.*, 2005; Yitzhaki and Hammershlag, 2004); midwives delivering babies (McKenzie, 2004); law enforcement, education, and medical practitioners serving their publics (e.g., Steff-Mabry, 2005); and arts administrators managing museums (Zach, 2005).

Proceeding a step beyond focusing on occupational information behaviors and needs of experts is a growing tradition that focuses on what has come to be known as "everyday information needs analysis" (Ellen, 2003). Traditionally, there has always been some attention to information seeking and use behaviors of incipient as well as actual experts working on particular situated projects within knowledge domains. The expansion of this approach to what is now called "everyday information seeking and use" was introduced to the library and information science field in the 1970s with a series of federally funded studies of everyday information seeking and use by the general population and by specific subpopulations. The studies are primarily known by the geographic sites of their execution: Baltimore, MD (Warner *et al.*, 1973); Syracuse, NY (Gee, 1974); Seattle, Washington, DC (Dervin *et al.*, 1976–2006); state of California (Dervin *et al.*, 1984; Palmour *et al.*, 1979–2006). Recently, Ellen (2003) undertook a replication-extension of the Seattle study in the United Kingdom.

What all these studies have in common is that they examined information seeking and use in specific everyday life situations, such as money management, child rearing, employment needs, and marriage relationships. Here again the user is conceptualized as being involved in a situation which has the constant attribute of the task the user faces.

The everyday information needs approach has spawned a rich tradition of published literature. In studies focusing on experts, some recent examples include: health care providers focused on providing information to improve patient safety (Cheung and Lam, 1996; MacIntosh-Murray and Choo, 2005; Wozar and Worona, 2003); knowledge workers seeking information to produce information (Hirsh and Dinkelacker, 2004); or midwives (and mothers) at birthing events (McKenzie, 2004). Examples from studies of non-experts facing situational demands include: mature undergraduates facing their everyday and academic situations (Given, 2002); relatives seeking information

by proxy to care for another's health (Hepworth, 2004); information seeking by stay-at-home moms (Tardy and Hale, 1998); information seeking by those who have cancer (Balmer, 2005; Basch *et al.*, 2004; Butow *et al.*, 1997; Chalmers *et al.*, 1996; Derdiarian, 1986; Graydon *et al.*, 1997; Harris, 1998); and information seeking for leisure (Savolainen, 1999).

III. The Essential Ideas Behind Special Populations

It is important to note here that in actuality many researchers who take demographic, domain, or task approaches to studying users in subgroups introduce a variety of interpretive or communicative elements into their studies. Likewise, practitioners who design services to meet the needs of users defined in demographic, domain, or task groups also introduce a variety of genuinely communicative elements into their services. However, communication-based approaches to research, service, and design are not inherently built into the subgroup approach to users. The result is twofold: one, communication needs are too often addressed in an ad hoc fashion; and, two, we lack the kind of cohesive theoretic framework which would allow us to make coherent sense of the cacophony of our subgroup approaches.

Despite this, there is little doubt that the general mandate to “know one's audience” is an important truth that has emerged from communication research in the past 50 years. In this context, it is fair to conclude that the sensibilities behind the array of attention to special populations manifested in Table 1 are well meaning. Further, there are a host of examples of research showing that researchers and practitioners have looked at the particular needs of special groups for new and important avenues of service. Large *et al.* (2004), in their usability work with elementary school children, found that while the children's information behaviors did agree with some dominant stereotypes (e.g., the children did like lots of color and movement), the children also behaved in non-stereotypic ways (e.g., they wanted clarity of content and operational usefulness). Another example (reported in Dervin and Foreman-Wernet, 2003) found a public library learning that non-English-speaking immigrant users were checking out popular video films to improve their English.

The difficulty we face, however, is that our dominant approaches to attempting to understand users are essentially driven by expert maps of the world. Because of this, we too often fail to hear what users have to say even when we make especial efforts to identify groups of users as special. Because of this persistent rupture between the worlds of expert librarians and those of users, it is useful to step back and examine more closely what fundamental picture is being presented of users when we define them as special.

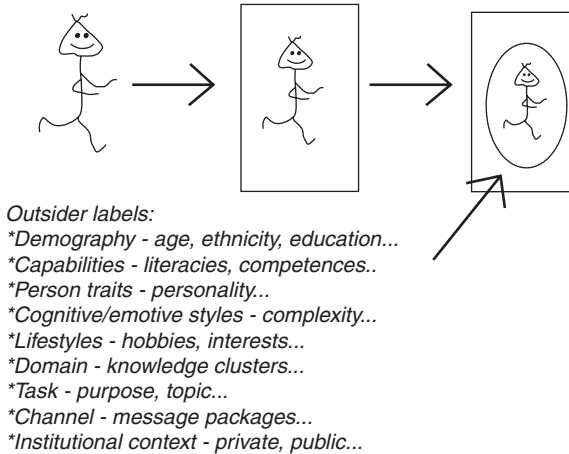


Fig. 1 The disappearing user encased by a sampling of outsider labels applied to users to designate them as “special.”

Fig. 1 attempts to capture the difficulty metaphorically. Essentially, the approaches to defining special populations which we reviewed cage the user into a box—either a box in which the user is fixed by one or more demographic attributes, or a box in which the user is fixed attributes describing the domain in which he/she works or the situational task demand he/she is seen as constrained within. In a very real sense, we can say the user disappears in these boxes even though the intention is quite the opposite. The box is the cage into which all the users of a given group defined as “special” are encased; the attribute is the attribute seen as defining that group, as making that group “special.”

These dominant ways of defining users as special are for the most part static. Time–space is frozen. Fig. 2 attempts to capture this fixedness by showing how the user remains described with a constant attribute through time–space, or how the user is encased in a situation that is itself described with a constant attribute as it moves through time–space.

The difficulty with this way of conceptualizing users is that it is too far removed from the complexities of the communicating that happens when users reach out to systems for help. The literature shows a clear recognition of this difficulty as it not only exhibits a cacophony of attributes which make users special, but it also exhibits a cacophony of theories of what researchers and system designers ought to be attending to (Dervin, 2001; Fisher *et al.*, 2005).

The struggles that library and information science research and practice exhibit in understanding users is not different than that exhibited in other

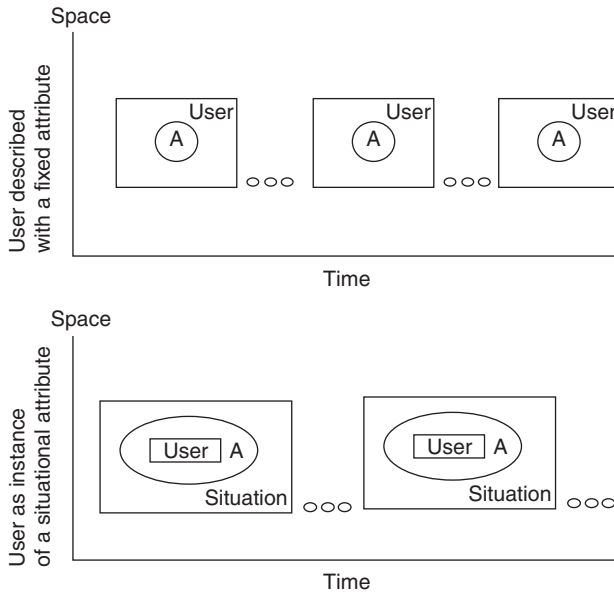


Fig. 2 The “special” attribute of the user seen as an unchanging attribute of the user as a person or as an unchanging attribute of the situation in which the user is an instance.

fields. In health communication, for example, it is well known that marketing approaches do not work as a basis for designing communication interventions and that what does work is expensive community-based or highly individualized interventions (Dervin, 2001; Rice and Atkin, 2003). In the field of mass communication, it has been a long-held caveat that audiences lead the way, they do not follow. In the terrains of technological innovations, it has been long known that most introductions of technological inventions fail and even for those that succeed, experts do not predict well how audiences will adopt and use their inventions (Shields and Dervin, 1998; Shields *et al.*, 1993). One classic example is the VCR, which diffused at lightning speed far beyond manufacturer expectations but not because of the early cumbersome preset timed recording features which manufacturers tried very hard to sell based on the appeals of the features as confirmed by numerous focus groups. Rather, the rapid diffusion came as a result of users making and viewing family videos and renting movies on-demand, exactly-when-I-want-it use. Perhaps the most famous example of experts guessing users wrong was with the telephone, which experts who introduced it proudly announced was a tool for business and not for the idle gossip of

women. It seems a long way from that admonition to the now iconic slogan “reach out and touch someone” and it is a way in which users informed experts, not the other way around (Dervin and Foreman-Wernet, 2003; Marvin, 1988; Rakow, 1992).

IV. The Dangers of Defining Subpopulations As Special

The review above advances an argument suggesting that the dominant approach to defining user groups as special is one which freezes users in time-space and then stereotypes them within demographic, domain, or situational task clusterings. Essentially, the predictive model says all users within this special group will have the same needs and seek and use information in the same ways.

There are three challenges—and resulting dangers—arising from this dominant approach to defining groups as “special.” First, the dominant approach is costly, one that we are unable to maintain in a world where group identities are shifting, disciplinary domains are colliding and elusive, and everyday circumstances change with sometimes alarming rapidity.

A second challenge is that evidence from some user studies suggests that this dominant way of looking at human information seeking and use is too far removed from what is really going on. The danger is that we then fill the gap of our lack of understanding with erroneous theories and fall back on our expertise as guidance. Time and again we find authors suggesting, for example, that when users say they did not find what they needed it is because they did not know how to look. Time and again, we find researchers, acting on behalf of expert systems, testing users for their capacities for doing what systems want them to do instead of examining what it is that users are doing with systems that they find useful. Classic examples in user studies here include a host of studies that classify as random, all user activities not defined as mandated by the system.

One manifestation of this rupture is the way in which research on users in library and information science, but also in other fields, posits that we must attend to the situational and environmental experiences of particular user groups while at the same time treating these situational and environmental experiences as fixed-task categories and retreating to personality and other trait explanations of results. As a result, while we find much of user studies research reaching for alternative approaches to understanding users in actuality for the most part we continue to use traditional approaches that conceptualizes users as unchanging across time-space. A number of authors have recently emphasized this point in various ways in the library and

information science (Olsson, 2005; Orange and Osborne, 2004). Olsson, in particular, made a strong case in his call for looking “beyond needy individuals.”

A third danger of a focus on special populations is political, in the sense that looking at users in this way is consonant with an approach that defines users as commodities. Fejes and Lennon (2000) advanced the argument cogently to gay/lesbian activists when they warned that now that the gay/lesbian marketing niche has achieved legitimacy, it has simultaneously made invisible others who have suffered and been stigmatized because of their differences. Their point is that legitimizing population needs can end up exploiting—commodifying—social identities. Interestingly, Mcpherson made a similar argument to libraries in 1977 by arguing that a focus on special populations can lead to a co-optation by special interests.

In the absence of understanding how to design systems and provide services that meet individual human needs, we have no way of putting a group or special population approach into proper perspective. Under what conditions is attention to special groups useful? When is it not? Clearly, attention to population subgroups is the normative way in which our societies organize and marshal resources and the battle ground for the identity politics that mark late-20th century history. But there is growing evidence that identity politics do not engender effective communication practices. While knowledge about user subgroups may be necessary, it is not sufficient for effective service and system design.

V. Arguments Behind the Arguments

If Table 1 and Figs. 1 and 2 capture the essential ways in which our society conceptualizes groups of users and potential users of systems, the arguments behind the arguments exemplify the rupture between these dominant approaches and communication realities. In short, the dominant approaches to defining users are ineffective communicatively. Practicing librarians have long been aware of the gap between system designs and serving individual needs. Across the service professions, it is documented that a major cause of professional burn-out is this gap and the stresses placed on well-meaning one-on-one practitioners to adapt inert systems to individual user needs (Dervin and Foreman-Wernet, 2003).

Unfortunately, this recognition has too seldom affected policy-level discourses where the subgroup orientation to understanding users and audiences dominates in virtually all service fields. Further, this recognition has too seldom impacted researchers who do the practical research that serves policy

analysts. As a result, it has been primarily researchers from the academy who have explored this gap by proliferating alternative user theories. The resulting cacophony of theories is a major source of the infamous divide between research and practice that marks not only the field of library and information science but the entire range of human studies (Craig, 1989; Dervin, 2003a, b; Hjørland, 1996, 2002; Wilson, 1996a, b).

In actuality, however, many of the researchers who seek alternative, stronger theories and approaches for studying users are working as allies to practitioners as they attempt to answer the question of how to define and understand users and user groups. Researchers have recognized the tensions between how our society dominantly defines user groups and the myriad failures that happen in instances of everyday practice—the many ways in which user needs are not met in every professional field of service and the many ways in which well-meaning practitioners must absorb on their shoulders the burdens of non-communication systems.

In library and information science, the turn toward this grappling is marked as having begun in the 1980s when there was a call for conducting user-oriented user studies (Bruce, 2002; Meho and Tibbo, 2003; Nahl, 1996; Vakkari, 1997; Wilson, 1997). Despite what is now a 30-year history (Dervin and Nilan, 1986; Zweig and Dervin, 1977), there is still little agreement on appropriate approaches for studying or theorizing users.

Yet, the complexity is simultaneously both a disappointing sign of failure to understand users, and an encouraging sign as a number of dialectical polarizations collide and begin to splinter. In research, it is well documented how collisions and dialectical polarizations of various kinds mark periods of new beginnings (Flyvbjerg, 2001). What is encouraging is that the polarizations that mark discourses are very hard to penetrate (Derrida, 1988; Foucault, 1980) but a sign of the good struggle is the very proliferation of diversities amid incoherencies. It is in this sense hopeful that we see a simultaneous imploding of user studies with avalanches of unrelated findings and exploding with diverse theories and approaches. It is after such periods of incoherency that we often find researchers, particularly younger ones, making new breakthroughs.

Others have examined the chaos of theories and approaches in user research (e.g., Dervin, 2003a, b; Hjørland, 1996; Olaisen, 1996; Vakkari, 1997; Wilson, 1996a, b), so in some senses the review that follows below is repetition. What is different, however, is that the review below focuses specifically on how the polarizations that permeate our efforts to define and understand users interrelate with our dominant emphasis on user subgroups. What else is different is our attempt to discuss these polarizations in a way that does not privilege the discourse of any one side of any one of the polarizations.

Because the territory has been much covered in the past and because the tensions in the literatures of user studies are intertwined and interrelated, we start by borrowing from prior discussions a very brief description of a set of polarities that pervade human studies (Bates, 2005b; Best and Kellner, 1991; Bruner, 1990; Craig, 1989; Dervin and Foreman-Wernet, 2003; Hayles, 1990; Lather, 1991; Murdock, 1997; Paul, 2005). We organize these polarities for our purposes in a set of seven different, albeit overlapping, dialectical tensions that we see as arising from the arguments behind the subgroup argument. We proceed in this way because there are virtually no pure examples of each polarization. The very complexity and current diverse incoherency of user studies is manifested by the fact that any one empirical study can easily be in any number of contradictory places all at the same time and by the fact that there is very little meta-discussion in the literature to help us wend our way in and between these contradictions.

Each of the polarities we extract occupies a significant but chaotic place in the user studies literature. What we mean by chaotic is that few attempts have been made to systematically address these polarities either by doing systematic syntheses of their presence or systematic comparisons of ways of finding the unifying dimensions beyond the polarities and turning those dimensions into systematic conceptualizations that can guide empirical observations. This is not meant to imply that all of these polarities can be resolved with homogeneous and single outcomes. Rather it implies that we need to move toward conditional understandings of when subgroup approaches to researching and serving users is useful, and when they are not.

What makes reading the research evidence about users so difficult is that for the most part the arguments between approaches to studying and thinking about users are not presented as conditional but rather as either ... or options. What is asked is: which end of each of the polarities presented below is “true” or “right” or “best.” Yet, in the literature, you can find robust arguments for all positions—a most befuddling state of affairs.

A. User Adapting to Systems vs. Systems Adapting to User

Perhaps the most fundamental dialectical tension is a long-held assumption, at one end of the polarity, that human beings are capricious, highly variable, and ill-suited to effective use of orderly systems. What systems must do is to organize their expertises in defensible ways requiring users to adapt to them rather than the other way around. This assumption can be seen as a subset of a more general assumption: that when it comes to communicating with individuals, there is always an efficiency vs. effectiveness trade-off. The individualizing of communication takes time, it is assumed. A related

assumption is that users because they are not experts do not really know what they want or need and/or are incapable of articulating their needs.

B. User Behavior As Habitual vs. User Behavior As Changing

A second tension concerns whether user behavior is best conceptualized as habitual; that is, the same across time–space; or changing in response to changing conditions. This is a pervasive tension although it comes forward in so many different forms that it is often hard to see how fundamental it is. There are many different variations of the user behavior is habitual hypothesis; and as many different variations of the user behavior is changing hypothesis. The next four polarizations illustrate this complexity.

C. User Made by Nature vs. User Made by Nurture

One way in which researchers attempt to reduce the complexity in human studies is to posit human beings as biological creatures with in-born, genetically rooted characteristics which are invariant across time–space. Others find this reduction of complexity unrealistic and turn in contrast to the host of different ways in which you can study users as made by nurture—social structures, home environments, life experiences, cultural milieus, and so on—rather than by nature. This dialectical tension in conceptualizations of users reflects a debate that dominates the international agenda—the nature vs. nurture debate.

A group of scientists whom Brockman (2003) has called the “new humanists” have essentially proposed, and won sizeable attention and resources for the idea of studying human beings as biological creatures and uniting human studies with studies of all biological beings. This is a complex and powerful movement about which much can be said. It has offshoots that have proved promising (e.g., significant advances in neuroscience). And, it has offshoots that have proved seriously troubling (e.g. the downsizing of resources) for the humanistically oriented academy and the collusion of some academics with the right wing establishment (Condit, 2004).

Essentially, the nature hypothesis plays out in the study of users as a series of conceptualizations based on such across time–space attributions as cognitive styles (e.g., cognitive complexity, capacity to abstract); personality variables (e.g., self-esteem, aggressiveness, communication apprehension); or other in-born traits (e.g., intelligence) usually theorized as constant attributes of the person or relatively constant across time.

While those holding nurture positions would like to argue that nature hypotheses can never hold, the fact is that we do not have a body of systematic evidence and argument that allows us to negotiate between these

positions. The way in which this tension impacts the subgroup approach to understanding and serving users is that much talk about subgroups rests on untested assumptions about the essential traits of different subgroups.

D. User Made by Social Structures vs. User Made by Unique Experiences

Another dialectical tension in user studies that impacts the use of the subgroup approach to understanding users is a tension where both sides eschew the nature hypothesis but one side looks to social structures—institutional arrangements, social class, political economy—as the best predictor of user behavior while the other side looks to more immediate confines—family, neighborhood, community, and cultural life.

As with all these arguments behind the argument, usually the interplay of this contest is not apparent on the surface. Poverty, for example, can be conceptualized as an in-born trait although one rarely sees this argument. More often it is conceptualized either as a consequence or effect of social structures; or as an attribute of immediate living conditions. Since such assumptions are rarely tested, the explanations work behind the scenes but have a profound impact on how we think about user subgroups both in our research and in our designs for services and systems.

E. User As Effect vs. User As Cause

Permeating the tensions above is another—whether human behavior can be predicted based on a series of causes (e.g., genetic make-up, in-born traits, social structure, environmental conditions) or whether human behavior is itself constructing itself. In the user as effects conceptualization, talk about users focuses on inputs and outputs, and rarely focuses on the interpretive or communicative in between. One of two assumptions is implemented. One is that inputs lead directly to outputs and that the phenomenology of individual human experience is not relevant. What this means is that the interpretive does not even make it onto the conceptual map—it simply does not exist. The second assumption is that inputs lead to the same interpretations for all humans within a particular confine. Thus, for example, it is assumed that all low-income pregnant women suffering from postpartum depression share the same interpretations.

To state this tension as between users seen as effects vs. users seen as causes is, of course, an over-simplification for the academic literature is replete with variations on this theme. Some, for example, conceptualize each human as a unique constructing entity; while others look at constructing

only within social confines so they somehow combine both the user as cause and the user as effect into the same framework.

The fine nuances of these arguments, and there are many, are less important to us than understanding how these differences impact our view of users in subgroups. In users as effects, we examine subgroups as holders of effects resulting from a priori external causes. In users as constructors, we focus more on how users are negotiating, adapting, and indeed inventing alternatives for their circumstances. Within this approach, of course, there are a bewildering number of different ways of defining circumstances.

F. User As Noun vs. User As Verb

At a higher level of abstraction, the assumptions above intertwine in another way described variously in the academic literature as a contest between static pictures of users vs. process pictures, or between noun portraits vs. verb portraits (Dervin and Foreman-Wernet, 2003). In many ways this is the most recent argument behind the arguments to emerge and one sees it peeking through the old polarizations in numerous ways. A variety of these are described in Section VI of this chapter.

Again, there are many variations on this theme. Some researchers, for example, call for a move from static pictures to process pictures by hypothesizing that there are different kinds of situations in which information seeking and using happens. One much emphasized example in both library and information science studies and in communication studies is the difference between seeking information in task situations vs. pleasure situations. The activity difference implied is task finishing vs. pleasure seeking. Arguing against this approach are those who suggests that these distinctions are too gross, and what is needed is to look at finer distinctions, specific smaller moments of functional orientations by users within situations (e.g. task initiation vs. topic selection). Yet another argument suggests that any emphasis on situations or situational subparts as having an inherent character is by definition an outsider view and what is needed literally is a move to a focus on verbs or activities; in essence, micro-moments of action as initiated and interpreted by users in situations. Examples here include a host of specific verbs which have begun to creep into the literature (e.g. starting, stopping, comparing, differentiating, and so on).

G. User Studied Qualitatively vs. User Studied Quantitatively

One final dialectical tension must be mentioned although certainly for academics it has become hackneyed—it is the tension between qualitative

approaches to human studies vs. quantitative. Those who see human behavior as predicted by prior causes use primarily quantitative and statistical approaches to their studies—experiments and large-scale surveys, for example. In contrast, those who see human behavior as situated, environmentally anchored, and grounded lean toward qualitative studies—participant observations, in-depth interviews, and case studies, for example. For the practitioner–observer this divide is particularly confusing for, in fact, the twain far too seldom meet even as we hear echoes of cries for multi-method approaches. This polarization is further complicated by the power that quantitative evidence holds in policy arenas. It has been observed, for example, that politicians make decisions based on qualitative evidence while presenting quantitative evidence as the basis for their rhetorical arguments (Dervin and Foreman-Wernet, 2003).

VI. How the Polarities Converge in Our Understanding of User SubGroups

If we look at the polarities reviewed above as symptoms of possible conclusions about how to understand and serve users, the empirical evidence is clear that there is some justification for each possible conclusion—under some conditions each holds.

One difficulty we face is that underlying these polarities is first and foremost what might best be described as an ideological tension. Ideas about users as constant, unvarying, and predicted by in-born characteristics are deeply embedded in the edifice of assumptions on which our authoritarian expert systems have been built. Experts, with access to expert knowledge and expert structures for accessing that knowledge, traditionally were assumed to know what was right for users and set out with well-meaning intention to provide it. Alas, however, there are a number of converging forces which make that position untenable as the only way of thinking about the system–user interface.

One such force is how the diffusion of electronic networks is changing the slices of normal human behavior—long documented in the communication literature—that users now openly show where systems can for the first time see that users do not behave as systems prescribe they ought. In the midst of the rise of demands for “just for me” services (Creelman and Harris, 1990; Kuhlthau and Tama, 2001) and the expectations that technologies can be designed to provide such flexibilities, the traditional position of authoritarian expert systems has become indefensible.

Another force that makes the traditional authoritarian cast of information systems untenable is the everyday experience of front-line practitioners

who constantly deal with user uniquenesses amid system stereotypes and rigidities. Despite predictions to the contrary, users are reaching out more and more to libraries and front-line librarians are being asked to be more things to more people in more personalized ways (e.g., [American Library Association, 2002](#); [Gordon et al., 2001](#)).

A third force that makes the old invariant authoritarian position of systems untenable is the fact that evidence from those taking more situated, constructivist, relativist, and cultural positions does have its own body of growing empirical support ([Dervin and Foreman-Wernet, 2003](#); [Fisher et al., 2005](#)).

In fact, both sides of each of the polarities outlined above have evidence to support them. Further, there are deep and rich bodies of work advancing every position. As but a few recent examples:

- [Abbas \(2005\)](#) has done useful work focusing especially on children's cognitive abilities in developing user-defined controlled vocabularies for subject access in digital libraries. [Nahl \(2005\)](#) has implemented a program of work extending this focus into the affective domain.
- [Ford et al. \(2005\)](#) have usefully pursued an individual difference, trait approach in examining web search strategies.
- A number of recent research projects have emphasized situated task or work orientations—[Freund et al. \(2005\)](#) in their work modeling the information seeking and use of computer scientists; [Shenton and Dixon \(2004\)](#) examining children's information seeking and use for different contextualized tasks; [Yitzhaki and Hammershlag \(2004\)](#) while examining academic vs. industry differences in computer scientist information behaviors; and [Zach \(2005\)](#) looking at information behaviors of arts administrators.
- Others have examined task situations and emphasized the verbs or activities or different stages and steps of information seeking and use. Notable here is the cutting edge work of [Kuhlthau \(2005\)](#) focusing on an information search process model in which users are studied in terms of differences in their information seeking and use as they face different task stages. Another example comes from [Foster and Gibbons \(2005\)](#) in their work observing the actual processes of faculty information seeking and use.
- In general, it is fair to say that verb metaphors have begun to occupy a major space in user studies. Recent examples include: [Bates' \(2005a\)](#) emphasis on browsing and berry-picking; [Rioux's \(2005\)](#) emphasis on information acquiring-and-sharing; [Erdelez's \(2005\)](#) emphasis on information encountering.
- Still others have cast far-reaching surrounds on their studies of information seeking and use in which they apply a variety of demographic, situational, cultural, community, network, and social constructivist approaches to their studies. Recent examples here include foci on: information grounds and the contexts of information use and how users evaluate outcomes ([Durrance and Fisher, 2005](#); [Fisher, 2005](#)); information horizons and how users perceive these horizons and move through them ([Sonnewald, 2005](#)); positioning theory which constructs the user in ways that are defined as having real effects on information seeking and use ([McKenzie, 2004](#)). Another example is the continuing project of [Wilson \(1997, 2005\)](#), which has over the years encompassed more and more of the varying dimensions implied by the polarities set forth above.

As this sampling suggests, there are large bodies of useful research on users which can help us understand and serve special populations. The difficulty is

that in fact there are a plethora of perspectives and research approaches which yield an avalanche of different research findings. Hjørland (1996) emphasized this when he charged: “We must cease the overproduction of unrelated facts.” One simply cannot at this time find in the literature agreements on the best approaches and conclusions. Further, researchers rarely talk across the divides between their discourse communities or between research terrains and those of practitioners. Unfortunately, the rigidity of the polarities and the lack of communication between the proponents of the various “sides” have prevented the emergence of robust conditional understandings. The situation can be seen as a stalemate in the sense that all sides continue to argue for the rightness of their claims. All sides have produced supportive evidence. And, the lack of sufficient meta-communication between sides deters our ability to compare, contrast, and negotiate the divides.

VII. Adding Clarity about Communicating to Our Understandings of Special Populations

There is reason to argue that the stalemate we face in our considerations of users as subgroups or special populations is at least in part a result of our trying to understand users by using too limiting conceptual schema. For our purposes, we will draw on Dervin’s (2003a, b) communicative methodological analysis—in particular, bringing considerations of time–space to bear on our understanding of user subgroups.

Fig. 3 provides a metaphorical illustration to support the idea that our conceptual schema may be serving as blinders to our vision. In the top section of Fig. 3, we see a user described statically as if time–space does not matter. The user exists as a person identified with a subgroup attribute (e.g., being poor or female). The same picture would hold if we conceptualized the user with a mix of unvarying attributes (e.g., low-income African-American women with postpartum depression). Because time–space is not incorporated inherently as part of the portrait, time–space becomes irrelevant.

When time–space is added, however—as in the middle section of Fig. 3—the implications of our subgroup definition become more apparent. Now our user is static, unchanging, but time–space continues to move while our user is captured by the same attribute across time–space.

The lower half of Fig. 3 provides a marked contrast. Here our user takes on a wide variety of attributes depending on where the user is in time–space. As the user moves through time–space, she may be focusing on family relationships, then poverty, then struggling with what we call illiteracy but she calls “hifallutin nonsense,” then running out of courage, then happening

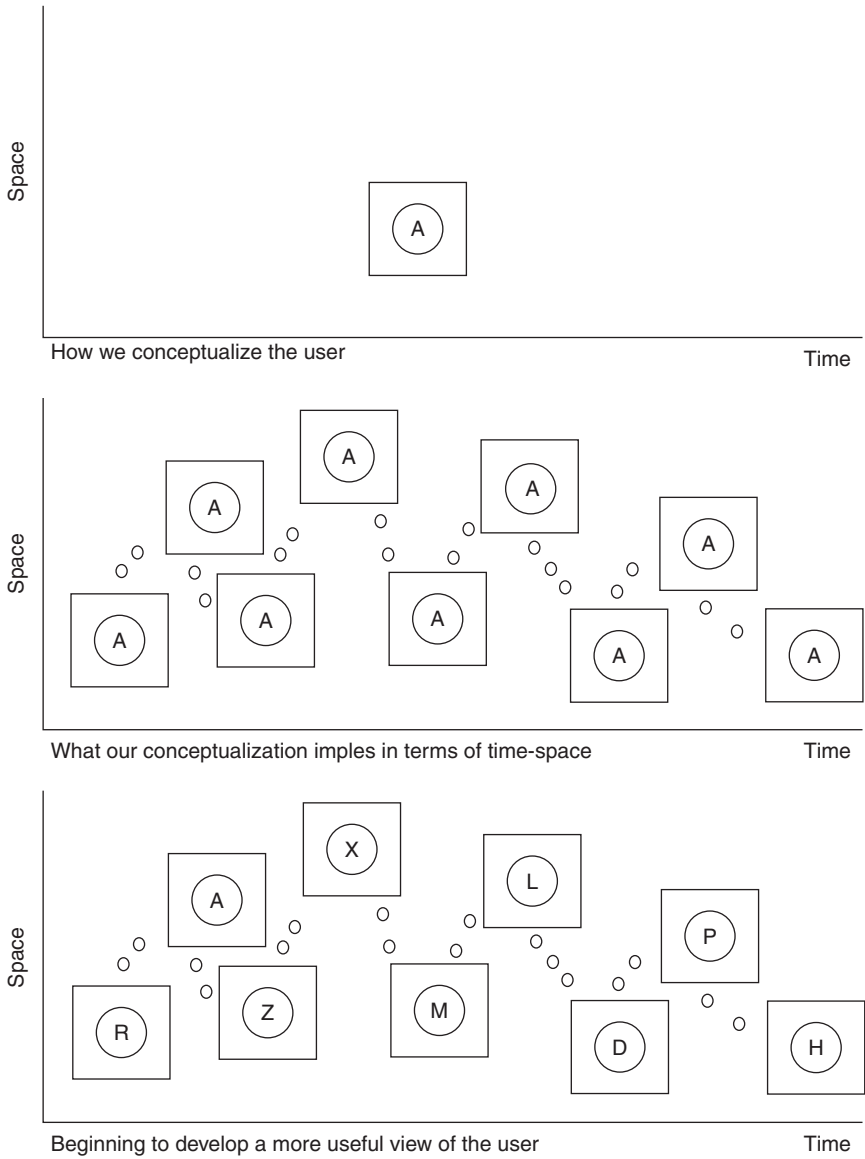


Fig. 3 Moving from a time—space static portrait of the user to a time—space anchored portrait.

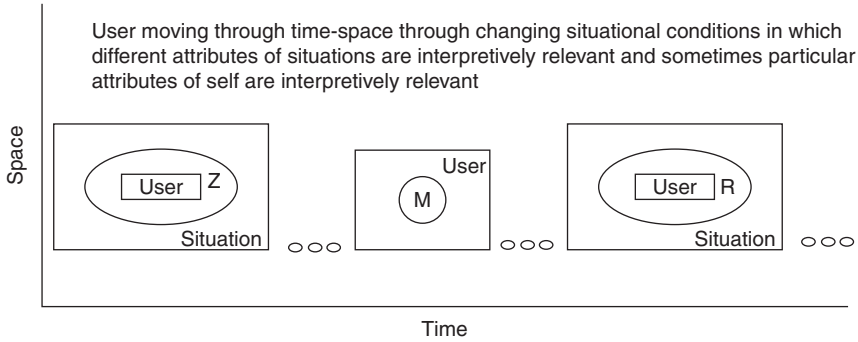


Fig. 4 Moving toward a communication view of special populations.

on a useful example, then seeking contact with someone who has tried the approach, and so on.

It may be that our user is usefully described with our subgroup attribute at some point—as shown in the lower section of Fig. 3, attribute A is relevant at one time–space moment. But a host of other attributes apply as well as time–space moves.

Based on research evidence, we do know that user behavior is far more like the lower portrait in Fig. 3. This does not mean, however, that there are no habitual information behaviors. The difficulty is that most of our analytics have assumed habitual behavior so we have little idea of when and under what conditions across time–space attributions of users are useful.

What we need is to find a way to address both sides of the polarities and examine the conditions under which each set of assumptions is useful and not useful. In effect we need to find a way to arrive at what is metaphorically pictured in Fig. 4. This figure attempts to implement what Olsson (2005) called for when he admonished us to go beyond cognitive-based approaches and aim instead for attending simultaneously to social contexts and interpretive frameworks. It also attempts to achieve what Orange and Osborne (2004) called for when they said we “... can embrace general traits of humanness while recognizing that a multitude of experience defines and affects individuals and groups.” (p. 49)

VIII. Summary and Conclusions

Despite predictions that electronic resources will replace librarians, recent data present a different portrait. The demands on librarians to serve all

manner of needs is actually going up. This phenomenon converges with another—the increased attention in policy/funding circles to the needs of special populations and the demands that libraries serve these special subgroups.

While the attention to user studies in library and information science is often described as overwhelming us with a plethora of competing data points, perspectives and methods, in fact a close examination provides support for a central proposition—there remains today as in the past an inherent tension in serving public needs between efficiency and effectiveness and between system mandates and individual user lives. Any attempt to serve special needs must address these inherent tensions.

Ironically, the current thrust of attention to the needs of subpopulations is in part seen as an answer to these tensions—the idea being that we can isolate subpopulations and their needs, narrowing down the need context, and thus serve the needs better. To this end, much research attention is being directed to studying special populations identified by a wide variety of names.

Clearly, knowledge of specific a priori factors and contexts can be useful and to some extent are a necessary prerequisite to serving needs well. It can only go so far, however, because, as data have shown no amount of advance knowledge and no array of demographic, lifestyle, personality, sociological, and other variables can predict the moment of information seeking and use. The result actually ends up privileging efficiency over effectiveness and system over individual. Necessarily, this bodes high communication failure.

In one sense, there is a synergy between the efforts of both practitioners and researchers to understand different subpopulations and the fact that these efforts have ended up by proliferating a bewildering array of ways of looking at users. That synergy is a symptom of our attempts to find more communicative and responsive ways of looking at individual information seeking and use and at the same time generalizing it to system service and design. The increased emphasis on examining specific kinds of information seeking and using behaviors seems the most promising avenue for the future.

We need to be aware, however, of the contradiction built into our simultaneous attentions to population subgroups and information seeking activities. The former is essentially a non-communicative way of seeing people. The latter is communicative but it does not align with the hegemonies of power and policy.

In this sense, it can be said that the burden of being special is that those serving the special user attempt through procedure and practice to homogenize service. From a communication perspective, however, all users must be defined as special and the identification of that useful moment of system–user

intersection must be seen as a communicatively iterative quest to which there is no end.

The primary thrust of this chapter has been to argue that we must find ways to introduce an inherently communicative methodology into research and practice focusing on users, and into the resulting design of library services, systems, and practices because it is only by doing so that we can make a dent in the tensions that now hold us captive. Bottom line, the question is not how to serve the needs of special populations but how to serve the needs of all users both efficiently and effectively and in ways that recognize the needs of individuals in their varying states of being and the needs of systems as they too evolve over time.

Understanding this communication mandate is especially important in the context of the increasing availability of a surfeit of information alternatives. Both expert commentary and evidence point to the need for information mediators even if we do not yet know how this vision might be realized.

When we do not address users communicatively, however, the difficulty is that the results of both research and practice too frequently support stereotypes. One such recent stereotype, for example, is that users prefer “google” to “libraries” but a close examination of some beginning evidence suggests this may be only true for some users in some situations under some conditions. In contrast, for some users in some situations under some conditions the library makes the important difference and the library is seen as helpful and as supportive as a good neighbor or loving family member. The question at hand is how to open the blinders on our vision so we can see users more realistically on their own terms and less as systems, or theories, want them to be.

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Progress in School Library Media Programs: Where Have We Been? Where Are We Now? And Where Are We Going?

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I. Introduction and Overview

School libraries in the United States have existed since the founding of private schools and academies in New England, such as Phillips-Andover and Phillips-Exeter in the late 18th century. The development of public secondary school libraries, however, did not occur until early in the 20th century. While New England's academies were national leaders in secondary school education, New England's public schools lagged behind their counterparts in the Central region of the United States in the development of school libraries. The first national standards for secondary school libraries was adopted by and published by the National Education Association (NEA) in 1918 from a study and report by the Committee on Library Organization and Equipment (CLOE), chaired by Charles C. Certain. The 1918 standards were entitled, "*Standard Library Organization and Equipment for Secondary Schools of Different Size.*" (NEA, 1918) This was the first attempt to quantify high school library facilities by identifying standards for a good high school library. In 1920, the American Library Association (ALA) endorsed and published these standards, which have become known as the "Certain Standards," in honor of the committee chair. The "Certain Standards" addressed the need for high school libraries to become an integral part of the school by setting goals, planning, and establishing quantified collections, seating, and equipment. These standards also called for creating a library classroom and for hiring a qualified librarian (with 1 year of postgraduate study and one year of internship) (NEA, 1918; ALA, 1920). Most importantly, this

document identified the role of the librarian as a professional who was not expected to do clerical work, but who "... should have the ability to work for and with teachers" (NEA, 1918; ALA, 1920, p. 12). Therefore, the standards movement began as an effort to quantify library facilities and to provide qualified librarians in secondary schools which became the focus for improving school libraries throughout the 20th century (Roscello, 2004).

Since the publication of two recent national guidelines, *Information Power: Guidelines for School Library Media Programs* (AASL and AECT, 1988) and *Information Power: Building Partnerships for Learning* (AASL and AECT, 1998a,b), the emphasis has changed from quantifying facilities to providing "access" to quality programs and instruction by certified library media specialists (LMSs). The national mission for school library media programs is "to ensure that students and staff are effective users of ideas and information" (AASL and AECT, 1988, 1998a,b, p. 1). *Information Literacy Standards for Student Learning*, was published by ALA in Chapter two of the second *Information Power* (1998) and also separately. Therefore, the 21st century library media programs have become focused on student-centered learning and achievement of information literacy standards.

Progress in the school library movement in the past century can best be described in two key initiatives of "standards" and "access." Both of these initiatives, however well conceived, cannot be fully implemented without state mandates and federal funding. Thus, this chapter will address the history of the "standards" movement from a quantified approach to assess library facilities in the 20th century to a qualitative assessment of programs and instruction in the 21st century. Although advances in school library media programs have been most notable since the 1960 unified library standards and federal legislation to support them, it is essential to understand how the early standards movement influenced the development of school libraries into unified library media programs.

After ALA endorsed the NEA standards for secondary school libraries in 1920, they recognized the need to also develop standards for elementary school libraries in 1925 (ALA, 1925). It was not until the end of World War II in 1945, however, that ALA adopted the first K-12 standards (ALA, 1945). In 1951, with the creation of the American Association of School Librarians (AASL) as a separate division of ALA, the first national association was founded whose primary goal was to promote school libraries. In 1960, AASL developed unified library standards (print and audiovisual) in cooperation with NEA's Department of Audio-Visual Instruction (DAVI). After DAVI merged into Association of Educational Communications and Technology (AECT), AASL collaborated with AECT and revised standards every decade in 1969, 1975, 1988, and 1998.

In 1958, the National Defense Education Act (NDEA) provided federal funds in Title III that could be used as seed money for library books and equipment. Almost a decade later, however, it was the Elementary and Secondary Education Act (ESEA) of 1965 that enabled the 1960 standards to become a reality. ESEA became the primary impetus for developing school libraries, especially elementary school libraries, with appropriations of \$100 million dollars through Title II for the purchase of school library resources (Michie, 2005, p. 1). Although school library media programs have been influenced by national standards, it was a combination of state standards and federal funding that enabled their development. The ESEA Title II, and later Title IV, funding became the driving force in developing school libraries along with state standards for approximately 20 years (1965–1985). Thus, LMSs were able to implement both the 1969 and the 1975 standards with the assistance of state mandates and federal funding. Since the end of categorical federal funding for school libraries in 1982, LMSs have struggled to compete with other educational programs for federal funds. In 1981 the federal government consolidated ESEA Title IV along with 32 educational programs into one funding “block” titled, Chapter 2 of the Education Consolidation and Improvement Act of 1981 (ECIA). ECIA Chapter 2 “block grants” were distributed to states based on a formula of school age population. The states allocated funds to the school districts to determine their own priorities using ECIA Chapter 2 block grants which migrated to Chapter 2 of Title 1 in 1988 with targeted funds for educational and instructional materials, but not specifically for school libraries.

In February 2001, Senators Jack Reed and Thad Cochran introduced a bill that would provide \$500 million for new library resources and training of librarians which was incorporated into No Child Left Behind Act (NCLB) of 2001 as the “Improving Literacy through School Libraries Program” (LSL) which is a competitive grant targeting school districts with at least 20% of families below the poverty line (Barack, 2005).

II. Where Have We Been?

A. Historical Perspectives from the Earliest School Libraries in New England

While public secondary school libraries were established beginning in the early 20th century, state legislation calling for school library “collections” or “apparatus”, however, began to appear by the mid-19th century in New England. Four New England states—Connecticut, Rhode Island, Maine, and New

Hampshire—adopted legislation to establish “library apparatus” or a collection of books between 1840 and 1850 (Siebens, 1941, p. 10). During the Civil War, there was little interest, however, in creating school libraries, but interest in enacting this legislation was revived once peace was restored. This pattern continues throughout the 20th century, with national interest in school libraries waning during both World Wars, but reviving again at their conclusion, and resulting in the publication of new standards by ALA in 1925 and in 1945.

The following examples from the early histories of school libraries reveal that many libraries were a mere collection of reference books located in alcoves adjacent to the principal’s office, or in locked closets or glass bookcases, with access available only by permission. In the beginning, the term “library” appeared to mean a collection of books primarily for reference use (Siebens, 1941, pp. 8–13). Even Phillips-Exeter Academy’s “Library,” established in 1795, was described as “a locked room, reserved for bad boys and dull books (mostly sermons)” (Siebens, 1941, p. 13). In 1870, when the second Academy burned, it was reported that so too did the original library of Phillips-Exeter Academy. Phillips-Andover Academy, founded in 1778, appears to have a library of record as early as 1819 with the “existence [of] a list of the library books in 1819” (Siebens, 1941, p. 14).

Other examples from early academies, support the idea of libraries used primarily for reference, including the Peck Library of Norwich Free Academy in Norwich, Connecticut, which was described in the catalog of 1856–1859 as:

The pupils of the Academy are allowed free access to it [Peck Library], under the direction of the teachers. They do not however, take the volumes from the Academy to their homes (Siebens, 1941, p. 14).

The catalog states further developments including the “South-East room on the first floor of the new building shall be devoted to the Peck Library” and shall be funded by the generosity of Mrs. Harriet Peck Williams. According to the catalog, Mrs. Williams will contribute furnishings and \$900 for books and, by January 1, 1860, will provide an additional sum of \$5000, “the income of which sum is to be for the enlargement of said library” (Siebens, 1941, p. 14).

Twenty years later, in the 1882–1883 catalog of Northfield Seminary in Northfield, Massachusetts, it suggests that the library will be used for enhancing students’ knowledge:

Our present library of 500 volumes of carefully selected reference books, histories, and biographies, forms the nucleus of what is needed to stimulate the young ladies to seek for knowledge outside of their regular textbooks (Siebens, 1941, p. 14).

Though primarily composed of reference books, these early academy libraries were expanded by generous donations from benefactors and some rivaled the size

of small city libraries. Without legislation, funding, or benefactors, however, public school libraries did not progress until the development of national standards and the passage of federal legislation to support them in the 20th century.

The following examples of early public school libraries have been selected to trace the historic development of school libraries as they emerged in the New England states.

B. Massachusetts

Although the State of Massachusetts had not enacted any legislation for the development of school libraries, public-spirited citizens advocated for the establishment of school libraries as far back as 1837. Two notable examples were Horace Mann in 1837 and Miss Sylvia Anne Howland in 1865. Horace Mann urged every Massachusetts school district to “raise by taxes a sum not exceeding \$30 for the first year and \$10 for subsequent years for the purchase of a library and apparatus for the school” (Siebens, 1941, p. 10).

In 1865, at the conclusion of the Civil War, Miss Sylvia Anne Howland left a fund of \$100,000 to the city of New Bedford, Massachusetts, “for the promotion of liberal education by enlargement of the Public Library and by extending to the children and youth of the city the means of a wider and more generous culture.” Thus, half of this amount was allocated to the School Department for the purchase of supplementary books for reading (Siebens, 1941, p. 10).

The first school library in Boston with a trained librarian was opened in the Public Latin School. Miss Helen Burgess wrote in *Library Journal* on April 15, 1926 that the Boston Public Latin School was:

the first distinctly secondary school in the new world to emphasize the study of the classics. Three years later, Harvard College was opened to provide further education for the alumni of Boston Latin ... In 1844 when the Boston Latin School Association was formed, one of its purposes was to provide for its library (Siebens, 1941, pp. 4–5).

In 1825 President John Adams established the Adams Fund “to provide for the higher education of the children of Quincy in some way that the city is not required by law to provide.” It took nearly a century, however, before the Adams Fund was allocated for the provision of school libraries (Siebens, 1941, p. 15).

In a report by the Quincy, Massachusetts school committee in 1884–1885, school libraries were identified as essential:

There are two urgent needs of the school, to which I would call attention. The first is the necessity of a ‘school library,’ in order that such instruction in history and literature may be afforded as is demanded by the best thought of the present time ... However good a public library exists, the well-being of the school demands its own library (Siebens, 1941, pp. 11–12).

Despite this appeal in 1884–1885, the first Quincy High School Library collection was not established until 1917 with a provision from the Adams Fund. Mr. Albert L. Barbour, Quincy Superintendent of Schools, obtained a court decision in 1917 allowing the use of the Adams Fund for “school libraries” (Siebens, 1941, p. 15). Therefore, in the balcony of the High School auditorium, the first secondary school library was created in Quincy with provisions from the Adams Fund at the end of World War I.

Another example of using private funds to create secondary school libraries was in Dorchester, Massachusetts, where the income from both the Christopher Gibson and the Bowdoin Funds were used to purchase “such books and apparatus as are not furnished by the city.” At the Dorchester High School, a library room was built in the new high school of 1901, but it was also used for a classroom (Siebens, 1941, p. 15).

At the turn of the century, at Brockton High School, a teacher of stenography and typewriting also dispensed library books through an opening in a half-opened door. From 1906 to 1922, teachers from History and English also took turns looking after the Brockton High School Library. In 1922, the first trained librarian was hired in Brockton and appears to be one of the earliest qualified librarians in New England along with Miss Burgess at Boston Latin School (Siebens, 1941, p. 15).

C. Rhode Island

In 1845, Henry Barnard, the First Rhode Island Commissioner of Education, recommended “the establishment of an education library of at least 30 volumes in every town,” which resulted in 29 out of 32 towns reporting the existence of school libraries with a total of at least 500 volumes in Rhode Island by 1849 (Siebens, 1941, p. 10). The Rhode Island legislature enacted The Barnard Act in 1845 by defining the corporate power of school districts to establish school libraries. It took nearly one hundred years, however, to provide secondary school libraries in the state. The Rhode Island State legislature authorized the State Board of Education in 1907 to create traveling libraries for schools throughout the state. According to Dr. James Rocket, Commissioner of Education in Rhode Island, this initiative actually hindered the development of school libraries in each city and town. By 1940, Dr. Rocket reported the existence in Rhode Island of only 15 high school libraries, 13 junior high libraries, and 9 elementary libraries employing 25 librarians, 11 teacher/librarians, and 1 student-run library by 1940 (Siebens, 1941, p. 10).

D. Connecticut

In the Annual Report of the Board of Commissions of Common Schools in Connecticut, it was reported in 1839, that “there are but six school libraries in the State” (Siebens, 1941, p. 9). In the 1842 Annual Report, there were still only six school libraries containing a total of 1000 volumes and two globes. To promote school libraries, Connecticut enacted The School Law of Connecticut in 1856 by appropriating \$10 per school district but requiring each school district to raise an equivalent amount to establish a “school library.” In addition, each district could receive \$5 in subsequent years providing the district raised the same (Siebens, 1941, p. 9). By 1897, Hartford High School, under the guidance of Mr. Alfred M. Hitchcock, Chair of the English Department, had established a quality collection of library books:

The books were the best in American and English fiction, poetry, drama, essays, and translations of the most read French and German classics (Siebens, 1941, p. 13).

Although the School Law of Connecticut was enacted in 1856, it appears that efforts to create school library collections did not occur until the turn of the century.

E. Maine

Progress in school libraries appears slowest in Maine. In 1939 Mr. Harrison Lyseth, Director of Secondary Education in Maine, reported in a letter to Miss Mary Lucas, former Supervisor of School Libraries in Providence, Rhode Island, that the quality of Maine’s school libraries varied:

Our earliest academies have had libraries of a sort from the very beginning in 1791. Previously, the libraries were mainly repositories for books; and schedules and the lack of librarians made it difficult to use these libraries even when they were furnished. Our good school libraries are very good and our poor ones are very poor (Siebens, 1941, pp. 9–10).

F. NESLA

The New England School Library Association (NESLA) was founded at a meeting at Simmons College on May 18, 1918 by “teachers, librarians, and others interested in school libraries,” whereby, a constitution was adopted and officers elected. Although many groups were initially involved in the creation of NESLA, these groups separated and formed their own professional associations. By 1940 NESLA was composed of 150 members, primarily

school librarians who found themselves increasingly isolated in their efforts to promote the development of school libraries (Siebens, 1941, pp. 16–18). NESLA played a significant role, however, in collecting and publishing historical data on school libraries from New England and in using these data to promote their improvement.

In Caroline Siebens' report for NESLA, *Supplement to The School Library in New England 1943–1944*, she summarizes the contributions of school libraries in New England during the Second World War. Ironically, World War II helped school libraries to promote their vital role in secondary school education by providing information, exhibits, and programs to support the war effort. The following examples show how school libraries in New England contributed to the war effort, with all NESLA's secondary schools reporting participation in the Victory Book Campaigns by collecting used books as gifts. High school librarians also reported additional activities to support the war effort, including Victory Corps, First Aid courses, informational exhibits on the war, vertical file updates, bibliographies and books to support courses such as pre-flight and pre-induction, plays, auditorium programs, and publications of student work. Moreover, at Brookline High School, with the cooperation of the library, the Radio Class presented a broadcast of Benet's "They Burned the Books," and the Senior English Class created a book entitled, "Sincerely Yours," about contemporary American life, which was exhibited in New York and then sent to English schools. Central Senior High School library in Providence, RI reported the creation of a "patriotic browse" held in conjunction with Social Science Groups and Student Council (Siebens, Supplement Part II 1944, pp. 12–15).

Miss Murch summed up the school librarians' contributions in unifying communities during the war:

the war effort is contributing to a better understanding between teachers, pupils, and librarians, because it brings home to us that we are all working under one banner of education for our country (Siebens, Supplement Part II, 1944, p. 15).

Therefore, school libraries made significant advances after the Second World War, with increased community support and with the creation of the first K-12 national school library standards by ALA in 1945. In addition, regional accreditation agencies began incorporating or adapting the national standards into their accreditation process for secondary schools. Moreover, federal legislation—NDEA in 1958 and ESEA in 1965—provided the funding and the momentum for the development of school libraries. It should be noted that the NDEA was spurred on by the Soviet Union's launching of Sputnik into space (Matthews, 1998, p. 79). Ironically, school libraries can trace their progress in the second half of the 20th century to these federal funding initiatives

influenced by the Soviet and American space race and Cold War. NDEA funding provided for the purchase of science, mathematics, and foreign language materials under Title III of NDEA, which targeted funds for “books other than textbooks and other materials and equipment.” Librarians, however, had to compete for a share of the NDEA funds, because school libraries were not specifically designated until the ESEA Title II and Title IV allocations beginning in 1965 (Matthews, in K. Latrobe, 1998, pp. 80–81).

III. National Standards: a Brief Historical Perspective

A. The First Secondary School Library Standards (NEA, 1918 and ALA, 1920)

Progress in developing school libraries coincided with the development of the first set of national standards for school libraries in 1918 by NEA. In 1915, the CLOE committee surveyed high school libraries in the United States and made recommendations for their improvement. Their draft report was presented at a Symposium of the [North Central Association of Colleges and Secondary Schools in March 1917](#), and revised and adopted by NEA in 1918 and entitled, *Standard Library Organization and Equipment for Secondary Schools of Different Sizes*. These standards are commonly known as the “Certain Standards” in honor of its Chair Charles C. Certain, an English teacher from Detroit. This report was endorsed and published by the ALA in 1920 and called for secondary school libraries to use quantitative measures to plan, develop, and evaluate school libraries. Six areas were identified for state high school examiners to evaluate school libraries: (1) Housing and Equipment, (2) Qualified Librarian, (3) Scientific Selection of Books and Materials, (4) Instruction in the Use of Books and Libraries, (5) Annual Appropriation for Salaries and Library Books, and (6) State supervision of School Libraries (NEA, 1918 and ALA, 1920, pp. 8–9). While these early standards provided a quantified approach for improving secondary school libraries, regional accreditation agencies and state departments of education began to adopt them to evaluate secondary school libraries.

B. The First Elementary School Library Standards

1. Elementary School Library Standards (ALA and NEA, 1925)

Charles C. Certain also chaired the 1925 joint committee composed of the NEA’s Department of Elementary School Principals and the ALA’s section of

School Librarians. This joint committee created a new set of standards specifically for elementary school libraries entitled, *Report of the Joint Committee on Elementary School Library Standards* (ALA and NEA, 1925). With the creation of the elementary school standards, two sets of standards existed, one for elementary schools (ALA and NEA, 1925) and one for secondary schools (NEA, 1918 and ALA, 1920). The elementary standards reflected changes in education and the need for supplementary materials. As C. C. Certain noted in the report:

Significant changes in methods of teaching require that the school library supplement the single textbook course of instruction and provide for the enrichment of the school curriculum ... Certainly no other factor in school organization bears more directly upon educational environment than does the library (ALA and NEA, 1925, pp. 1–2).

The 1925 Elementary School Standards included standards for quantifying materials and appropriations. These standards incorporated the following five areas: (1) Purpose, (2) Essentials, (3) Architectural Specifications, (4) Administrative Requirements, and (5) Library Instruction. Although the early focus of secondary school libraries was on creating a collection of reference books, the elementary school standards recommended the purchase of books for reading enjoyment and provided a list of 212 core books for elementary collections. The elementary school library standards also called for the inclusion of visual media by creating for the first time an integrated media approach. Thus, the role of the school library was expanded to include audio-visual media and instruction in the use of both books and non-print materials. These standards addressed the need for hiring district library supervisors and qualified librarians. It should be noted that although the 1918 Secondary School Standards were well received by administrators and teachers, the elementary school standards did not receive the same warm welcome, because the concept of elementary school libraries was new and no additional funding existed. By the early 1940s, only 10 states had developed standards for elementary school libraries, and in most states, elementary school libraries did not exist until 1958 and 1965, when federal funding was appropriated. The 1925 Standards are significant, however, as they identified the importance of the role of the librarian in the changing nature of education.

C. Standards and the Impact of Federal Legislation

1. School Libraries for Today and Tomorrow (ALA, 1945)

With the end of World War II in 1945, as part of ALA's postwar series, *Planning for Libraries*, ALA published the first K-12 quantitative and

qualitative standards for school libraries, *School Libraries for Today and Tomorrow* (ALA, 1945). These standards placed responsibility for library services on the local school boards. In addition, the school library was identified as responsible for the following four areas: (1) Reading Center, (2) Information Center, (3) Reading Guidance, and (4) Instructional Services. In 1947, in response to these standards, the California legislature created a "County School Service Fund" to establish county level "Instructional Materials Centers," which also proved to be an incentive for school districts to establish local school libraries (Saunders, 2nd ed., pp. 1–2).

In 1951, with the creation of AASL as a separate division in ALA, its main goal became the development and improvement of all school libraries. In 1956, AASL issued an official statement on the need to incorporate a variety of media into the school library, thereby creating an "Instructional Materials Center." Not until 1958, however, when NDEA provided federal funding for "instructional resources", was this possible. Therefore, "instructional materials centers" under the direction of newly defined "educational media specialists" began to incorporate both print and media. While NDEA of 1958 provided seed money for instructional materials, it was the ESEA Title II funding in 1965, designated specifically for school libraries, that became the major impetus for developing school libraries. With \$100 million dollar appropriation for ESEA Title II, school libraries were created and expanded. For approximately the next twenty years, from 1965 to 1982, school library media collections flourished with annual funding from ESEA Titles II and IV. By 1975, ESEA Title II was combined into ESEA Title IV and in 1978, Title IV, Part B was renamed, "Instructional Materials and School Library Resources" and was distributed to states and schools based on a formula of school age population. In 1981, the ECIA, consolidated 32 programs into Chapter 2, including ESEA Title IV, and provided states with a "block" of funds to be distributed to school districts. Thus, local school districts could determine their own priorities and could use the so-called "block grant" funding for any of the former 32 programs. By 1985, only 29% of local block grant funds were being used for library media center support (Michie and Holton, 2005, p. 6).

In addition to the improvements at both district and school levels, ESEA Title II and Title IV, provided funding for personnel at the state level to administer their programs, thereby, creating school library supervisors at the State Departments of Education. With new leadership and guidance at the state level, State Supervisors could offer support to district level and school level programs, including statewide guidelines or standards and consulting services to improve programs and administer federal funds. With the adoption of ECIA Chapter 2, however, the administration of block grants was

simplified and no provision was required for school library media resources or staff at the state level. Thus, many collections stagnated as schools used the block grant funding for other priorities.

D. AASL First School Library Standards

1. Standards for School Library Programs (AASL, 1960)

By 1960, many schools had surpassed the 1945 standards and were beginning to integrate a variety of media into the library. Thus, with the cooperation and endorsement of nineteen groups, the newly created AASL, division of ALA, published its first set of standards in 1960, *Standards for School Library Programs* (AASL, 1960). The significant name change in these standards was the evolution from “school libraries” to “school library programs.” Thereby, the very title of the 1960 standards and the definition below implies a full range of instructional “programs” using a variety of media as opposed to a focus on library print collections of the past.

The school library program provides students with the opportunities to integrate and to correlate audio-visual materials with printed materials, as well as to make use of each medium for its own particular value (AASL, 1960, p. 17).

Prior to 1960, the standards did not provide for integrated audio-visual resources. These standards provided quantitative criteria for audio-visual, as well as print, resources. Most importantly, they articulated the role of the “School Library Program” in the total instructional process by uniting librarians, administrators, and teachers in a common goal and, thereby, expanding library services. AASL led an active campaign to disseminate and to implement the 1960 standards nationwide and were ably assisted by two ALA projects (Darling, 1964).

These projects were: The School Library Development Project and the Knapp School Libraries Project. With a \$100,000 fund from the Council on Library Resources, Inc., state departments of education were encouraged to submit proposals for implementing these standards, and twenty-one grants were awarded. Funded with a million dollars by the Knapp School Libraries Project, a prototype was created to demonstrate the impact of excellent school libraries on the learning environment. The Knapp Project was thought to have a great impact in creating awareness of the benefits of a unified library media program and instruction. From 1963 to 1965 the Knapp Project examined five elementary schools selected from over one hundred applicants. By 1965 the Knapp Project was expanded to secondary schools. According to Peggy Sullivan, the

project was successful in meeting its four main objectives as outlined below:

1. To demonstrate the educational value of school library programs, services, and resources, which fully meet the national standards for school libraries;
2. To promote improved understanding and use of library resources on the part of teachers and administrators, and to relate the demonstration centers to teacher education programs in nearby colleges;
3. To guide and encourage communities in the development of their own library programs; and
4. To increase support for school library development, among educators and citizens, by disseminating information about the demonstration programs and evaluating their effectiveness in reaching the stated goals (Sullivan, ALA, 1968, pp. 6–26; Coleman, 1983).

E. First Joint Standards for Media Programs

1. Standards for school media programs (AASL and NEA DAVI, 1969)

In response to AASL 1960 standards, the NEA DAVI committee published its own set of standards for audio-visual media in 1965, *Quantitative Standards for Audiovisual Personnel, Equipment and Materials* (NEA DAVI, 1965). With the Knapp Project results and, with two separate sets of standards for print and audio-visual materials, it was evident that AASL and NEA DAVI would need to combine efforts to create joint standards for future unified media programs. In 1969 John Rowell, President of AASL, identified the purpose of creating joint standards at a Symposium at Syracuse University as:

Two objectives that have motivated this project are: (1) to bring standards in line with the needs and requirements of today's educational goals and (2) to coordinate standards for school library and audiovisual programs (McGinniss, ed., 1970, p. 7).

Furthermore, Rowell articulated the need for school librarians to communicate and interpret these standards by collaborating with their colleagues in all types of libraries in order to create a nationwide network of communication, media resources, and information to ensure that all students have access to quality resources:

students with access to high level, sophisticated media and research resources which no one type of media facility will ever be able to afford by itself (McGinniss, ed., 1970, p. 10).

In 1969, AASL and NEA DAVI joined together to create one set of standards for school media programs by simultaneously publishing joint standards, *Standards for School Media Programs* (1969). The purpose of these joint standards was to convert “library programs” into integrated and unified “school media programs.” These standards became essential for improving school media programs by recommending the inclusion of a variety of media resources which were purchased with ESEA funding and thereby, creating “instructional materials centers” or “learning resource centers,” with unified print and audio-visual resources under the direction of library “media specialists.”

Moreover, the 1969 standards identified the essential role for media specialists in influencing the educational environment and instructional design programs as described below:

The process of education is essentially creative ... In this entire process the media program, its staff, and its center play vital roles ... Therefore, it is important that every media specialist participate actively in shaping the learning environment and the design of instruction ... The focus of the media program is on facilitating learning and improving the learning process in its new directions—with emphasis on the learner, on ideas and concepts ... and on inquiry ...” (ALA, and NEA DAVI, 1969, pp. 1–2).

Thus, beginning in 1969, the clarion call was for school librarians to embrace a variety of media resources, and to become true “media specialists” who could create new learning environments focused on the learner and the inquiry process. In addition, the 1969 standards replaced the word “library” with “media center,” thereby, uniting both print and audio-visual resources in one “media program”. Media specialists were expected to develop instructional strategies to meet the needs of the learner with a variety of materials. Although both associations recognized the need to revisit the standards every two years, it was an onerous task, and they were able to revise these standards every decade in 1975, 1988, and 1998.

IV. Where Are We Now 1975—2005?

A. Media Programs: District and State (AASL and AECT, 1975)

In 1973, both AASL and AECT (formerly NEA DAVI) approved a joint set of standards called, *Media Programs: District and State*, which were published in 1975. These new standards continued to emphasize the need for a unified media program in each school under the direction of a media specialist and supported by a district-level supervisor. Moreover, the standards were identified as essential measures for all interested constituencies

including an:

authoritative guide to school administrators, supervisors, business managers, boards of education, and school architects who seek responsible criteria for establishing, maintaining, and evaluating media programs (AASL and AECT, 1975, p. 2).

The role of the LMS evolved from one of support service to essential as “an integral part of the total instructional program of the school.” (AASL and AECT, 1975, p. vii) The 1975 standards expanded the roles of the media specialist and identified staffing levels and competencies of the LMS, including, for the first time, the requirement of a master’s degree. These standards called on LMSs to plan their programs by setting educational goals for each element of the media program.

Thus the 1975 standards are also significant for identifying the essential elements of the school library media program, including staff, facilities, collections, and budget. Helen Saunders identified these standards as essential for media specialists for “priority decision making.” She further identified the importance of these standards by capitalizing the words, “central” and “user” in her book on the role of the media specialist as, “CENTRAL to the learning process rather than supportive, and creating a new focus on the USER” (Saunders, 1975, p. 5).

With continued ESEA funding for almost twenty years and with new standards in 1975, librarians and educators were united in a common purpose to provide cohesive library media programs. Ironically, although school library media programs flourished in the 1970s and were recognized for helping students to learn by using and creating a variety of media products, the designated funding for school libraries disappeared by the mid-1980s. As federal funding for library media programs was absorbed into Chapter 2 of ECIA and Title 1 block grants, financial support from state and district levels also seemed to dissipate. AASL and AECT, however, continued to collaborate to produce two new sets of standards, now called guidelines and entitled *Information Power: Guidelines for School Library Media Programs in 1998 (IP1)* and *Information Power: Building Partnerships for Learning in 1998 (IP2)*.

B. Information Power: Guidelines for School Library Media Programs (AASL and AECT, 1988)

The first *Information Power: Guidelines for School Library Media Programs* (AASL, 1988) is significant for creating the first set of national guidelines including a national mission for school library media programs which

has remained the same for the past seventeen years:

The mission of the library media program is to ensure that students and staff are effective users of ideas and information. This mission is accomplished:

- by providing intellectual and physical access to materials in all formats
- by providing instruction to foster competence and stimulate interest in reading, viewing, and using information and ideas
- by working with other educators to design learning strategies to meet the needs of individual students (AASL and AECT *IP1*, 1988, p. 1; *IP2*, 1998, p. 6).

In 1988, with the creation of the first *Information Power*, Marilyn Miller, immediate Past President of AASL, addressed a congressional hearing on the importance of school library media programs and the need for reauthorization of funding:

The school library is the information base of the school. The school library serves as a point of voluntary access to information and ideas and equally as a learning laboratory for students as they acquire critical thinking and problem solving skills needed in a pluralistic society. Good school librarians work closely with teachers to integrate information seeking [skills] and use activities into curriculum units that are designed to deliver content as well as to equip students to locate, evaluate, and use effectively a broad range of resources: print, audio, video, tactile, and now electronic data systems (Miller 1988, p. 122).

Although school libraries were eligible for funding from Chapter 2 of ECIA and Title 1, school districts tended to use their block grant funding for other priorities especially technology. In 1993, in response to the need for funding earmarked specifically for school library media programs, then Representative Jack Reed (now, Senator) introduced legislation H.R. 1151, the Elementary and Secondary School Library Media Act, to reauthorize ESEA funding to reinvigorate school library media programs. This legislation was also introduced as S. 266 in the Senate by Senators Paul S. Sarbanes and Paul Simon, and enjoyed wide co-sponsorship and was eventually passed; but, no allocations were authorized. While the 1988 *Information Power* standards were heralded as essential guidelines for providing a wide range of media resources, technology, and instruction for all students, the federal funding did not emerge. Thus, AASL began a campaign to promote and to revise the 1988 standards, with a new focus on building partnerships and creating student-centered learning programs based on information literacy standards.

C. Information Power: Building Partnerships for Learning (AASL and AECT, 1998a,b)

Information Power: Building Partnerships for Learning (AASL and AECT IP2, 1998a,b) is the second *Information Power* and builds upon the mission, goals, and objectives identified in the first *Information Power* (AASL and AECT IP1, 1988). The key difference is the addition of the second chapter, *Information Literacy Standards for Student Learning*, which was also published separately (AASL and AECT IP2 & ILS, 1998a,b). The major challenge in implementing the second *Information Power* is funding in order to provide “access” to quality library media programs for all students to become life-long learners. The following summaries from *Information Power: Building Partnerships for Learning*, depict essential elements of quality library media programs; although they also present challenges for LMSs to develop equitable access for all students.

The vision of the second *Information Power*, as presented in Chapter One, builds on the key concept of lifelong learning as identified in the mission “to ensure that students and staff are effective users of ideas and information.” To fulfill this mission, the LMS needs to integrate information literacy standards into the curriculum. Highlights of the LMS’s four roles are adapted below as:

1. Teacher, by collaborating and analyzing the learning and information needs of students and designing effective instruction for research;
2. Instructional Partner, by identifying links across curriculum and designing authentic learning tasks and integrating information literacy standards;
3. Information Specialist, by providing leadership in acquiring and evaluating information resources in all formats and by modeling for students’ information access and evaluation, and especially through the use of electronic resources and
4. Program Administrator, by defining the policies and planning, executing, and evaluating the library media program to ensure quality services, program, and instruction (AASL and AECT, 1998, p. 4–5).

The following seven goals of the library media program are abbreviated below as:

1. To provide intellectual access to information ...
2. To provide physical access to information ...
3. To provide learning experiences that encourage students to become discriminating consumers and skilled creators of information ...
4. To provide leadership, collaboration, and assistance to teachers ...

5. To provide resources and activities and contribute to lifelong learning ...
6. To provide a program that functions as the information center of the school ...
7. To provide resources and activities for learning that represent a diversity ... (AASL and AECT, 1998, pp. 6–7).

The most significant element in the 1998 *Information Power*, however, is the addition of the “Nine Information Literacy Standards for Student Learning” identified as:

The student who is information literate:

1. accesses information efficiently and effectively,
2. evaluates information critically and competently,
3. uses information accurately and creatively.

The student who is an independent learner is information literate and:

4. pursues information related to personal interests,
5. appreciates literature and other creative expressions of information,
6. strives for excellence in information seeking and knowledge generation.

The student who contributes positively to the learning community and to society is information literate and:

7. recognizes the importance of information to a democratic society,
8. practices ethical behavior in regard to information and information technology,
9. participates effectively in groups to pursue and generate information (AASL and AECT, 1998, pp. 8–9).

The challenge for the LMS is to build upon the three main themes of collaboration, leadership, and technology by creating partnerships with teachers to integrate these nine standards across the curriculum. Chapter Three describes how these three themes can be integrated into library media programs as follows:

1. Collaboration: The LMS is a catalyst initiating collaborative efforts focused on meeting the learning needs of students by integrating information literacy standards.
2. Leadership: The LMS takes a proactive role in using technology, in offering staff development, and in promoting information literacy and independent learning.

3. Technology: The LMS is the primary leader in modeling the use of instructional and informational technologies and in designing student learning to focus on authentic learning, information literacy, and curricular mastery by emphasizing process (AASL and AECT, 1998a,b, pp. 47–57).

The responsibility of the LMS is to create a dynamic program as described in Chapter Four by challenging students to become information literate by applying authentic learning, by constructing knowledge, by using problem solving skills, by disciplined inquiry, and by creating personal meaning from learning in a collaborative culture. The LMS models collaboration with teachers and adheres to the “Ten Learning and Teaching Principles of the School Library Media Programs” to create constructive learning environments (AASL and AECT, 1998, pp. 58–82).

The role of the library media program as outlined in Chapter Five focuses on providing information access and delivery of student-centered programs using policies and procedures that provide flexible and equitable access to information for learning and for mastering information literacy standards (AASL and AECT, 1998, pp. 83–99).

The role of program administrator is detailed in Chapter Six to guide the LMS to create appropriate planning documents and consistent policies and procedures (AASL and AECT, 1998a,b pp. 100–121).

Moreover, Chapter Seven challenges the LMS to become a leader in his/her schools by creating a library media program that becomes the information center of the school. Leadership is described as when the LMS connects to the school community, as well as extends his/her program to the larger community, the nation, and the world. By using information literacy standards as the framework for thoughtful information-based authentic learning, library media programs can create independent students who inquire and seek information, evaluate it, apply it to new problems or decisions, and assess how well the information has met their needs. The LMS should collaborate with parents, public and academic libraries, businesses, and other community partners to enable students to succeed and achieve lifelong learning beyond the school (AASL and AECT, 1998, pp. 122–135; Barron, 2000; Callison, 1999, 2003; Harada and Donhan, 1998; Haycock, 1998).

1. School Library Development by Comparing Statistics from 1953—1954 to 1999—2000

A recent report issued by the National Center for Education Statistics (NCES) traces a 50-year history of public school libraries by comparing

statistics from 1953 to 1954 with statistics from 1999 to 2000 and by providing an analysis of these data.

In the early 20th century, public secondary school libraries existed as primarily small reference book collections usually locked in closets or as classroom libraries as well as resources provided by traveling state collections. The emerging school libraries of the early 20th century as first identified in New England, often grew out of library services first offered by public libraries, as described in *The Report of the Commissioner of Education for the Year 1899–1900 (City and Popular Education, 1901)*. Examples cited in this report include class visits with teachers to the Public Library of Worcester, Massachusetts and reading lists created for teachers and students by the Providence Free Library of Rhode Island. In Newark, New Jersey, a proposal called for the establishment of library stations, including 50 books for each of the city schools. As reported by Lathrop, in 1934, library services to schools in rural areas were provided primarily by traveling state library collections from state agencies or by state universities (Michie and Holton, 2005, p. 2). An illustrative example of combined public library services incorporated with the state university was in practice at the University of New Hampshire and the town of Durham until as recent as 1996 when they agreed to split.

Traveling state library collections, such as existed in Rhode Island, provided books and materials upon request, but some states also supplied visual aids. By 1942, however, only 7% of schools reported using state loan collections (Beust and Foster, 1945), with 40% of schools indicating that they had either classroom collections or library books but not administered from a central location by a librarian. By the early 1940s, only 18% of schools nationwide reported having a centralized library with 48% of those in city schools compared to 12% in rural schools (Michie and Holton, 2005, p. 2).

By 1954, 36% of all public schools had school libraries, but by 2000, 92% of public schools reported the existence of centralized school libraries (Michie and Holton, 2005, p. v).

The following highlights are adapted from NCES' authoritative report:

- School Librarians Nationally: In 1953–1954, 40% of the public schools reported having a school librarian; but by 2000, 86% of public schools reported having a school librarian (Michie and Holton, 2005, p. v).
- School Librarians by Region: In 1953–1954, the percent of public schools with a librarian in the six accreditation regions ranged from a low of 17% in New England to a high of 62% in the Western accreditation region; but by 2000, they ranged from 61% in the Western region to 93% in the Southern region (Michie and Holton, 2005, p. vi).

- **School Libraries Nationally:** In 1953–1954, 25% of elementary public schools and 95% of secondary public schools reported having a school library; but by 2000, 95% of elementary public schools and 87% of secondary public schools reported having a school library media center (Michie and Holton, 2005, p. vi).
- **School Libraries by State:** In 1953–1954, the percent of public school libraries by states ranged from a low of 13% in West Virginia to 80% in North Carolina. By 2000, the percent of public school libraries by states ranged from a low of 73% in South Dakota to 100% in Hawaii, Vermont, and Wisconsin (Michie and Holton, 2005, p. vi).
- **School Librarians by State:** In 1953–1954, the percent of public schools with a librarian ranged from 7% in Vermont and the District of Columbia to 80% in Delaware; but by 2000, the percent of public schools with a librarian ranged from 59% in West Virginia to 100% in Hawaii (Michie and Holton, 2005, p. vi).

This statistical report on school libraries reveals enormous growth and progress in the development of school library media centers nationally, regionally, and by states in the past fifty years. While NCES reported an increase in the overall federal share of revenue for all public elementary and secondary education from 4.5% in 1953–54 to 7.3% in 1999–2000, the funds earmarked for school libraries could not be identified (Michie and Holton, 2005, p. 1). Since the demise of ESEA funding in the 1980s, no dedicated funding has been allocated for the improvement of school library resources except through the competitive grant, “Improving Literacy Through School Libraries” (LSL) which is a provision of the NCLB Act of 2001. Therefore, it is difficult to identify any percentage of federal funding which is currently used for school libraries. Although school libraries have evolved from locked books and reference collections of the early 20th century, to integrated library media centers of the 21st century, future support of library media programs remains uncertain. While the nation’s school library media programs receive varying degrees of financial support from their local school districts, few state and federal appropriations are allocated for services or resources in school library media programs except through competitive grants such as LSL and Library Services and Technology Act (LSTA) which is allocated primarily for technology or resource sharing. Thus, a wide discrepancy exists nationwide with both the funding and access to school library media programs for all students. Some schools even lack library media centers, services, and instruction by certified LMSs.

Therefore, the progress of school library media programs, unlike public libraries, is dependent solely on the priorities and funding of each local

school district, especially wherever state standards are non-existent. Although school library media standards have reflected the history of educational reforms in America, throughout the 20th century and *Information Power* challenges schools to implement equitable access to school library media programs, they are not presently realizable without adequate funding and staffing. *Information Power* guidelines cannot be fully realized in the 21st century without both federal funding and state mandates. Thus, all students do not have equitable access to library media programs.

In an attempt to ensure that all students learn and succeed in public schools, federal legislation was enacted to improve student learning with the provisions of the *NCLB Act of 2001*. In February 2001, US Senators Jack Reed and Thad Cochran, introduced a bill that would provide \$500 million dollars to improve and update school libraries with new books, updated technology, training for librarians, and extended hours for keeping school libraries open. The Reed–Cochran bill was incorporated into NCLB with the inclusion of a competitive grant, “Improving Literacy through School Libraries Program” (LSL), and \$12.5 million dollars has been made available including 94 grants that were funded in 2002. School districts with at least 20% of families below the poverty line are eligible to apply for these competitive grants. Senator Reed articulated the need for federal funds for school libraries as follows:

Too many books on school library shelves across the country contain harmful stereotypes and inaccurate material. The reason for this horrible state of affairs is the loss of targeted national funding for libraries—20 years ago dedicated school library funding was rolled into a block grant. By block granting funds to the states, we abandoned a national commitment to improving school libraries (Michie and Holton, 2005, p. 6).

The White House Conference on School Libraries was held in 2002 and incorporated many of the ideas from *Information Power* to help promote equitable access to school library media programs.

V. Where Are We Going?

A. Vision of Information Literacy Standards for the 21st Century

Since the publication of the *Final Report* by ALA’s Presidential Committee on Information Literacy (1989), much has been written about information literacy in libraries. Since 1990 there has been a proliferation of books, articles, and resources addressing information literacy in various contexts (schools, colleges, and libraries) and incorporating a variety of literacies including

visual, media, computer, digital, and network. Educational institutions, library organizations, and scholars have written about information literacy and the research models to support standards. The US Labor Secretary's Commission on Achieving Necessary Skills defined information literacy skills as essential competencies for knowledge workers of the future (SCANS, 1991). While no one definition covers all aspects of information literacy, ALA's definition has been widely accepted as follows:

Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information ... The uncertain quality and expanding quantity of information poses large challenges for society. The sheer abundance of information will not in itself create a more informed citizenry without a complementary cluster of abilities necessary to use information effectively (ALA, *Final Report*, 1989).

For the 21st century, all types of libraries need to collaborate and teach users how to process information and to become information literate.

After the creation of AASL's first set of information literacy standards for students in K-12 in *Information Power: Building Partnerships for Learning* (1998), the Association of College and Research Libraries (ACRL) adopted *Information Literacy Competency Standards for Higher Education* (in 2000), which provides a framework for assessing the information literate individual. These frameworks extend the work of AASL by creating a continuum of expectations for information literacy for college students. The competencies and indicators provide students with a framework for gaining control over the research process. The ACRL standards ensure that an information literate person can perform the following: (1) determine the nature and extent of the information needed, (2) access needed information effectively and efficiently, (3) evaluate information and its sources critically (4) use information effectively to accomplish a specific purpose, and (5) understand many of the uses of information ethically and legally (ACRL, 2001, <http://www.ala.org/acrl/ilcomstan.html>).

Thus, information literacy has emerged as the essential goal for workers to succeed in a global economy and for students to become lifelong learners and citizens in a democratic society. In addition, ALA advocates collaboration among all types of libraries to create information literate communities through a variety of initiatives (See <http://www.ala.org>). The AASL Strategic Plan 2005 calls for devising new guidelines and standards which may include input from ALA's Interdivisional Information Literacy Standards Committee and may consider expanding the roles of the LMS to include "cybrarian" and "change agent." (Morris, 2004 and Morris, 2005.)

VI. Recommendations from the Research

Keith Curry Lance, principal investigator in studies in several states analyzing the impact of school library media programs on student achievement, recommends five action steps for library media programs, based on his research (Morris, 2004, 2005). These following steps aim to ensure higher levels of academic achievement by students:

1. Adequate funding must be provided for library media programs to support staff, information resources, and information technology.
2. Library media specialists must adopt leadership roles in their schools including instruction and work with principals and teachers as professional colleagues.
3. Library media specialists must provide access to technology and information resources both in the library media center and throughout the school.
4. Library media specialists should provide access to both high quality databases with authoritative information as well as the Internet.
5. Schools should adopt policies of flexibly scheduled access to library media programs for students' success (Lance and Loertscher, 2001, p. 78).

Furthermore, if LMSs are going to succeed in implementing *Information Power* and incorporate *Information Literacy Standards for Student Learning*, they will need to collaborate with teachers and other partners in the school community and the larger world to enhance library media programs and access to resources. Library media specialists will also need to collaborate with the larger library community, including public and academic librarians, to continue development of multi-type library networks and to share resources by providing access to collections, electronic resources, and databases. The funding of information literacy initiatives to enable all students to succeed will need local, state, and federal support. State departments of education will need to adopt standards based on *Information Power* and *Information Literacy Standards* and provide leadership and financial support to help all schools develop equitable access to library media programs and resources by improving facilities, collections, budgets, staff, and scheduling. Thus, John Rowell's clarion call in 1969, for school librarians to unite with their colleagues in all types of libraries, in order to create a nationwide network of communication, media and research resources seems prescient today (McGinniss, ed., 1970, p. 10). Thirty-five years later, his recommendation

is still essential if library media programs are going to create information literate communities of the 21st century.

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The Undergraduate Library and Its Librarians in the Large Research University: Responding to Change to Remain Vital and Relevant

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I. Introduction

The present review seeks to stimulate thinking about transforming the undergraduate library, both conceptually and in reality, for the future as it continues its search for the best ways to address the library needs of undergraduate students attending a large research university. The review focuses on what has emerged from, been consequential to, and poses challenges for the undergraduate library concept. The author conducted searches in the [Library Literature and Information Science](#) database, WorldCat database, the Melvyl[®] The Catalog of the University of California Libraries, and the Google[™] search engine for information related to the separate undergraduate library in the large research university. Pertinent abstracts, literature, and Web documents were reviewed for references. The search period was from October 2005 to March 2006.

The opening of the Lamont Library at Harvard University in 1949 was momentous in that Lamont was the first separately housed undergraduate library at a large research university. The concept of a separate library for undergraduates in a large research university is attributed to Keyes Metcalf, Harvard's University Librarian from 1937 to 1955 (Metcalf, 1988). Lamont catalyzed an idea that, once imprinted, could not be removed from the library's service model. In 1958, the University of Michigan opened the first separately housed undergraduate library in a state supported university (Person, 1988, p. 73). By 1970 there were over 30 undergraduate libraries (Person, 1988; Table 1). After identifying the undergraduate library

at large research universities as a trend in and of itself in *Advances in Librarianship*, Muller (1970) concludes that:

There is no question that the undergraduate library on a large campus represents a service that is needed. It was brought into existence in order to provide appropriate facilities that the traditional research library could not satisfy. It is a notable new development. Its chief characteristics are a highly selective collection of books and other library materials, ample seating for readers, and, ideally, close *liaison* with the teaching faculty to make it function as an effective teaching instrument. Present undergraduate libraries have barely begun to realize their full educational potential. The likelihood of their playing a more important role will depend (1) on the initiative of the teaching faculty in visualizing new instructional approaches that more fully exploit the multi-media resources of a good undergraduate library and (2) on the extent to which students are given academic credit for, or are at least allowed sufficient free time for, independent study and unassigned reading and intellectual exploration, (3) on the extent to which students can be motivated to place a high value on books and reading within the academic environment and society in general, and (4) on the extent to which an individual student is encouraged to resist counter-attractions that tend to absorb his limited free time (p. 130).

This passage, with few changes, could have been written today and suggest that in the 21st century the undergraduate library, both conceptually and in reality, finds itself grappling with some familiar and persistent issues in the context of a large research university. Faculty interest, curriculum focus, and student predilections all still exercise influence over the undergraduate library reaching its potential. Added to those existing dynamics, new challenges confront the undergraduate library in the form of advances in technology and changes in both student learning preferences and faculty teaching methods. The undergraduate library has been responding to all of these influences for many years and will continue to do so for many years to come. Much has happened as the undergraduate library progressed from a concept to a standard feature of the large research university environment. The consistent vision has been a commitment to providing undergraduate students with their fair share of library services and programs in the highly competitive environment of the large research university.

II. What Has Emerged from the Undergraduate Library Concept?

Metcalfe (1988) is the best-known chronicler of Lamont Library. McNiff (1949) and Williams (1949) document the selection of books for the collection. Carpenter (1957) discusses the impact of the Lamont catalog as a guide for other undergraduate library collections. The body of literature about the Lamont Library served as a guide and set the standards for those separately housed undergraduate libraries that followed in the 1960s and

1970s. Library leaders and scholars grappled with the “undergraduate library as a service model” and inspired reports and articles documenting every aspect of the first undergraduate libraries and, later with papers presented at think-tank type institutes and symposia. [Kuhn \(1969\)](#), [Mills \(1968\)](#), and [Muller \(1970\)](#) provide the early historical context for the trend of the undergraduate library on the large research university campus. Reflecting back to that time, [Person \(1988\)](#) coined the phrase “the literature of rationale” and said, “Nowhere is it more obvious that much of the literature on undergraduate libraries is repetitious than in the discussions and reports on the rationale for establishing such libraries” (p. 11).

The literature of rationale addresses several themes. In 1970, key undergraduate library proponents met at The Institute on Training for Service in Undergraduate Libraries to offer analyses of the first 20 years of the undergraduate library. One of the important issues was establishing a definition of an undergraduate library. [Hoadley \(1970\)](#) defines it within the context of her paper as “a library unit, separately housed with services geared at the lower-division undergraduate student on a university campus” (p. 1). [Haak \(1970\)](#) defines it within the context of his paper as: “(1) a special library for undergraduate students; (2) located in a university or other institution supporting graduate work to a significant degree; (3) housed in either a separate building or in a self-contained section of a general building; (4) consisting of a collection designed to support and supplement the undergraduate curriculum; and (5) a staff and services which promote the integration of the library into the undergraduate teaching program of the university” (p. 1).

While these definitions hold true for today’s undergraduate libraries, an additional role has, if not evolved, at least been formally identified and named. That is the role of the undergraduate library as a “third place.” Sociologist [Ray Oldenburg \(1989\)](#) identified the place between work and home, where people are able to just “hang out,” as the “third place” (p. 16). [Dom Nozzi \(2003\)](#), an urban designer, summarizes the importance of these third places and the essential elements of a well-functioning third place:

They are distinctive informal gathering places, they make the citizen feel at home, they nourish relationships and a diversity of human contact, they help create a sense of place and community, they invoke a sense of civic pride, they provide numerous opportunities for serendipity, they promote companionship, they allow people to relax and unwind after a long day at work, they are socially binding, they encourage sociability instead of isolation, they make life more colorful, and they enrich public life and democracy ...

They must be free or quite inexpensive to enter and purchase food and drink within. They must be highly accessible to neighborhoods so that people find it easy to make the place a regular part of their routine—in other

words, a lot of people should be able to comfortably walk to the place from their home. They should be a place where a number of people regularly go on a daily basis. It should be a place where the person feels welcome and comfortable, and where it is easy to enter into conversation. And a person who goes there should be able to expect to find both old and new friends each time she or he goes there (Nozzi, n.d.).

The undergraduate library more than other libraries on a large research university campus serves as an important third place because there are many undergraduates who live on campus, may not have reached the age of majority (the age at which one acquires full legal rights of adulthood), and may not have easy access to transportation. Faculty members, researchers, and graduate students are fewer in number than undergraduates and can congregate at campus restaurants and pubs, coffee shops, and faculty clubs in addition to their offices and laboratories, or even some other place off campus on their way home from work.

Arguments for and against the need for the separate undergraduate library at the large research university is another theme in the literature. [Metcalf \(1947\)](#) takes the stance that “in a large university library, such as we have at Harvard, we should segregate to a great enough extent to make it possible to give the undergraduate students reasonably good library service such as an undergraduate can now have at Oberlin, Williams, Wellesley, Wesleyan, or almost any good college” (p. 399). [Wagman \(1956\)](#), another staunch supporter of the separate undergraduate library, writes that the new undergraduate library being planned at the University of Michigan “will be designed, frankly and unashamedly, to induce the students to enter it and read” (p. 154). Drawing on his experiences at Rice Institute and Princeton, [Dix \(1956\)](#) voices opposition stating: “My own feeling is simply that for purposes of education and for purpose of research the larger the collection the better, within reason, if it is well arranged and if other conditions are optimum” (p. 148).

[Wilkinson \(1978\)](#) offers a comprehensive review of literature about the undergraduate library. The significance of Wilkinson’s review is that he compiles articles and papers by the frequently cited experts of the day and he includes most of the frequently cited examples of the themes of the literature of rationale. Ten years after Wilkinson’s publication, [Person \(1988\)](#) reflects the maturation of the undergraduate library concept after roughly two decades of implementation. He adds the theme of assessment of the undergraduate library’s efficacy to the body of existing literature. Referring to the 1980s he concludes that:

Throughout this period of educational change, the undergraduate library as a concept has offered a flexibility and responsiveness that university library systems as a whole could

not easily emulate. It has also provided a visible response to a large and varied constituency which could not easily identify with other elements of the library system. That such a solution still has a viable appeal is attested to by Wayne State's plans for a new undergraduate services building, begun in 1987 (1988, p. 134).

Engle (1995) updates the theme of assessment of the efficacy of the undergraduate library. The first part of his article is an historical reference to the Lamont Library and a description of the development of the undergraduate library, societal influences, and the contributions of key people from the 1960s to 1970s. The author then goes on to note conditions "defining the current environment for librarians working with undergraduates in the research university" citing: (1) increasing financial pressures; (2) the rapid growth of networked, hypertext, multimedia systems; and (3) calls for a stronger commitment to teaching.

The literature builds on the themes of rationale and assessment with research about the undergraduate library and its components. Wilkinson (1971) divides the functions of an undergraduate library into seven areas:

1. *A study hall*: Students coming to the library with their own books and using them exclusively.
2. *A social center*: Students meeting and talking to other students.
3. *A reserve book dispenser*: Books segregated onto special shelves at the request of professors.
4. *A browsing collection*: The main collection with open-access for all students.
5. *A listening facility*: Audio rooms or listening rooms—the equipment plus records and tapes of music and spoken arts.
6. *A visual materials center*: Films and filmstrips, pictures, paintings, prints, etc.
7. *A center for reference services*: The assistance given students by librarians—what happens at the reference desk or in an encounter between student and librarian.

And he asks, "How do undergraduate libraries rate?" Wilkinson gives good ratings on two of these seven areas (study hall, social center), middling rates on two (reserves and collections), mixed ratings on two (listening and audiovisual), and poor ratings on one (reference service). The rest of the article is an explanation of the author's dissertation on reference services at several undergraduate libraries. He finds reference service in decline and describes it as follows:

Librarians, in too many instances, make no attempt to understand what the students are trying to ask. The student asks a hesitant question which is not what he really wants to know. The librarian, however, answers the question and makes no attempt to get at what

was actually wanted. At some reference desks, one has a feeling of watching a traffic cop pointing to possible locations of information. There is little exchange, little dialog, little interplay. The most important first step in giving good reference service is poorly performed. At other reference desks, the librarians must have been chained at birth to their chairs—they are still in the fetal position with heads down and almost hidden from the view of any potential questioner. Only a few reference librarians ever approach students who are clearly perplexed, uncertain, and in need of assistance. Some reference departments give no telephone service. Others have official policies that questions will not be answered over the phone for students (Wilkinson, 1971, p. 1571).

Muller (1970) believed that “the distinctive characteristic of an undergraduate library on a large university campus is not only that it serves undergraduates but that the collection of books, periodicals, and other library materials is (or should be) of a highly selective and choice nature” (p. 113). Voight (1970), then University Librarian at the University of California, San Diego, supported the notion that for the undergraduate library “books are the essential ingredient, and thus the critical question in justifying the undergraduate library is whether there is a definable and viable book collection which will be of more value to undergraduate students in meeting the educational objectives of undergraduate education than does the large research library. The existence of an increasing number of undergraduate libraries indicates that librarians have answered this question affirmatively” (Para 1). Thirty years after Muller and Voight, Hardesty and Mak (1994) are still asking “How realistic is the attempt to identify books that should be held by every undergraduate library” (p. 362)? The authors provide a detailed history of attempts at developing core collections for the undergraduate library. The persistent answer is that identifying a core undergraduate library collection is unrealistic and at best has had mixed results. Pearson (1999) offers the only modern day perspective of building an undergraduate library collection from scratch for the Adamany Undergraduate Library at Wayne State University. Approval plans played a key role in obtaining current and a 1-year back run of approval slips from which to select titles. Librarians searched large commercial Web-based vendors to create lists of desired titles. The author notes his “greatest initial frustration with building a new collection was not knowing a source for an already compiled and read-to-buy opening day collection—a ‘core collection’ (p. 44).

III. What Has Been Consequential to the Undergraduate Library Concept?

A. Experimentation and Innovation

The literature reveals that long-standing hallmarks of the undergraduate library are experimentation, innovation, willingness to change service configurations, flexibility, and dealing with a large population of students with

limited resources. As an undergraduate librarian at the 2006 American Library Association (ALA) Midwinter Meeting Undergraduate Discussion Group meeting put it, the undergraduate library is “the place where it happens” on campus. In many cases, the undergraduate library on a large research university campus is significantly smaller administratively and physically than its large research library sibling. Examples are the University of Michigan Shapiro Undergraduate Library, the University of Wisconsin College Library and Harvard’s Lamont Library. Yet, undergraduate libraries are mandated to meet the demands of a larger clientele, all undergraduate students, than research library’s mandate to meet the demands of a smaller clientele of faculty, researchers, and graduate students. This allows for implementing new services and programs such as term paper clinics, peer-to-peer counseling, and electronic reserves on a modest budget that have the potential to have an impact on a large number of undergraduate students. It is not uncommon for the undergraduate library to launch a pilot project that turns into an ongoing program, or to otherwise try an innovative approach to service provision. Some of the literature is dated by references to keypunched information on computerized cards and early-generation computer resources such as InfoTrac, but do serve to highlight the nimble and inventive nature of the undergraduate library. For example, [Debrezeny \(1985\)](#) acknowledges that personalized one-on-one term paper consultations for undergraduates are an ideal approach. However, undergraduates are many and librarians are few. The undergraduate librarians at the Robert B. House Undergraduate Library at the University of North Carolina at Chapel Hill developed a method of indexing term paper consultation forms to avoid repetition of effort, share subject specialized knowledge, and preserve the information for future use. [Momenee \(1987\)](#) took advantage of large numbers of undergraduate students converging on the undergraduate library to complete a term paper project to get immediate feedback via interviews to inform the decision to renew the subscription to a computerized reference service. In this study librarians conducted 222 interviews in a period of just 2 weeks.

B. Societal and Cultural Shifts

It is a typical occurrence that the undergraduate library is able to quickly respond to national trends. The 1990s saw an increasingly intensive focus on “user-centered” service-based delivery. In part this was triggered by advances in and proliferation of computing technology, coupled with increased access to the Internet, and, ultimately, easy access to the Web. At the same time there was national-level recognition that conditions in higher education had been changing significantly and needed to be addressed. *Reinventing*

Undergraduate Education: a Blueprint for America's Research Universities, commonly known as The Boyer Report (*The Boyer Commission on Educating Undergraduates in the Research University*, 1998) articulates what proponents of the undergraduate library in the large research institution have known for decades:

... the research universities have too often failed, and continue to fail, their undergraduate populations. Tuition income from undergraduates is one of the large sources of university income, helping to support research programs and graduate education, but the students paying the tuition get, in all too many cases, less than their money's worth. An undergraduate at an American research university can receive an education as good or better than anything available anywhere in the world, but that is not the normative experience (p. 5).

In response to these technological, societal, and higher education changes, *Wilson (1999)* proposes a new way to think of the undergraduate library concept, which she characterizes as a gateway:

The profound change in the nation's demographics, burgeoning information technologies, educational mandates, and an information-based society have stimulated a reexamination of undergraduate library services. It is no longer sufficient to offer nontraditional services. The undergraduate library cannot be defined by space, collections, or personnel, but rather, by services that link students with information and provide the requisite education to manage that information. The undergraduate library becomes a gateway through which students enter, experiment with emerging new technologies, learn critical use of information, connect to information providers, and emerge as self-sufficient information managers (p. 18).

Stoffle (1990) cites *One Third of the Nation* (1988) as reporting that by the year 2000, one-third of United States citizens will be from minority cultural and racial groups, stating further that, "[u]ndergraduate libraries have the potential for becoming the model of the multicultural, pluralistic environment that will be both the society and the campus in the near future" (p. 47). *Macadam and Nichols (1988)* introduced an innovative approach to supporting the Shapiro Undergraduate Library at the University of Michigan's commitment to retaining minority undergraduate students. The Undergraduate Library created a peer-to-peer counseling program, consisting of seven minority undergraduates to assist at the reference desk, tutor students in word processing, provide term paper assistance, and publicize the peer counseling program. A visit to the undergraduate library's web site (see: www.lib.umich.edu/ugl/PIC/) reveals that this program has remained active for over 18 years. At the University of California, San Diego Undergraduate Library, *Echavarria (1990)* developed the Undergraduate Student Internship Program which served to promote librarianship as a career choice to minority undergraduate students. *Meltzer (1995)* reflects the trend toward a consumer service model when she describes the use of the

focus group interview, a tool from the field of retail marketing, to garner input about library services from undergraduate students at the University of California, Berkeley and the University of California, Los Angeles (UCLA). McGinnis (1999) documents an example of the shift into the digital age of a staple undergraduate library service, course reserves. These are a sampling of some activities taking place at undergraduate libraries reported in the literature. It is likely there are many more that have not been documented. These examples remind us that the business of the undergraduate library has remained the same. However, how that business is conducted has changed and shows that the undergraduate library is the place for “being innovative, experimental, non-traditional, alert to changing needs” (Person, 1988, p. 135).

C. Teaching and Instruction

Over time the intersection between the undergraduate library and instruction has gone from obvious to elusive. Undergraduate library proponents envisioned a role for the undergraduate library in classroom instruction and closely tied to the curriculum. Hoadley (1970) believed that two of the six ways that the undergraduate library was made different from the university library were:

- 1) by attempting to make the library an instructional tool by planning it as a center for instruction in library use, to prepare undergraduates for using larger collections and 2) by staffing it with librarians interested in teaching the undergraduate the resources of a library and the means of tapping those resources ... (p. 1).

Haak (1970) wrote that “the original justification for undergraduate libraries was not just open shelves, not just books, but a program which, as a result of library-academic planning, would contribute forcefully to the educational experience of the undergraduate” (p. 1). According to Phipps (1982), “the function of the undergraduate library today is more important than ever before, for it takes the teaching mission seriously, often taking over where the faculty left off or never began. It is in undergraduate libraries where programs have been developed to reach the large numbers of students handicapped by a deficiency of basic library skills” (p. 10). The College Library at the UCLA achieved a national reputation for bibliographic instruction. Many libraries adapted the bibliographic instruction workbook developed and used at UCLA by Miriam Dudley (Person, 1988, p. 99). Dudley was a pioneer in bibliographic instruction whose efforts led to the creation of the Association of College and Research Libraries Instruction Section. She was recognized by the establishment of the prestigious Miriam

Dudley Instruction Award (see: <http://www.ala.org/ala/acrl/acrlawards/miriamdudley.htm>).

Before widespread use of computing technology in academic libraries, undergraduate librarians taught students how to use one library, one catalog, one reference collection, and a finite set of indexes in unique and innovative ways. Some tried-and-true tools undergraduate librarians developed were slide-tape shows, point-of-use guides, tours, and building orientations. At the University of California, San Diego Undergraduate Library, [Smith \(1988\)](#) recognized that computer and video technology was second nature to undergraduates. Moreover, video offered the ability to show students moving around the library while grappling with a real research problem assignment. Video also clearly showed spatial relationships and the circulation of people from one area of the library to another. Smith produced an 8-minute video that used local beach color and humor in a believable scenario that was used in conjunction with lecture and hands-on instruction.

The landscape of undergraduate library collection development irreversibly changed when libraries introduced online catalogs. The impact was two-fold. One, undergraduates did not have to go physically to the undergraduate library to use its card catalog. Two, students had the ability to search the contents of library collections that, up to the advent of the online catalog, they had no notion existed. [Slater \(1998a\)](#) comments on the impact of the online catalog on the Moffitt Undergraduate Library at the University of California, Berkeley that, "... the creation of the online catalog, GLADIS, made the holdings of Doe and the branch libraries, immediately evident, so it seemed silly to pretend that students were going to restrict their research to the books they could find in Moffitt" (p. 5). This observation can be applied to all undergraduate libraries and extended beyond searching all of a university's collections to searching the Internet. As a consequence, undergraduates can choose to bypass the undergraduate library's collection altogether.

It became insufficient and irrelevant for undergraduate librarians to teach students how to use one library, one card catalog, one reference collection, and a finite set of indexes within the confines of one building. To remain viable, instruction in undergraduate libraries needed to be transformed. [Harrington \(1989\)](#) describes the paucity of functional and interactive computer-assisted instruction programs for end users, and decides to undertake the task of writing one himself. [Acree \(1999\)](#) and [Barker \(1999\)](#) both describe the shift in bibliographic instruction from predominantly paper-based systems to electronic ones. That shift, in turn, was accompanied by a shift in content. Instead of teaching how to use one's own campus library only, the focus became how to teach skills that would enable not only searching for, retrieving, and using information far beyond both the confines of one library

building and the authority of a list of further readings from a reference book. A component of evaluating information was an essential addition to instruction because undergraduate students could now gather information from an incalculable number of sources through online catalogs, electronic databases, and especially the Internet, which Ellen Meltzer, then director of The Teaching Library at the University of California, Berkeley, rightly characterizes as “easy to use poorly and difficult to use well” (Slater, 1998b). So, while UCLA College Library librarians continue to exhibit a strong commitment to instruction as exemplified by the work of Grassian and Kaplowitz (2001), the focus is on information literacy (see: <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm>), which provides a much broader approach to and conceptual framework for instruction than did a workbook, or a slide/tape show, or a video developed to teach how to become functional in a particular undergraduate library.

Undergraduate librarians also addressed instruction in *The Mission of an Undergraduate Library: Model Statement* (Association of College and Research Libraries (ACRL), 1987). Instruction is included in the information services section that also includes collections, reference encounters, and orientations and states that, “Bibliographic instruction programs should improve the ability of students to make effective use of the library collections, services, and staff. Instruction may be offered as part of coursework in an academic subject or interdisciplinary program, in a separate course on library skills, in workshops and term paper clinics, and through point-of-use aids in the library” (Information Services, Para 4). In the *Guidelines for University Library Services to Undergraduate Students* (ACRL, 2005) instruction is given its own section which includes a note that, “Standards and guidelines for information literacy and instruction are useful tools in developing and assessing library instruction,” referring to the standards and guidelines provided by the ACRL “Information Literacy and Instruction” web site (Instruction). Twenty years after Hoadley *et al.* (1990), then Deputy University Librarian and Associate Dean of Libraries at the University of Southern California, takes the responsibility for teaching a step further down the path of a paradigm shift by proposing a new model for undergraduate libraries in which a predominant focus on instruction, forces a new look at how the library is configured and how space is used:

Now a few undergraduate libraries have been given the chance to plan for expansion and, in the process, to conceptualize a new type of library, a teaching library, which would respond to the current reconceptualization of the place of teaching and learning in the dominant research environment of American universities and provide new environments conducive to the learning of the information age (p. 77).

IV. Challenges for the Undergraduate Library

A. Configuration and Use of Space

Person (1988) concluded about undergraduate libraries by the end of the 1980s:

Clearly, they are not a passing fad, nor are they obsolete. They are challenged; a few even are threatened and may not survive much longer in their present form. But that is not in itself cause for great anxiety among undergraduate librarians, for these libraries were created as innovative responses to problems in education, and if those problems change so might the responses without the present concept being labeled a failure (1988, p. 135).

The key phrase is “in their present form.” In the 1990s, in addition to changing services and programs to meet the needs of undergraduate students, the undergraduate library as place was in transition. The availability of electronic resources, from OPACS to databases, caused the library to make computer workstations available for end user online searching. Computers and their paraphernalia require space configurations different from traditional library study carrels and tables and chairs. Alberico (1995) applies the biological concept of recombination to describe new information uses of undergraduates that require changes for the undergraduate library as place:

Words, images, sounds even moving pictures are being blended to spawn new kinds of electronic documents. An online search used to yield a printout, then a downloaded file. Now a session at a workstation yields an electronic document that can communicate with other electronic documents. New information artifacts are being built with tools for a new era. Students can channel streams of knowledge and drive alike, originating everywhere, to their own machines. From the bits and pieces of information flowing in, students are already creating personal composite digital documents (p. 30).

Whether it was the result of renovation or new construction, there has been a distinct trend to either reengineer the entire undergraduate library or some part of it into an open computing environment or laboratory and library hybrid. The purpose is to provide an integrated, holistic, one-stop approach for students to search, retrieve and integrate what they find. The facility may include emerging as well as current technology, and may or may not be organized in a collaborative fashion; that is, a facility that is run by at least two separate campus units, typically the library and computing services. Usually these facilities are still intended to continue to serve primarily undergraduates; if renovated, they are also usually given new names to reflect the transition. Popular terms have been “learning (or information) commons,” “information arcade,” or “computing commons.” Sometimes the name is driven by the need for an easily remembered moniker. There is Center for Library and Instructional Computing Services (CLICS) at the University of California,

San Diego: an undergraduate library that was renovated and rechristened in 2000 (see: clics.ucsd.edu). Another example is The College Library Instructional Computing Commons (CLICC) at the UCLA (see: <http://www.clicc.ucla.edu/>).

The Thomas and Dorothy Leavey Library at the University of Southern California offers valuable insight (and hindsight) into the complexities and ambiguities associated with the concept of the undergraduate library as a place. In early reports about Leavey, there is a distinct lack of identification or association of it as an undergraduate library, physically or conceptually. The emphasis is placed on technology and teaching. This perspective overrides the other conventional undergraduate library services it offers. It is significant that the overarching concept of the undergraduate library appears to be unnecessary and irrelevant. The Leavey Library may be what early undergraduate library proponents' (Haak, 1970; Hoadley, 1970) envisioned as the ideal of an undergraduate library, in that it seeks to integrate itself with the curricular and teaching mission of the university. Comings (1994) used the term "cybrary" even though many of Leavey's services and functions match those of a conventional, separately housed undergraduate library. Holmes-Wong *et al.* (1997) discuss Leavey Library's planning, debut, and 1-year follow-up. It is a four-story building, open long hours, providing a roughly 90,000 volume book collection in open stacks, 270 current journals, newspapers, and magazines, most undergraduate reserves, reference service, and an instruction program. While it is reported that "The Information Commons and Learning Rooms, located on the ground floor of Leavey, account for most of the activity in the library" (p. 76). It is also noted that:

Since the collection from the former College Commons housed in Doheny Library was transferred to Leavey, there has been a significant increase in circulation. Statistics show that during Leavey's first ten months of operation from August 30, 1994 to June 30, 1995, circulation increased roughly 55 percent over the immediately preceding twelve-month period when the collection was housed in College Commons (Holmes-Wong *et al.*, 1997, p. 82).

And:

In the fall of 1995, approximately four thousand items from 250 courses were on reserve, an increase of at least 100 percent compared to the former College Commons reserves. While the increase in reserves use is due to the fact that undergraduate reserves have been centralized in one location in Leavey, the increased circulation of print materials may be attributed to the new location and extended hours. While technology may draw students into the building, they take advantage of its print collection and undergraduate reserves. The technology and extended hours have resulted in students using traditional library services more rather than less (Holmes-Wong *et al.*, 1997, p. 82).

Crockett *et al.* (2002) focus on issues related to staffing in the Leavey Library that bring to light some of the challenges associated with transitioning to a new and innovative spatial and service model. One issue was the difference in service philosophies between staff from a library background and staff from a computing background. Crockett *et al.* cite the research of McLean (1997), Shapiro and Long (1994), and Strain and Prentice (1999)—research that substantiates that library organizations place a strong emphasis on service, while academic computing organizations are typically less concerned about the end user. It seems inevitable that undergraduate libraries and campus computing services will establish partnerships and consequent ownership overlaps. Ameliorating the service philosophy dissonance between these partners is imperative.

Another issue identified by Crockett *et al.* was that of achieving the right level of technical competence for effective service. Initially there were three types of service providers staffing two desks. Reference librarians and student navigation assistants, who were hired, trained, and supervised by Leavey librarians, shared one desk. Student computer consultants, who were hired, trained and supervised by the campus computing services, staffed the other desk. Over time application software evolved to become easier to use causing Crockett *et al.* (2002) to observe that “the line dividing computer consulting and research assistance had gradually blurred, so that Leavey users were puzzled by the need to categorize their questions as either computer-related or research related—they simply did not perceive the two as separate, and they resented, justifiably, being asked to distinguish between the two” (Disintegration, Para 3). In 1999, a new service model was implemented that was significantly different. It eliminated the role of student computer consultants. Instead, in addition to their respective existing levels of reference support, both reference librarians and student navigation assistants would provide “first-tier” software application support. This service model “meant that the Leavey librarians would be required to become appropriately proficient in the basics of multiple software applications and to become much more conversant with connectivity issues” (Crockett *et al.*, 2002, Toward a new model, Para 2).

In contrast to the literature describing the Leavey Library, Sutton (2001) reports on the opening of the David Adamany Undergraduate Library at Wayne State University. The focus is on integration into the curriculum; collaborative learning and resource-based learning by means of a credit course; three computer laboratories that seat 30–35; open computing areas; four seminar rooms; an auditorium; 24-hour access Sunday through Thursday; a community room; and 32 collaborative study rooms. It also embraces the role of the undergraduate library as a “third place” in that it meets the social and cultural needs of undergraduates by including a space designated

for creative performances and another with large-screen television monitors continuously tuned to current event channels. The role of the undergraduate library as a third place might also explain the trend toward creating coffee shops and cafes within these libraries. Sutton concludes that in the undergraduate library, “it is possible to create learning spaces that contribute to the learning goals of students and the teaching goals of the university. Once in place, the programs that occupy these spaces can generate their own success and make the library the true center of learning on campus” (2001, p. 146).

Rather than the luxury of a new building, [McKinstry \(2004\)](#) had to contend with figuring out how to renovate a 1970s vintage undergraduate library at the University of Washington into a 21st-century facility. She found that, luckily the University of Washington Odegaard Undergraduate Library possessed “an ideal central location, with multiple group study rooms, a media center, comfortable furniture, a widely circulating collection” that was “innovative by design from the beginning by creating inviting spaces that provided solitude without isolation, supported work in parallel, and set the right balance between contemplative and group study space for students” (p. 138). The transformation started in 1994 with the construction of a computer classroom—colloquially known as a “collaboratory”—that has evolved over the last 10 years into “the only 24-hour library on campus, a 365-seat general access computing laboratory, two computer classrooms or “collaboratories,” a drop-in center for faculty to support teaching with technology and create a suite of online tools, a copy center, a digital audio workstation, a wireless network, electronic whiteboards, and 14 renovated group study rooms” (p. 139). In an effort to address the issue of how to provide services in the learning commons environment, [McKinstry and McCracken \(2002\)](#) offer differing opinions about the advantages and disadvantages of an experiment at the Odegaard Undergraduate Library in which the reference desk was moved into the middle of a second floor computing commons.

In the 1990s, in response to sustained budget cuts and rapid growth of electronic resources (in number and in cost), several changes occurred at the Moffitt Undergraduate Library at the University of California, Berkeley. In 1993, the Teaching Library was created, which housed in Moffitt ([Maughan, 2001, p. 73](#)). In 1996, the Information Gateway opened on the first floor as a result of a Pacific Bell Foundation grant matched by library funding ([Slater, 1998a, p. 5](#)). In 1997, the collection was reduced in size from 180,000 to 80,000 volumes. At one point, no books were bought ([Burdman, 1997, p. 3](#)). In 1999, the Free Speech Movement Café, also located in Moffitt, was under construction, opening in early 2000.

Recently announced changes at the University of Texas Undergraduate Library are the latest instantiation of this trend toward re-conceptualizing the undergraduate library as a learning commons model (Axtman, 2005; Blumenthal, 2005). While the literature does not yet document the philosophical underpinnings of these changes nor their planning and implementation, it is worth noting that the conversion manifested in the changes at Leavey, Odegaard, and Adamany continues unabated.

B. Changes in Student Learning and Study Preferences

The dynamic character of an undergraduate library is, in no small part, driven by an institution's commitment to supporting the learning and study characteristics and preferences of its undergraduate students. Some of these characteristics and preferences seem to be constant, and some change generationally. Knapp (1970) observes that, "An important item on the agenda of the student activists ... is improvement in the quality of undergraduate teaching. We must support these students in this effort. We might, for instance, try to involve the most talented of such students in examining the potential role of the library in excellent teaching and in developing plans to see that this potential is realized" (p. 40). Davis (1971) tells us that we as undergraduate librarians "exist to give active, rather than passive, service; that we must anticipate as well as reflect student needs, and that all our functions and activities should be coordinated to this service" (p. 308). Orne (1970) provides a descriptive and philosophical approach, albeit a somewhat idealized one, about "the nature and purposes or functions of the undergraduate library in our time" that takes into consideration the nature of a certain generation of undergraduate student (p. 2231). "Young people today are in open rebellion against authority of all kinds. The library must not appear to command; it must ambush" (Orne, 1970, p. 2232).

A spike in birth rates through the 1980s, coined the "Echo Boom," occurred simultaneously with cultural and racial demographic shifts to produce a generation referred to as Millennials. This "Millennial" generation's characteristics and preferences have been identified and discussed in detail by Tapscott (1998) and Prensky (2001), as well as many others. When the generation reached college age in the mid-to-late 1990s, the field of higher education began studying them intensively. Howe and Strauss (2003) discuss the impact of the Millennial generation generally on colleges and universities. Caruso and Kvaivik (2005) identify students' need for "convenience, connection and control." Narrowing the scope to the academic library, Merritt (2002), Oblinger (2003) and Lippincott (2005) describe general Millennial characteristics. The characteristics most cited are: (1) positive relationship

with parents, (2) trained to be doers and achievers, (3) tremendous consumers, (4) technology veterans, (5) increasingly diverse, and (6) growing in number (Merritt, 2002, p. 44). The Gardner and Eng study (2005) relates these generational characteristics in the specific context of the undergraduate library. The authors summarize the results of a library use and satisfaction survey they conducted in 2003. While noting that their is not a scientific sample, they do believe that it is representative enough that their results would apply to the general undergraduate population at their university. They summarize current literature on Millenials while comparing their survey results to characteristics that are often attributed to Millenials. They found corroboration and support for four expectations attributed to the current college age generation: (1) demand for quality academic facilities and high academic achievement; (2) the need for customization of technology and research; (3) the need for integration of technology into learning; and (4) the usage of new communication modes (p. 416).

The *Mission of a University Undergraduate Library: Model Statement* (1987) ascribed to undergraduate students four general characteristics: (1) They do not yet have the sophisticated research skills needed to exploit the research library's potential. (2) They are intimidated by the complexity and size of a large library system. (3) They are often reluctant to ask for assistance in the use of a library. (4) They are unaware of the many services and resources which are available in university libraries. The retitled *Guidelines for University Library Services to Undergraduate Students* (2005), the document amended and added the following undergraduate student characteristics and needs:

1. They are beginning to acquire the research skills needed to exploit the university library's potential.
2. They need a user-friendly environment, where assistance is offered and questions are encouraged.
3. They need to be introduced through library instruction, either one-on-one or through coursework, to the academic nature of the services and resources available in university libraries.
4. They are most often enrolled in courses where assignments have short deadlines requiring timely library services. These courses often have large enrollments.
5. They are often enrolled in mandatory introductory courses that fulfill distribution requirements, but are not necessarily in their field of interest.
6. They are frequently the largest component of the campus population, yet often have the least political clout (p. 727).

The characteristics and preferences of undergraduate students as described by both cultural observers and undergraduate librarians create an interesting composite picture. We see a confident, driven achiever; a sophisticated consumer; and a demanding user of technology who is accustomed to lots of attention and being able to purchase and use the latest technology in the marketplace. This profile differs from that of Orne (1971) and Knapp (1970) in significant ways and presents a challenging client to the conservative, slow moving, and relatively static world of the large research university.

C. Librarians and the Undergraduate Library

Undergraduate librarians have demonstrated their commitment to and advocacy for library services and space for undergraduates as is evident in *The Mission of a University Undergraduate Library: Model Statement* (ACRL, 1979, 1987) and *Guidelines for University Undergraduate Libraries* (ACRL, 1997). The most recent revision of the later work, as its title reflects, encompasses not only a separate undergraduate library but also a suite of services: *Guidelines for University Library Services to Undergraduate Students* (ACRL, 2005).

The Undergraduate Librarians Discussion Group meets at the Annual conference and Midwinter meetings of the ALA. Originally comprised of directors of undergraduate libraries at large research universities, attendance at the Discussion Group's conference meetings has expanded to welcome librarians who work in undergraduate libraries and occasionally librarians from community colleges. At the 2006 ALA Midwinter Meeting the author asked the group about what they believe the undergraduate library and its librarians contribute and what challenges they are experiencing.

It was clear that they place importance on providing advocacy for undergraduates in the large research university with the intention of improving the undergraduate experience. They collaborate with campus partners, such as computing services and student government, to provide extended, enhanced, and new services. They described desirable undergraduate librarian characteristics as flexibility and willingness to try new things and take chances. They described a pedagogical "bent" which emphasizes process orientation over resource orientation. They view their generalist nature as a specialization. In comparison with a subject specialist on the reference desk who is resource-oriented, undergraduate librarians possess an innate ability to know when to stop, back off, and let the student drive the process, playing more of a coaching role. One librarian described a quality she called a "state of mind" by which she meant finding pleasure in working with undergraduates, having empathy for students, and having the ability to appreciate the mindset of an undergraduate. Challenges included ongoing efforts to

convince undergraduates that they need a library at all in the face of increased self-services such as self-checkout and access to the Internet, increased involvement with campus First Year Experience (see: <http://www.sc.edu/fye/0>), initiatives to improve student retention and, protecting the undergraduate library from library and campus administrators who see it as a target for space and money, due to the lack of political influence undergraduate students.

V. Conclusion

What does the future hold for the undergraduate library both conceptually and in reality? It faces continuous technological advances, escalating costs, political pressures, and changes in undergraduate learning preferences and faculty teaching methods. The literature reveals that today the undergraduate library continues to address issues that early proponents and opponents observed and articulated. Wingate (1978) wonders if obsolescence is imminent or on the near horizon. He builds his case on several perceived weaknesses of the undergraduate library. First, that research university undergraduates do not need an easy or basic library but instead need to be challenged by a complex library system and books beyond their grasp. Second, what constitutes an adequate undergraduate library book collection in the face of a widening choice of course offerings and changes in instructional methods? Third, what is the cost benefit of a predominantly duplicate collection in a constrained budget environment? He predicts the demise of the undergraduate library concept.

Person (1982) collects a variety of opinions on the future viability of the undergraduate library. Opponents of the undergraduate library argue that the development of library instruction offsets the need for the undergraduate library and the too small university's lack of need for a separately housed undergraduate library. Supporters argue that the undergraduate library is needed more than ever. That it serves as a locus of bibliographic instruction, "often taking over where the faculty left off or never began. It is in undergraduate libraries where programs have been developed to reach large numbers of students handicapped by a deficiency of basic library skills" (1982, p. 10). It serves as a gateway to the research collections and to provide staff "geared toward meeting the specific needs of non-specialist undergraduates" (1982, p. 11).

Library Journal reported on interviews with TerHaar, Campbell, Stoffle, Stroyan, Lombardi, Kaufman, and Pape, six librarians and a faculty member, to elicit their views on the future of the undergraduate library. They were

asked to define “what it needs to do in order to remain a vital and relevant part of the campus community” (p. 38). Several themes emerge that not only underscore the undergraduate library’s vitality, but also preserve and promote the Gestalt, if you will, of the undergraduate library. One, the undergraduate library needs to meet a student where they are: that means a virtual space and a brick-and-mortar place. Two, undergraduate librarians need to provide a unique kind of reference intermediation that teaches rather than just answers. In classroom and informal settings, they need to serve as accessible guides through the increasing complexities of online access to resources. Three, the undergraduate library serves as the “third place” on campus, between classes and residence halls, where students go to see and be seen and so it needs to provide a variety of spaces from small group study rooms to individual stations, 24-hour service, cultural and arts exhibits, and up-to-date technology (TerHaar *et al.*, 2000).

The undergraduate library concept in the context of the large research university has changed over time, from a separate undergraduate library housed in its own building, to a defined area within another library building, to information or learning commons, and from a specific physical location to a suite of services and programs aimed at undergraduates. There have also been attempts at re-conceptualizing it to emphasize either teaching or technology or both, with varying degrees of success. The teaching library and gateway library concepts made sense in principle and rhetorically. In practice neither the appellations nor the concepts “stuck.” The information or learning commons models have yet to supplant the undergraduate library or permanently shift the basic paradigm of the separate undergraduate library to some other model of service delivery. The persistence of the undergraduate library indicates that it provides a unique environment for the incubation and implementation of new services, programs, and functions to meet challenges posed by advances in technology, changing undergraduate student learning preferences, and evolving faculty teaching methods.

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Educating the Profession for the Future

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Library Professionals for the 21st Century Academy

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I. Introduction

In describing the development of library education in the United States during the previous decade in *Advances in Librarianship 1975*, Lester Asheim noted that concern about how new professionals were being prepared for librarianship had been a constant theme throughout the history of the profession in the United States (1975, p. 148). Asheim stated that serious concerns of the previous decade had led to several steps that were answers to long-standing problems. He went on to describe developments in nine key aspects of library education:

1. Actions by the American Library Association (ALA) leading to establishment of the Office for Library Education and approval by the ALA Council in 1970 of an official policy titled "Library Education and Manpower," which was centered upon the absolute requirement that libraries reorganize as needed to make maximum use of personnel with varying levels and types of educational preparation and job responsibilities.
2. The sudden shift from the perception of an imminent personnel shortage that would leave 100,000 positions unfilled, to the perception of a crowded job market in which it was feared less qualified, thus cheaper, personnel would be preferred over highly qualified but more expensive professionals.
3. Several developments in accreditation of educational programs including the introduction of continuing review procedures, an increase in the number of accredited programs, and approval of new standards for accreditation in June 1973.

4. Numerous changes in federal government support of libraries and library education.
5. Responses to social concern and government requirements to attend to the needs of minorities, with particular attention to increasing minority representation in the profession through targeted recruitment programs and to educating librarians to serve a diverse group of clients.
6. Growth in the number and variety of post-master's educational programs through which professionals could develop a new specialization, learn about emerging areas such as technology, meet state certification requirements, or satisfy other career goals.
7. Major changes in master's programs including increasing the length of the program, changing the core requirements to include emerging areas of importance, and providing opportunities for more specialization within the degree program; a related trend was the growing importance of and opportunity to earn a doctorate in library science.
8. Official recognition by ALA of the status of non-professional library personnel and the need for formal programs to prepare individuals for positions as Library Technical Assistants (LTA), and formal alliance between the Council on Library Technical Assistants (formerly the Council on Library Technology) and ALA in 1973.
9. Concern in the school library media field about the potential effects of official sanctioning of LTAs on school library media services and the status of professionally educated staff.

Asheim concluded by noting that the need for change was the thread that connected almost all discussions of library education during the decade; change was not just accepted but anticipated, encouraged, and even instigated at an increasing pace. The accompanying effect on professional education was that "... the stress in education ... fell upon education-for-change rather than upon the history, the heritage, the tradition." (1975, p. 178) Wisely, perhaps, Asheim declined to predict whether or not this particular stress on change would continue, but he did raise the possibility of a respite, a period when change would be placed to the side in favor of reaction and retrenchment. Thirty years later his words sound almost wistful:

The next few years may be a period of synthesis following the antithesis of the past decade—not a complete return to an earlier and more leisurely past, but not so violent a wrench as was feared by some, and sought by others (1975, p. 178).

Two other descriptions of the state of library education appeared subsequent to Asheim's article. [Wilkinson \(1978\)](#) described educational prepa-

ration in Canada. Wilkinson's discussion touched on several of the themes that Asheim had discussed but within the distinctly Canadian environment in which regional and national concerns competed for the dominant position. Davinson (1976) described trends in European library education using much the same framework for the discussion.

If Asheim's vision of a more tranquil era was fulfilled, the era lasted only briefly. Even a cursory examination of the professional literature since 1975 reveals that not only did the push to change libraries and library education continue, but also the speed and intensity of change increased and the directions of change multiplied. Twenty years after Asheim's article appeared, Creth (1995) explored the tension that accompanies change. In a discussion of forces for change in academic librarianship, Creth described the real task facing academic librarians as nothing less than a fundamental transformation of the vision of roles for all academic library staff. She called for academic librarians to be visible and vital participants in key areas that transcend the library's boundaries. While acknowledging the value of tradition, she called for constant evaluation of established practice in the light of rapidly developing challenges and opportunities. The dynamic personal attributes that Creth set forth as requirements for the "new" academic librarian—flexible, adaptable, willing to take risks, imaginative, able to form partnerships, constantly learning—translate into the outcomes of Asheim's education-for-change.

This chapter is an attempt to follow up on Asheim's invaluable summary of the state of library education in the United States 30 years ago but using a narrower framework. This chapter will focus on preparation for academic librarianship; the discussion will be placed within the context of higher education in the early 21st century, an enterprise which has itself changed dramatically since 1975. Two trends identified by Asheim and one additional trend will be described as part of contemporary education (defined as the year 2000 forward) for academic librarianship.

II. The Environment of Academic Librarianship

Education for academic librarianship over the past 25 years cannot be divorced from the countless changes in the academic environment that occurred during the same period. Preparation for academic librarianship has, of necessity, responded to both overarching societal changes (such as the pervasiveness of information technology) and to narrower changes linked more specifically to the academy (e.g., the US Supreme Court decision requiring disclosure of peer review materials in appealed tenure cases). (National Research Council, 1999; *University of Pennsylvania v. EEOC*, 1990)

The literature identifies four broad changes in the higher education environment that impact practice and preparation for library work in academe. Looking back, it is impossible to identify specific incidents that might have heralded the changes; rather a number of social, political, legal, technological, and economic influences have converged to alter the roles and responsibilities for academic institutions and the libraries in them. Student demographics, the entrepreneurial university, information and communication technology, and emerging “interdisciplines” and the expanding responsibilities of the university are addressed here.

A. Changes in Student Demographics and Expectations

According to Educational Testing Service researchers [Carnevale and Strohl \(2001\)](#), an unprecedented number of students will attend colleges and universities in the immediate future. “Generation Y, representing 4.3 million youngsters born between 1982 and 1997, is likely to produce an increase of 1.6 million college students, of which 80% will be minorities, by 2015.” (p. 1) The real and projected increases in the number of students can be attributed to the demands of the 21st century job market while the larger proportion of minority students reflects the growing diversity of the communities that feed the higher education system.

It has been noted that “some college education” will be a requirement of 70% of the 20 million new jobs likely to be created by 2008. This increasing demand for higher education continues a trend that began over a quarter century ago. Indeed, in 1998 “more than 80% of managers and professionals had at least some college education, up from 59% 25 years earlier.” ([Carnevale and Fry, 2001, p. 2](#)) In addition, occupations “not usually associated with book learning” are frequently demanding higher and higher levels of education, with 54% of clerical workers (up from 25% in 1973) now listing some college experience on their resumes. ([Carnevale and Fry, 2001, p. 2](#))

Collins explains this credential inflation as a “process that feeds on itself. A given level of education at one time gave access to elite jobs. As educational attainment has expanded, the social distinctiveness of that degree and its value on the occupational marketplace have declined; this in turn has expanded demand for still higher levels of education.” ([Collins, 2002, p. 24](#))

Although the demand for higher education has accelerated since the mid-1900s, distribution of students across departments, major fields, and disciplines has shifted. Over the past quarter century the academy has increasingly prepared students specifically for the workplace rather than for participation in the world of ideas and culture. Brint notes that “academic year 1969–1970 was the last year in which a majority of four-year college

and university students graduated from arts and sciences fields.” (2002, p. 232) At both bachelors and masters levels, growing numbers of degrees are being awarded in the practical, rather than the liberal, arts. The number of graduates in allied health, business administration, communications, engineering technology, and computer and information systems has expanded from two- to ten-fold over the past 25 years and even at the masters level “the top seven degree-producing fields are now all occupational.” (Brint, 2002, p. 236) These changes have begun, and will continue, to change aspects of academic librarianship from collection requirements to student preparedness for using academic libraries.

Over the past 25 years the emerging knowledge economy has demanded more and more sophisticated skills and abilities of its workers, and colleges and universities have introduced programs to prepare workers for in-demand occupations in fields like business, health care, and technology. How have the student demographics shifted as the workplaces and colleges changed their demands and foci?

Overall, the number of US high school graduates declined from the early 1980s, bottomed out in 1995, and began a continual increase in 1996. According to the National Center for Educational Statistics (NCES, 2006), the anticipated increase in the number of high school graduates is 11% between 2001 and 2012. (US Department of Education, n.d.) However, this only begins to elucidate the shifts in demographics involving the incomes, racial backgrounds, ethnicities and ages of prospective college students.

In the early 1980s, the typical college student was white, aged 18–21, and came from an upper income family. By 2000, minority total college enrollment saw a greater than 100% increase, from 2 million to 4.3 million students. However, NCES reported a “widening gap” between white and African American and Hispanic enrollments: in 2000, white participation in higher education was 46%, while African American and Hispanic participation lagged at 40% and 34%, respectively (American Council on Education, 2004). Nonetheless, colleges and universities are welcoming increasing numbers of minority students, many first generation enrollees in higher education institutions. The overall number of students enrolled in higher education increased as well, by 27%, between 1980 and 2000.

Besides the increase in minority enrollment during the past two decades, an additional shift in demographics occurred. The number of older students has grown faster than any segment of the student population: In 1984, 8.6% of enrolled undergraduates were over the age of 35; by 2004, the proportion was 12.5%. This trend, which is expected to continue, means that colleges and universities are serving over six million adult learners over the age of 24 today and should anticipate serving even more of them in the future. If

college enrollment reaches the NCES-estimated 16 million by 2008, adult learners could account for nearly half of all students. (US Census, 2003) In fact, it has been posited that the “adult need for lifelong learning at the university level will become far larger than that represented by traditional 18- to 22-year-old students.” (Duderstadt, 2002, p. 2.)

It is well documented that adult students, particularly the increasing number of them who are also employed full- or part-time, have different needs than their more traditional counterparts. University services, including libraries, laboratories, and business offices, are being called upon to develop new service modalities and or extend hours to meet the needs of part-time and distant learners. Academic units are pressured to develop innovative schedules and to offer technology-mediated courses to meet the needs of working adults. So-called “non-traditional students” are fast becoming the norm, continuing to build the trend that began a quarter century ago.

The changes in student demographics and expectations outlined here suggest that there is an increasing need for resources to support new services, new students, and new demands. Changes in the resource needs and funding models for higher education over the past 15 years provide both an opportunity and a challenge for all units within colleges and universities, especially libraries.

B. The Entrepreneurial University

Although marketing and advertising have been used by colleges and universities for over a century, the more recent commercialization of higher education is a phenomenon of the last quarter century. Bok, in his *Universities in the Marketplace: The Commercialization of Higher Education*, acknowledges that the practice is ages old, but he differentiates between pre- and post-1970, and notes, “Entrepreneurship is no longer the exclusive province of athletics departments and development offices; it has taken hold in science faculties, business schools, continuing education divisions, and other academic units across the campus” (Bok, 2003, p. 3). The recent acceptance of the idea that institutions of higher education should profit from teaching, research, and service derives from several converging factors.

First, state and federal support for higher education, including state appropriations to public universities and the availability of federal financial assistance for students, have failed to keep up with the demand placed upon both institutions and individuals from an increasingly skill-intensive workplace. Duderstadt and Womack (2003) suggest that where state and local funds were largely sufficient in the 1960s and 1970s, financing the public university now requires a broader portfolio of resources beyond state

appropriations. Resources include federal support for research and student financial aid; tuition and fees paid by students and their parents; gifts and endowment incomes; revenues from auxiliary operations such as hospitals, residence and dining halls, and athletics; and technology transfer licensing and other research spin-offs. (Duderstadt and Womack, 2003, p. 106) Thus, public universities now have “institutional advancement” offices; urban campuses that heretofore served commuting students are building dormitories; and regional colleges aspire to be “research” universities to capture the benefits of sponsored research and industry partnerships. Development offices in academic libraries are now the norm rather than the exception, and libraries have become as concerned as academic departments about their “shares” of indirect or facilities and administration (F&A) overhead attached to research grants and contracts.

Adding to the problem of declining state appropriations for higher education, social service programs, previously federally funded, have been shifted to the states (for instance Medicare and Medicaid). Meanwhile, those who are new to higher education, including adult learners, minorities, and students from lower income families, are coming into the system at the very time when the cost of an education is shifting from taxpayers to students. (Duderstadt and Womack, 2003, p. 2) Higher education, since about 1980, has been placed in the untenable position of attempting to meet increasing demands with fewer stable resources.

Second, the cost of higher education has increased dramatically since 1985. Expenditures on higher education increased from just over \$130 billion in 1985 to \$244 billion in 2005, an increase of 86%. (Cappelli, 2003, p. 51) The increased costs of the enterprise can be attributed to rising costs of the resources necessary to academe: books and journal subscriptions, research apparatus such as laboratories and equipment, personnel, and communications and technology. (Although the costs for the latter may have declined per unit purchased or leased, the number of computers, telephone lines, software packages, and the like has increased to meet student and faculty requirements.) At the same time, the constituents of the higher education system have begun to demand greater value for the tuition dollar. Popular publications such as *US New and World Reports* and *The Princeton Review* rank colleges and universities on “best values” as well as on graduation rates, acceptance rates, and alumni giving.

Third, the economic boom of the 1980s led to corporate interest in investment and collaboration in university research and development, while passage of the Bayh—Dole Patent and Trademark Act of 1980 enabled universities to patent the outputs from publicly funded research. More venture capital units, business incubators, and centers for technology transfer

appeared on campuses to encourage the commercialization of research and development outputs. Bok notes that corporate support for university research increased from 2.3% to nearly 8% in the 30 years between 1970 and 2000. (Bok, 2003, p. 12)

Finally, competition from the private sector has gained ground in the educational market. As the demand for continuing education, conveniently delivered degree programs for adult learners, and occupation-oriented skills and certification courses grew over the past two decades, for-profit education companies seized the opportunity to use innovative technologies to deliver instruction at diverse locations and over the Internet. The growth in this sector is obvious from the number of articles in the *Chronicle of Higher Education* on for-profit schools: over 30 articles on the topic were indexed in 2003, up from seven such articles in 1997 and one in 1996. An increasing number of students are expected to attend for-profit institutions in the near future.

From videotaped lectures to Web-based asynchronous classes, large numbers of students are now served on a 24/7/365 schedule. While the private, for-profit companies continue to expand their offerings, main stream colleges and universities have entered the e-learning market as well, although academic outreach, continuing education, and distance education units tend to be responsible for financing their own operations from revenues. The “tub-on-its-own-bottom” financial model has now been adopted in other programs and units throughout traditional institutions.

Bok and Duderstadt, presidents emeritus of Harvard and the University of Michigan, respectively, caution universities to carefully study the risks of unregulated commercialization of higher education. They urge consideration of the public investment, traditional goals, and the broad purposes of the academy while recognizing that changes that began in the latter half of the 20th century are likely to continue (Bok, 2003; Duderstadt, 2002).

C. Information and Communication Technology

Information and communication technology in the last quarter century has profoundly impacted every aspect of society, including higher education. It is remarkable to recall that the IBM Personal Computer (PC) was introduced in 1981, as was BitNet, the network that many faculty members first used to transfer data from one computer to another. The initial version of Windows appeared in 1983, but the first truly useful version was not introduced until 1990. The Web was born in 1990. By 1992, there were only 26 Web sites; there were 7.13 million by 2004 (*Silicon Valley/San Jose Business Journal*, 2000); many are hosted at colleges and universities. It is the rare academic library that does not have a Web presence, along with the attendant costs and organi-

zational concerns associated with maintaining Web-based services. The infusion of technology into higher education for academics, management, and communication has been so great that only a few of the most basic issues can be discussed here. As with changing demographics and the entrepreneurial university, there are opportunities for higher education, but there are costs, unintended consequences, and unmeasured impacts of technology as well.

The greatest advances in technology over the past 25 years are associated with the convergence of computing, communications, networking, and the exploding availability of digital information. For university students, faculties, and managers and administrators, these advances continue to alter how business is conducted, but more importantly, they change how individuals interact, communicate, teach, and learn.

For students, benefits of technology developments include the availability of better teaching and learning opportunities. Reliance on classrooms, libraries, and laboratories with infrastructures to support instant communication with the world beyond the university, immediate access to information resources, and alternative modalities for the delivery of instruction are the most obvious changes that technology has on student learning. Students are no longer tethered to the physical campus: remote access to computing supported by the university, including file space, personal Web pages, e-mail, and 24/7 technical assistance (and in some cases even laptops on loan) are increasingly available to every student. Distance education serves students who are remote from campus facilities or whose work or personal schedules do not allow their regular presence in class at a particular place and time each day or week. Technology enhanced classes, on-campus or distant, enable students to learn in ways that best accommodate their individual learning styles. Distant students, and students who are resident on campus, expect library access to support their learning with similar convenience.

Twigg (2003) suggests that classes supported by technology engage students in active learning regardless of class size, thereby eliminating the "one-size-fits-all" approach of large lecture sections and avoiding the lack of coordination that can plague multiple small sections of the same course (2003, p. 123). These and other benefits to students in the technology supported curriculum or e-learning environment accrue when three conditions are met: the students are "information technology literate," students know their best learning styles and can manage the environment accordingly, and the instructor has developed a course that allows students to "do" rather than "hear about" something. All of the conditions have costs, especially during the transition from old to new ways of teaching and learning. Support for faculty and staff development, instructing students on the new technologies, and providing technical assistance and "help desks" all require substantial human resource

investments. Hardware, software, networks, and maintenance on the systems require continuous funding. And the management of the technology requires new organizational structures, formal and informal. These costs, faculty might argue, are minor compared with the investment of their time in reworking course material for delivery in new instructional modalities. Faculty workload issues, questions of course “ownership,” and evaluation of e-learning courses all require advance planning and policy implementation (Gerson, 2000).

On the administrative side of the university, technology makes many things possible that were unheard of only a few years ago. Financial systems are integrated with student information systems and human resources systems so that a student’s registration can be blocked or graduation postponed if funds are owed for parking tickets or library fines. Thanks to technology, applicants for admission can be tracked from their first inquiry to improve enrollment management; faculty can receive notices of research funding opportunities based on digital academic profiles; and degree audits for students can be performed instantaneously. Institutional research offices can “slice and dice” data to report on every detail of university activity. And although the technology is pervasive and rapidly changing, management has to prioritize and plan ahead for infrastructure, personnel, and training. Because of the high costs and the complexity of large integrated, enterprise systems, this planning requires support from the highest levels of administration and participation from the lowest operational level as well.

Other technologies whose impacts require consideration by the academy include digitization of library, archival, and other institutional assets; social technologies, such as blogs and facebook, and their appropriate use; and the organization, storage and management of the messages and information contained therein.

It has been suggested that a technology strategy for higher education in the digital age “must be systemic, drawing together diverse applications such as instruction, research, libraries, museums, archives, academic computing, and university presses. Yet it must also recognize and accommodate the very great diversity among university activities.” (Duderstadt and Womack, 2003, p. 70) The challenge, then, is not just in acquiring, learning, or using technology, but in managing it for the benefit of the university’s diverse constituents and stakeholders.

D. Emerging “Interdisciplines” and New Responsibilities

The disciplinary system for organizing faculties into programs, departments, schools, and colleges has been in place in the US for well over 100 years. This social structure of higher education has been challenged at various times in

the 1920s, 1930s, and 1960s, mostly in the social sciences, but the core silos of the academy have remained in place. The investment in the current system has been seen as too large and deeply imbedded in the institutions to overturn, with everything from doctoral programs and faculty hiring to the very stability of American higher education on the line (Abbott, 2002, p. 219). However, new demands on higher education to find solutions to society's problems, the availability of technology to support rapid communication and collaboration among scholars worldwide, and the emergence of entrepreneurial universities, trends which have grown or accelerated since 1980, pose yet another threat to the traditional disciplinary system.

Academic libraries are not immune from the impacts of these changes. Where library liaisons have had responsibilities for bibliographic and instructional services to departments in the traditional academic disciplines, staffing must now address new and emerging fields, many of which require facility with the literatures and research cultures of fields heretofore unimagined.

Although higher education has long addressed practical problems of society (e.g., the land grant college extension programs in agriculture), the great growth in the academic research enterprise is a post-World War II phenomenon. With infusions of federal dollars, the growth of mega-funding agencies such as the National Science Foundation and the National Institutes of Health, and expanding university-government partnerships, university research has taken a practical turn by addressing issues, for example, in health care, economic development, environmental sciences, and national defense (now read Homeland Security) (Duderstadt and Womack, 2003, p. 53). This development has changed how universities and scholars are evaluated: research funding and publication have become the coin of the realm in the academy, while teaching and service have diminished in value in many institutions. As Duderstadt and Womack assert, "The level of sponsored research activity is not only a measure of faculty quality and a source of graduate student support, but it is also frequently a determinant of institutional reputation." (2003, p. 54)

Removing barriers to collaborative efforts between scholars from different disciplines is a major concern in today's higher education environment. On some campuses, researchers are brought together to address broad societal problems in interdisciplinary centers such as MIT's Media Laboratory and the University of Pennsylvania's Center for Bioethics. Elsewhere, formal interdisciplinary departments have been formed. In the humanities and social sciences, American studies, women's studies, and various "area studies" look at history, culture, art, and literature to gain greater understanding of the focal populations. Science policy, educational policy, and information policy are addressed in interdisciplinary programs and departments. From the biological and physical sciences,

programs in biomedical engineering, material science, environmental science, and many health sciences fields have developed. Cognitive sciences, combining psychology, neurology, computer science, and biology cross-disciplinary boundaries as well. Fields like the social studies of science and urban and regional planning are legitimized, as are the other fields mentioned here, by scholarly and professional societies, complete with their own journals and conference proceedings and, on campus, undergraduate, and graduate majors.

In some instances, the labor market, demanding higher skill and education levels of its workers, has driven the recent growth in popularity of what Brint calls “the practical arts.” He reports that fields like transportation studies, computer and information systems, recreation studies, and communications (all by their nature interdisciplinary) have been among the fastest growing degree-granting fields since 1970, while interest in English, history, foreign languages, and mathematics has declined (Brint, 2002, p. 233).

Whether the disciplinary social structure of higher education will transform the academy remains to be seen, but the public’s insistence that universities solve practical problems in the workplace and in society at large brings challenges to educational leaders. Klein states that interdisciplinary approaches “integrate separate disciplinary data, methods, tools, concepts, and theories in order to create a holistic view or common understanding of a complex issue, question, or problem.” (Klein, 2005)

E. Preparing Librarians for the Changed Academy

The implications of accelerating change in the higher education environment and the themes outlined here are systemic. They touch every unit within colleges and universities, including, importantly, the academic library. Academic librarians repeatedly identify technology, new roles and responsibilities of librarians, and the recruitment and education of librarians to assume the new roles and responsibilities as major concerns (Hisle, 2002; Marcum, 2003). The remainder of this chapter addresses the preparation of academic librarians for the 21st century academy.

III. Library Education 30 Years after Asheim

With the description of higher education as background, this section of the chapter begins with a brief look at contemporary education for librarianship in general, and then moves to consideration of education for academic librarianship in particular. Two themes derived from Asheim’s article and from the description of higher education in the early 21st century are then discussed in

detail: (1) changing definitions of qualifications for academic librarianship, and (2) building a diverse profession for effective practice within the increasingly diverse environment of colleges and universities. This chapter concludes with a brief discussion of distance education and academic librarianship and a review of questions for further study.

A. Overview of Library Education

The most comprehensive recent examination of education for librarianship was the result of a large two-year research effort funded by the W. K. Kellogg Foundation. The KALIPER (Kellogg-ALISE Information Professions and Education Renewal) Project was conducted between 1998 and 2000 by a team of 20 researchers from 13 colleges and universities in the US, Canada, and England. This large-scale effort was the most comprehensive examination of library and information science curriculum since 1923.

The *KALIPER Report* (Association for Library and Information Science Education (ALISE), 2000) describes an educational field in which change continues to be the constant as schools respond to internal and external pressures, including demands from students and other constituents; faculty interests and expertise in new areas; technological advances; and institutional relationships. The report identified six major trends in library and information studies education:

1. In addition to libraries as institutions and library-specific operations, curricula are addressing broad-based information environments and problems.
2. While curricula continue to incorporate perspectives from other disciplines, a distinct core has taken shape that is predominantly user-centered.
3. Schools and programs are increasing the investment and infusion of information technology into their curricula.
4. Schools and programs are experimenting with the structure of specialization within the curriculum.
5. Schools and programs are offering instruction in different formats to provide students with more flexibility.
6. Schools and programs are expanding their curricula by offering related degrees at the undergraduate, master's and doctoral levels.

The KALIPER research team concluded that library and information science curricula were undergoing rapid change and renewal. Pettigrew and Durrance (2001, p. 170), both members of the project's Advisory Committee, described

library education as “a vibrant, dynamic, changing field that is undertaking an array of initiatives.”

Tenopir’s (2000) succinct summary of the state of library education at the opening of the 21st century identified two important trends. One trend related to changes in the structure of the degree program itself. Tenopir found that schools were building in flexibility and allowing for more specialization within the library science master’s degree; replacing the library science degree with a more generic degree such as Master of Science; and adding other master’s degrees in closely related fields such as information systems. Undergraduate programs in information technology and systems were growing both in the number of schools offering an undergraduate major or minor and in the number of students enrolled in such programs. While graduates of such programs do not compete directly for most library-based positions, they do compete with master’s graduates for other information jobs.

The second trend was a fundamental change that affected all aspects of professional education: the evolution of many library programs into “information programs.” This change signaled a redefinition of mission and vision for each of these programs as they developed new academic programs or modified existing programs to educate other types of information professionals in addition to librarians and to seek alliances with a broader range of institutions other than libraries. The faculty of these programs viewed the change as a natural expression of the intrinsic connections among the information professions as well as the multidisciplinary nature of research and scholarship conducted by faculty and students in the programs and as a means to strengthen the position of the educational program within its university setting. However, students, alumni, and practitioners were not so positive about this change. In 1999, ALA’s Congress on Professional Education addressed, as a major concern, issues related to changes in educational programs preparing librarians with the move toward broader-based information programs.

In 2004, 56 schools or departments offered the ALA-accredited master’s program. In addition to offering the accredited master’s degree, a number of these schools or departments also offered the following programs or degrees (Daniel and Saye, 2005, Chapter 2):

Undergraduate major	16 schools
Master’s degree in information science (ALA accredited)	4 schools
Master’s degree in information science (not ALA accredited)	3 schools
Master’s degree in another discipline	17 schools
Post-master’s certificate	25 schools
Doctoral program	29 schools

Even among the accredited master's programs there is considerable variation in requirements, emphases, and possibilities for specialization. Markey's (2004) study of the academic programs describes the closest thing to a common core of courses that exists among the schools. The elements of the core program are foundations of the field, reference services, organization of information, management, and either research methods or information technology. These five areas by extension comprise the closest approximation available of the "common knowledge" that *all* new graduates of these programs will share, keeping in mind the variations among programs even for these five common elements.

B. The L(ibrary)-School or the I(nformation)-School?

Many of the academic units—schools, colleges, departments—that offer a program to educate librarians have been undergoing significant transformations as discussed by Tenopir. Places previously known as "the library school" are now the "information school," or "i-school." In some, the change happened gradually; at others the change seemed to come very suddenly. By 2006, 54 of the 57 programs (either accredited by ALA or institutional members of ALISE or both) had the word "information" in its title, either in combination with the word "library" (43 programs or academic units) or without the word "library" (11 programs or units). Three programs or units had "library" but not "information" in their title. These changes in title are not new, of course, nor are the changes to and broadening of the curriculum to include courses for other information professionals such as archivists, database managers, Web site managers, and records managers. The significant change is the mutual recognition of the schools as a distinctive group based on common concerns and aspirations.

The movement toward information schools became more formalized as a group of deans and directors of interested schools coalesced into a separate group called the i-School Deans that met regularly to discuss matters of mutual interest. The first conference for the group was held at Pennsylvania State University, September 28–30, 2005. Nineteen schools were listed as participants; 14 of these schools offer the accredited master's degree in library and information science. The conference program featured sessions on information school essentials, challenges, identity, and academic life. Changing the names and broadening the reach of the former "library schools" has raised resistance and complaints that education for librarianship and research that will benefit libraries have been displaced by teaching and research more closely aligned with computer science, information systems, or other allied but separate disciplines.

These changes that appear to replace librarianship and library concerns or at least push them to secondary status in favor of information programs has generated widespread discussion. Michael Gorman (2004), while President-Elect of ALA, asked the question "What ails library education?" and followed with a long list of answers that focused on perceived shortcomings from too few accredited programs to the lack of national standards for curriculum. Gorman called for education centered on core functions of all libraries, topics that he felt has been marginalized in favor of information systems and technology. He described the current state of library education and educators as divorced from the needs and concerns of the practice of librarianship and called for ALA and the educational programs to collaborate on producing a national curriculum, revamping the accreditation system, and reconceptualizing librarianship for future generations.

John N. Berry, Editor-in-Chief of *Library Journal* (2005) supported Gorman's assessment that library education was in crisis. Berry described his encounters with students and recent graduates of accredited master's programs who complained about the lack of courses in traditional library areas and required courses that had little relevance to professional practice. Berry focused on distance learning programs as needing special attention by ALA and its Committee on Accreditation to make certain that the programs met accreditation standards.

Dillon and Norris (2005) responded to Gorman, Berry, and other proponents of the "crisis" view of library education by analyzing data on research output, gender representation of faculty, the relationship between gender of instructor and curricular topics, and the curriculum of accredited master's programs. They offered a different and provocative definition of "the crisis" as a crisis of confidence grounded at least in part by a lack of attention to quality. They also saw the time of crisis differently:

This may be a once in a century opportunity to convince those in power that the field has a real contribution to make. The crisis we face is less to make research more relevant to local concerns of practitioners, or to revamp once more a set of core classes or accreditation standards, but to demonstrate our authority as a profession in dealing with information issues at both theoretical and practical levels, within academia and beyond. This is a crisis in the sense of it being an opportunity and a turning point, and in that sense, it should be welcomed. (p. 296)

Many other individuals have contributed to the important debate over library education, and this brief summary cannot include all of their contributions. The discussion now turns to academic librarianship in particular, against this background of references to a crisis, criticism from practitioners about the relevance of library education to professional work, discussion of

the value and long-term effects of the information school movement, and the broadening of the curriculum of many accredited programs to include other baccalaureate and graduate degrees.

IV. Education for Academic Librarianship

Education for academic librarianship has not been protected from the swirl of changes, problems, and concerns briefly outlined above. Changes in the enterprise of higher education have affected academic libraries, and education for academic librarianship has been affected by those changes as well as by changes in education for librarianship in general. Yet another view of the state of contemporary library education came from Jackson (2000) in an analysis of the image and status of academic librarians. Jackson asked whether or not there was a connection between the debate about image and status of academic libraries and the curriculum of educational programs for academic librarians saying, “Librarians are being left with the unsettling feeling and question that if library schools disappeared tomorrow, would anyone notice or care?” (p. 98) He identified several trends as possible contributors to the problems of image and status.

The trend toward an increasingly technological curriculum at the expense of the body of knowledge that comprises librarianship placed technique at the forefront of professional education, in his view. Jackson questioned how well students were being acculturated to and prepared for careers in research and scholarship, which is the basis for full acceptance of academic librarians as peers of other university faculty. He defined the new professional as a “library educator” whose professional responsibilities include a deep involvement in research and scholarship. Not only were students not being taught research design and methodology, but they were being acculturated to a view that did not include research and scholarship as a professional responsibility. Library education, in Jackson’s view, was promoting an entrepreneurial, technical professional culture and preparing students to expect and accept professional roles that clearly would not allow them to become peers of the faculty.

Jackson made eight recommendations to define “the characteristics, role, education, of the new professional, and required institutional support systems to allow them to be effective librarian educators” (2000, pp. 104–111):

- Academic librarians must be open, flexible, and self-confident about change.
- A strictly ‘service’ approach is not enough.
- Traditional continuing education and in-service training are not sufficient.

- Academic librarians must become comfortable with research, theory building, and scholarly publishing.
- Academic librarians must seek advanced degrees in subject areas.
- Academic librarians must promote and market themselves and the profession to the academic community.
- Academic librarians and administrators must be willing to redesign job responsibilities and conditions.
- Colleges and universities must be willing to create the conditions to allow academic librarians to flourish as library educators.

Jackson's concluding statement called for change in the composition of the profession by attracting new professionals who intentionally choose academic librarianship because of its vibrancy as a career. Jackson's view of academic librarianship has potential for restructuring the educational requirements for academic librarianship to include preparation for research and scholarship. One means of obtaining personnel who are not only capable of deep scholarship but prepared to undertake it is to change the qualifications required for academic librarian positions, an approach that is discussed in the next section.

A. Alternative Paths to Academic Librarianship

Thirty years ago Asheim discussed shifts in definitions of qualifications and roles for library personnel over the decade ending in 1975. Aggressive measures to prepare more qualified professionals had been undertaken on the basis of a predicted shortfall in the number of qualified personnel. Expectations of and training for non-professional staff had undergone qualitative changes as responsibilities previously reserved for professional staff were re-defined as non-professional tasks. Associations for non-professional staff were formed and gained greater recognition. There was concern about the threat that growing acceptance of non-professional staff performing higher-level library functions posed to professionally qualified individuals, particularly in the school library media field. At the same time, additional formal educational programs to follow on to professional education were being introduced. Some of these programs were "sixth-year" programs that led to certificates or specialist credentials; others were designed to update basic master's education with academic work in emerging areas, such as technology. The number of doctoral programs was growing, also. According to Asheim, the number of schools with accredited master's programs that offered the doctoral degree grew from three in 1948 to 21 twenty-five years later (1975, p. 171). He viewed all of these changes as "separate and distinct

reactions to certain overarching changes in the social role of the library, evidences of a natural evolution in a dynamic profession” (1975, p. 173).

Concern about appropriate roles for library personnel, the requisite qualifications for employment in libraries, and various modes of obtaining the required training continues 30 years later. The impetus for the discussion comes from several sources. In academic libraries there has been considerable discussion related to specialization. Detlefsen (1992, p. 187) identified three types of specialists hired by libraries: technology specialists, administrative specialists, and subject specialists. Neal (2006) stated the situation in this way:

Academic libraries now hire an increasing number of individuals to fill professional librarian positions who do not have the master’s degree in library science. Instead of appointing librarians with the traditional qualifying credential, they hire staff ... who hold a variety of qualifications, such as advanced degrees in subject disciplines, specialized language skills, teaching experience, or technology expertise.

The debate about specialization is more than a debate about appropriate qualifications for academic librarians; in essence, it is a debate about the relative value of different graduate education, the role of the academic librarian, and the status of librarians in academia. It is a complex and sometimes emotional issue that gets to the core of the profession’s self-concept. This debate is not new, but recent talk about an impending shortage of qualified librarians has brought forth vigorous consideration of alternative paths into academic libraries.

An impending shortage of qualified personnel to fill an expected wave of retirements has been forecast for at least a decade. Statements about the shortage abound; a statement from American Library Association (ALA) summarizes the situation (ALA, 2002):

Based on 1990 Census data, almost 58% of professional librarians will reach the age of 65 between 2005 and 2019. In 1998, 57% of professional librarians were age 45 or older (July 2000 *Monthly Labor Review*). Based on 2000 survey published by *Library Journal*, 40% of library directors said they would retire in nine years or less.

While the shortage hasn’t disappeared quite as quickly as the predicted shortage described by Asheim (1975), it hasn’t materialized as quickly as anticipated either. Regardless of questions about whether or not the shortage is “real,” the expectation of a massive exodus of experienced librarians and a dearth of qualified newcomers to take their places persists and remains a factor in efforts to build the new professional workforce.

1. Meeting the Need for Subject Specialists

The forces driving the debate over appropriate qualifications for academic librarianship—the assumed shortage of qualified personnel and the need for individuals with advanced qualifications in a specialty—come together in the case of the job of subject specialist in an academic or research library. In this case, the shortage is assumed to have already begun. According to a press release from Indiana University, directors of area studies centers identified the need to create a pool of qualified individuals to fill vacancies anticipated to materialize as early as 1998 (Mathia, 1998). In 1993, area studies administrators made the impending shortage a central topic of their annual meeting not only because of the services that the area studies subject specialist offered to scholars and students but also because of the need to meet the requirements for federal government funding (Kuntz, 2003).

2. Post-Doctoral Fellowships

Several solutions were developed to meet this shortage, but the model that has prevailed is predicated on developing an alternative means of preparing individuals for careers in academic librarianship. Post-doctoral fellowship programs were developed as a new educational path outside the traditional route through an accredited master's program. The fellowship programs recruit and train individuals who already have a doctorate in the humanities, area studies, or other fields for positions as subject specialists in academic and research libraries. Typically, such programs are 9–12 months in length, during which time the fellow works closely with experienced librarians in public service, collection development, faculty liaison tasks, and other responsibilities of a subject specialist. Through this apprenticeship, the fellow learns the essential functions of the subject specialist's job in less time than an accredited master's degree program requires. Academic libraries themselves frequently administer the programs either alone or in partnership with another organization.

Kuntz (2003) described and evaluated a post-doctoral fellowship program at Indiana University funded by the Mellon Foundation. Using the structure of a "typical" library and information science master's program as the framework, Kuntz talked about the various activities that comprised the fellowship program as fellows learned about automation, professional perspectives, user needs, reference, cataloging, collection development, and management—topics that she equated with required master's courses. Other activities related to government documents and preservation were discussed as substitutes for a typical master's level practicum. She described how fellows decided to informally sit in on courses offered in the accredited master's

program at Indiana University and defined these courses as equivalent to electives in a master's program or extracurricular activities.

In their final evaluations of the fellowship program, the fellows stated that the design of the fellowship required substantial changes. Integrating the fellowship program into an ALA-accredited master's program, designating the program as a post-master's opportunity, and including formal coursework in an accredited master's program in the fellowship experience were suggested. In summary, Kuntz noted that the fellows received excellent training but that full acceptance by the profession of the fellowship experience as equivalent to the master's degree was necessary before such programs could fully serve as a means of preparing highly qualified scholars for specialized library positions and as a way to meet the predicted personnel shortage (p. 326).

3. Adaptations of the Post-Doctoral Fellowship Model

The post-doctoral fellowship model has been adapted to meet an expanding list of personnel needs. The Council on Library and Information Resources offers the Post-doctoral Fellowship Program in Scholarly Information Resources for Humanities, which "is designed to give the best recent Ph.D. recipients in the humanities a unique opportunity to develop as information professionals and scholars." (Council on Library and Information Resources, 2006) Fellows work within academic libraries, archives, or special collections, performing a range of tasks including curriculum development, teaching and learning support, and digital resource production and use during a one- or two-year fellowship period. The program description asserts that after completing the fellowship, participants will be prepared for new career paths in the academy and will be "exceptionally qualified to find challenging positions in research institutions and/or campus libraries."

The fellowship model has been adapted to include the library and information science master's degree as part of the fellowship experience as well. In 2004 the Institute of Museum and Library Services (IMLS) funded the Association of Research Libraries (ARL), the Catholic University of America, Simmons College, and the University of North Carolina-Chapel Hill to recruit and train 45 master's-level students using the fellowship model. Program activities include a fellowship experience in a host library, mentoring, and a week-long leadership institute in which fellows learn more about opportunities and challenges facing academic and research libraries. Fellows are assisted in finding a professional position in a research library upon graduation.

B. Assessing Supply and Demand

As stated earlier, the anticipated shortage of librarians in general and subject specialists in particular has not appeared as predicted. In 2004 IMLS funded a project to assess supply and demand related to subject specialist positions. The project is being conducted jointly by the University of Wisconsin-Madison and the University of Maryland. Two of the project goals are to determine current demand for and supply of subject specialists in academic and research libraries, and to establish projected demand for and supply of subject specialists in academic and research libraries. The project also addresses effective replicable recruitment methods and a model curriculum.

Data about the demand for subject specialists were gathered through a survey of ARL member libraries conducted in Spring 2005. Preliminary analysis of the data leads to the following conclusions (Barlow and Fisher, 2006):

- Nine out of ten academic and research libraries employ specialists for business, education, and biological science.
- Eight out of ten academic and research libraries employ specialists for the humanities, social sciences, music, physical sciences, and mathematics.
- One-third or fewer academic libraries employ subject specialists for South Asian studies, Southeast Asian studies, and Scandinavian studies.
- The most frequently predicted needs for new subject specialists in 2010 were for the biological sciences, engineering, humanities, and physical sciences.
- Approximately 75% of library directors predicted that in 2010 staffing patterns for subject specialists will have been reconfigured into combinations and definitions that are different from those used currently.

The results of this survey somewhat temper the expectation of a large demand for subject specialists in the near future, particularly for new personnel in area studies. The largest pending demand appears to be the biological and physical sciences, engineering, humanities, and social sciences.

Students in accredited master's programs who hold an advanced degree were surveyed, also. Preliminary analysis of the data leads to the following conclusions (Chiu *et al.*, 2006):

- The largest group of graduate degrees were in the humanities, and 87% of these degrees were master's degrees.
- Advanced degrees in social sciences, area studies, education, and law were the next largest group of graduate degrees.
- More than 80% of students who had earned an advanced degree had earned a master's degree, not a doctorate.
- The humanities accounted for 21% of the doctorates.

- None of the respondents had earned a doctorate in engineering, computer science, mathematics, agriculture, business, or architecture.

When the results of the two surveys are compared, it appears that humanities is the only field in which the supply of librarians educated in an accredited master's program who also have an advanced degree in the subject area will be sufficient to meet the projected demand. The shortfall appears to be most critical in the biological sciences, physical sciences, social sciences, and engineering. Of course, these data do not reflect librarians who earn a subject doctorate after earning the library and information science degree. Initiatives to facilitate advanced study by librarians particularly in critical areas of physical and biological sciences and engineering may be a promising means for meeting personnel needs.

C. Educational Requirements for Subject Specialists

The same study investigated the perceptions of the essential elements of library and information science education in preparing persons for subject specialist positions held by ARL library directors, practicing subject specialists, and students earning an accredited master's degree who already have a graduate degree in a subject specialty. There was considerable agreement between library directors and practicing subject specialists; both groups agreed that user needs, reference and information services, collection management, and appropriate technologies were very important for future subject specialists. The differences between the opinions of library directors and those of practicing subject specialists are interesting to note. Library directors identified database searching, information literacy, research methods, and subject bibliography as very important, as well; practicing subject specialists did not agree but showed strong agreement on the importance of a practicum or internship (Barlow and Fisher, 2006). The students were more diverse in their opinions of which elements of professional education were essential; only reference and information services was considered essential by a majority of the students. (Chiu *et al.*, 2006) The findings from the first part of this study and from other studies are being incorporated into the design of a model curriculum for preparing subject specialists.

D. Concerns about Alternative Education for Academic Librarianship

The changes in qualifications accepted for professional work in academic libraries and the development of new career paths into these libraries have led

to questions about the privileges and status of professionally educated librarians. Neal expressed the view that had been voiced by others (2006):

Academic libraries are also creating a wide range of new professional assignments ... that demand diverse educational backgrounds. Additionally, responsibilities formerly carried out by librarians are frequently transferred to support staff and student employees. There is also a new cohort of MLS librarians who have received their degrees through distance rather than residential programs.

The implications of these trends for the academic library workforce and for the condition of the academic library workplace need close study. Neal (2006) expressed deep concern for the academic library as an institution and called for careful attention to the complexities of integrating a diverse staff and managing the institution as it accommodates these changes.

Williams and Zachert (2000) recounted a similar situation in special librarianship in an article first published in 1986 then reprinted in 2000 in the *Journal of Education for Library and Information Science*. They address the question of specialization within library and information science education:

When changes in attitude took place over the years, they came mostly from the demands of practitioners rather than from analytical study of the needs of library and information workers or from purposive planning by library educators (2000, p. 30).

One interesting aspect of the present situation in which new alternative paths to employment in academic libraries are being developed is that the push for change is coming from library directors and association directors who themselves hold the accredited professional master's degree.

E. Diversity

Thirty years ago Asheim described the challenge of diversity in librarianship in this way:

The stress placed by the federal government on minority recruitment and on services to minorities reflects a growing concern in the society as a whole. In the library field, this awareness of the disadvantaged and unserved groups within the American society represented a particular challenge because it raised questions about some of the basic tenets of the 'library faith.' Librarians had long seen themselves as very special guardians of the democratic ideal. ... But active expression by minority groups of their demands for equal treatment introduced a keener perception of the actuality behind the rhetoric, and libraries found that they had been no less influenced than any other social agency by the dominant values and traditions that prevailed in the society as a whole (1975, p. 160).

Diversity continues as a major challenge in the education and practice of librarianship, in general, and academic librarianship, in particular. Enhanced

diversity satisfies social policy and assists the larger institution in meeting its own diversity goals; it is also considered a means of improving services to a more diverse student body. The major library associations, funding agencies and foundations, and educational programs, individually and in partnerships, have undertaken numerous initiatives to build diversity in library staff, services, and collections. Each of these aspects of diversity affects the practice of academic librarianship, but the discussion that follows concentrates on workforce diversity.

While it is difficult to accurately describe the diversity of staff in academic and research libraries, information from different sources can be combined to give a reasonable picture. [Kyrellidou and Young \(2005\)](#) reported on data collected by the ARL's *Annual Salary Survey 2004–2005*. One hundred member libraries in the US reported data about their professional staff. According to the survey, 12.8% of the professional staff in US ARL libraries are members of one of four minority racial/ethnic groups. By group, the minority representation is as follows:

American Indian or Alaskan Native	0.3%
Asian or Pacific Islander	5.8%
Black	4.5%
Hispanic	2.2%
White and Other	87.2%

[Lynch \(1998\)](#) reported on the racial/ethnic origin of academic, public, and school librarians. Data for academic librarians had been collected as part of the *ALA Survey of Librarian Salaries, 1998*. The sample excluded libraries with fewer than two professionals. By group, minority representation was as follows:

American Indian or Alaskan Native	0.57%
Asian or Pacific Islander	4.98%
Black	5.87%
Hispanic	1.80%
White	86.78%

While the results of these two surveys cannot be directly compared, the reported data paint similar pictures of the diversity, or lack of diversity, among the professional staff of academic libraries and further confirm the fact

that the profession of librarianship continues to be overwhelmingly white. Members of racial/ethnic minority groups comprise less than 14% of the professional staff, according to these two studies.

1. Programs to Increase Diversity

The apparent lack of success in enhancing diversity among academic librarians 30 years after Asheim's observations is not because of a lack of effort on the part of the profession. Scholarships and other financial aid for minority students continue to be available from individual schools, professional associations, and other interested stakeholders. Perhaps the best-known national program is the Spectrum Initiative established by ALA in 1997. The mission of Spectrum is to improve local library services by developing a workforce that is representative of the communities that libraries serve. The Spectrum Scholarship program recruits individuals of racial/ethnic minority origin to librarianship and provides scholarships to students planning to attend an ALA-accredited program or an NCATE-accredited school library media program that is recognized by ALA. Schools are encouraged to provide additional financial aid to Spectrum scholars. In 2004, ALA received over \$900,000 from the IMLS to double the number of Spectrum scholarships. Sixty-seven students received Spectrum Scholarships in 2005–2006, bringing to 346 the total number of scholarships awarded through the program. Close to 70 new scholarships will be awarded for study in 2006–2007.

IMLS has funded numerous programs at individual colleges and universities to recruit and prepare minority students for careers as librarians. The University of Maryland received one of the earlier grants in 1998 under the IMLS National Leadership program; the \$100,000 grant was used to support minority part-time students through fellowships that included full tuition and stipend and reimbursement for books, travel to a professional conference, and other expenses incurred to attend the MLS program at Maryland. Two of the four fellows supported by the grant entered academic and research librarianship. The University of Oklahoma received funding of approximately \$150,000 from IMLS in the same year for a program with similar goals. Shortly thereafter, the University of Tennessee received IMLS funding to increase diversity through a distance education program that enabled 10 students from underrepresented groups to participate in an online cohort program that included mentoring from on-campus peers. From this modest beginning, IMLS-funded projects to increase the number of librarians from racial and ethnic minority groups have grown in number, size, design, and cost. In 2005, IMLS awarded more than \$6,000,000 to institutions or partnerships of

institutions for programs designed to enhance diversity among the library profession through a variety of approaches.

The ARL Initiative to Recruit a Diverse Workforce seeks to attract individuals from underrepresented groups to careers in academic and research libraries. The program provides a financial award of up to \$10,000 over two years to students enrolled in a library and information science master's program and enhances the students' opportunities for professional growth and networking through a symposium held during an ALA Midwinter meeting and a mentorship program. The initiative received a significant boost in 2003 when it received an award of approximately \$400,000 from IMLS. Eight students received funding between 2000 when the initiative began and 2003. Since the receipt of IMLS funding, 35 students have been selected for the program, including 19 students in 2005–2006.

2. Diversity in ALA-Accredited Programs

The primary pipeline for the supply of academic librarians is the set of master's degree programs accredited by ALA and represented by the institutional members of ALISE. ALISE collects data annually from the member schools and publishes an annual report in which the data are organized and analyzed; these reports are a rich source of data about library and information science education. For the purposes of trying to understand diversity in the supply of new professionals, this discussion will go back before 2000 to provide a longer view of diversity in the schools. [Table 1](#) shows the percentage of students who earned a master's degree from an ALA-accredited program in the US by racial/ethnic group for each academic year from 1995–1996 to 2002–2003, the most recent year for which data are available.

The racial/ethnic composition of recipients of ALA-accredited master's degrees for whom data was reported has changed only slightly over the eight years included in [Table 1](#). Recipients from underrepresented groups increased from 9.3% of all recipients of MLS degrees in 1995–1996 to 10.8% in 2002–2003. The total number of MLS degrees received by underrepresented groups represents 10.8% of degrees awarded during this period.

The largest increase was among African American students. The percentage of degrees earned each year by African American students increased by 36%, from 3.6% in 1995–1996 to 4.9% in 2002–2003. The total number of degrees awarded to African Americans over the eight-year period was 1664, or 4.5% of all degrees awarded.

Table 1
 Recipients of ALA-Accredited Master's Degrees in the US by Racial/Ethnic Group

Year	American Indian/Alaskan Native (%)	Asian or Pacific Islander (%)	Black, not of Hispanic origin (%)	Hispanic (%)	White (%)	International or not reported (%)	Total master's degrees awarded (number)
1995–1996	0.4	2.9	3.6	2.4	85.4	5.3	4862
1996–1997	0.6	2.8	4.2	2.0	85.7	4.8	4643
1997–1998	0.5	3.0	4.4	2.4	85.9	3.9	4629
1998–1999	0.4	3.1	4.3	3.1	85.2	3.9	4655
1999–2000	0.3	2.8	4.8	5.9	79.6	6.5	4495
2000–2001	0.5	2.6	4.5	3.2	79.2	11.0	4618
2001–2002	0.5	2.6	4.5	3.2	79.2	10.0	4576
2002–2003	0.4	2.6	4.9	2.9	79.9	9.4	4843
Degrees awarded 1995– 1996 to 2002– 2003	164	1045	1664	1149	30744	2555	37,321
% of degrees awarded 1995– 1996 to 2002– 2003	0.4	2.8	4.5	3.1	82.4	6.9	(100%)

Note: Data for this table are from Daniel and Saye, Table II-3-a, each annual report 1997–2004

According to the data the percentage of Hispanics among graduates of accredited programs increased 21%, from 2.4% to 2.9%. The large, one-time increase in the number of Hispanic graduates in 1999–2000 is noticeable. Further examination of the *Library and Information Science Statistical Report 2001* (Daniel and Saye, 2001) reveals that the increase is accounted for by one program. It may be that the increase was the result of a special program for Hispanic students at the school, or it may be that the number is an error in data reporting. If the number of Hispanic graduates is adjusted by eliminating the data in question, the percentage of Hispanic graduates for the eight-year period is 2.8% rather than 3.1% as shown in the table.

The representation of American Indian/Alaskan Native graduates and of Asian or Pacific Islander remained essentially the same over the years shown in the table. Graduates who are from the American Indian/Alaskan Native ethnic group accounted for less than 1% of all MLS recipients in each year; 164 individuals from the ethnic group received an MLS from 1995–1996 to 2002–2003. The percentage of Asian or Pacific Islander degree recipients decreased slightly from 2.9% to 2.6%; 1045 individuals from the ethnic group received an MLS from 1995–1996 to 2002–2003.

Both the number and percentage of white recipients of the MLS degree decreased over the time period reported. In 1995–1996, white students were 85.4% (4150) of degree recipients; in 2002–2003, 3871 white graduates were 79.9% of degree recipients. There was a small increase in the percentage of white graduates in 2002–2003.

3. Diversity in Higher Education

Academic librarians serve the faculty, staff, and undergraduate and graduate student population of the US institutions of higher education. Table 2 shows the distribution of faculty, staff, and students in US higher education by racial/ethnic group. Data for students are for fall semester 2002; data for faculty and staff are for 2003. (NCES, 2005)

The professional workforce of academic librarianship appears to resemble the faculty in racial/ethnic composition. About 87% of academic librarians are white (Kyrillidou and Young, 2005; Lynch, 1998), as are 85% of faculty. In 2003, 20.5% of faculty and staff were members of minority groups. Among faculty alone, 15% were minorities. (NCES, 2005). The representation of each ethnic group among faculty and staff is a close match to the corresponding group among academic librarians. However, the racial/ethnic composition of the student body differs significantly from the composition of academic librarians as a group. In 2002, 29.4% of students in degree-granting institutions in the US were members of minority groups.

Table 2
 Percentage of Faculty, Staff, and Students in US Colleges and Universities by Racial/
 Ethnic Group

Racial/ethnic group	Faculty and staff	Students
American Indian/Alaskan Native	0.6	1.0
Asian or Pacific Islander	4.9	6.5
Black	9.8	11.9
Hispanic	5.2	10.0
White	72.0	67.1
International	7.5	3.6

4. Other Perspectives on Diversity

Winston (2001) identified additional benefits to an organization that builds diversity. For academic libraries, the usual rationale for building a diverse staff is based upon social responsibility and equity—arguments that apply to many organizations—and upon the desire to improve library services by more closely aligning the library's staff with the population that the library serves. Winston cited research from the private sector that found that companies that are the most diverse as measured in various ways are also more successful. He tested this relationship in the academic environment and found supporting evidence among liberal arts colleges. He concluded that his study and prior research provide evidence that diversity is a critical element associated with organizational performance and success in an academic environment as well as the private sector.

Leonard (2001) found that 44% of African Americans surveyed would not consider accepting a position in an organization that did not already have a diverse workforce. Citing this study, Goss (2003, p. 595) stated the case for special efforts such as residency programs within academic libraries as a way to enhance recruitment and retention of minority librarians. Leonard's finding and Goss's discussion suggest how difficult increasing the diversity of library staff within a single college or university can be—the less diverse the library staff is, the harder it will be to increase diversity by recruiting minority individuals. If the effect works within a profession at large as well as within a single institution, the slow progress in building diversity among the library profession becomes easier to understand, and growth in small increments may be the best result that can be expected.

Lance (2005) took a different approach to the issue of racial and ethnic diversity among library staff by examining it from the perspective of the

educational background of the US population by racial/ethnic origin. Instead of comparing representation of minorities among library staff to representation in the population at large, Lance used minority representation among adults over the age of 25 years and among holders of master's degrees as the bases for comparison. Lance concluded that most of the discrepancy between representation of African Americans, American Indians and Alaskan Natives, and Hispanics in the library workforce can be attributed to the underrepresentation of these groups among holders of master's degrees in general. He also concluded that Asian/Pacific Islanders are the most underrepresented group among librarians when holders of master's degrees is the basis for comparison. Lance suggested that librarianship would benefit from a general increase in the number of individuals from minority groups who undertake graduate study.

Any increase in the ethnic diversity of individuals coming into the profession is positive. However, the small size of the overall increase (16%) as shown earlier over a period of time when considerable attention and resources were focused on attracting minorities into the profession and the fact that the increase is not seen among all minority groups are cause for continuing concern. An implication of Lance's analysis is that recruitment efforts must reach beyond the immediate audience of individuals who are already considering graduate studies. Recruiting and supporting minority students who have already decided to apply for graduate study in library and information science is a worthy effort and can be expected to slowly and selectively increase the representation of minorities among the profession as it seems to have done over the past decade. However, more noticeable growth will require recruitment programs and financial aid strategies designed to bring even more minority students into the higher education system as undergraduates, to increase awareness and serious consideration of graduate study in general among minority undergraduates, and to assist potential graduate students in overcoming real and perceived barriers to graduate study.

E. Distance Education

Distance education influences education for academic librarianship in two ways. First, opportunities for students to participate in distance learning in library and information science continue to develop. In 1995–1996, the accredited schools reported offering 909 courses away from the home campus (Daniel and Saye, 1997, p. 285). In 2001–2002, the number of distance education courses had increased to 1172; more than 70% of these courses utilized the Web, television, telnet, or a mix of delivery methods which do not necessarily require the student to travel to a remote site (Daniel and Saye, 2003, p. 236).

A large-scale coordinated distance education program is the WISE (Web-based Information Science Education) Consortium. WISE is an international collaborative effort to broaden the educational opportunities available to students in member schools and to foster relationships among the schools and their faculty. Students at participating schools may enroll in Web-based courses offered by other schools, thus enhancing access to courses for students without regard to location. The WISE project received initial funding from IMLS. The initial success of WISE in its first phase of operation has led to planning for expanding membership and attaining a stable self-supporting status.

While the quality of instruction in distance education and other aspects of the educational experience itself have been studied extensively, questions related to the professional experiences and careers of students who earn their degree entirely through a distance education program are now being raised (Neal, 2006).

The second effect of distance education on academic librarianship comes from the demands on academic libraries to provide services to students enrolled in distance education programs. Distance education programs at all levels of education are experiencing rapid growth. In a comprehensive review of library services for distance education, Gandhi (2003) quoted a prediction that more than 3300 colleges and universities would offer distance education courses by 2004 (p. 138). NCES reported that 55% of all two-year and four-year institutions offered distance education courses in 2001 (NCES, 2003).

Distance education students require library and information services just as do residential students. The Association of College and Research Libraries (ACRL) adopted guidelines for such services in 2004. Educational programs specifically designed to prepare academic librarians for distance education programs are just beginning to appear. The University of North Texas, for example, offers a program of study in Distributed Learning Librarianship. The University of Maryland University College, which is not associated with the College of Information Studies that offers the accredited master's degree, has a post-graduate certificate program in Library Services in Distance Education. Most, if not all, accredited master's programs offer courses in copyright, Web-based technology, virtual reference service, user needs, instruction, and other topics that relate to the responsibilities and job functions of a librarian serving distance education students. However, except for these few certification programs, the components of professional education in academic librarianship to support distance education have not yet been clearly articulated into specialties in many schools.

V. Conclusions

This chapter has attempted to describe the environment in which education for librarianship exists today, and to look closely at selected aspects of education for academic librarianship. Two of the aspects explored here, the development and recognition of alternative educational preparation for academic librarianship that does not include the accredited master's programs and the continued underrepresentation of racial and ethnic minorities among academic librarians, have far-reaching implications for the composition of the workforce, professional responsibilities and status of librarians, and for the academic library itself. Distance education is creating a new client group for the services of academic libraries and their staff; distance education is bringing change to the educational experiences of new academic librarians as well.

Many, perhaps most, library educators and practitioners today do not remember the more leisurely time upon which Asheim reflected. The era of change that he described as starting in 1965 is simply the way things always have been to today's educators and practitioners—change is the constant in the field and education-for-change is a basic requirement for faculty and students alike. At the same time, librarianship is enriched by its heritage and culture. The task for educators is to combine these two elements into an educational program that transmits the profession's culture in a way that is meaningful and useful to the next generation of professionals.

At this time it is not possible to predict the long-term effect of the trend toward specialization and the concomitant push to broaden the definition of acceptable qualifications for professional positions. Will the value of the ALA-accredited master's degree decline and lose ground? Will competition in a larger marketplace force fundamental changes in the accredited programs themselves? There is some evidence that the accredited programs are attempting to respond to these questions by designing programs of study that take into account differences in the education and skills that applicants already have. This is a change from the one-size-fits-all approach (with some variations achieved through a set of elective courses) that has been the dominant model in library education for a very long time. It is impossible to say how well these initiatives will work out for students and for the schools and departments themselves, but the efforts should be encouraged and assisted. New ideas for improving educational programs will continue to emerge.

The field's stakeholders—educators, practitioners, administrators, students, retirees, friends—must continue working to build a truly diverse profession. The hard work of the past decade has brought about some change, but a new burst of creativity seems to be necessary. New programs must address systemic problems and bring more minority students to the threshold of graduate study,

open the possibility of graduate study for them, and recruit them to the profession. An improved information service to a diverse population is not the only benefit to be derived; the profession itself will benefit from new and different perspectives, experiences, and ideas. New inquiry into the effects of diversity in the classroom, the workplace, and other venues as they occur in the profession might yield new insights into ways to build diversity.

Evolution and change in academic librarianship must continue as higher education itself changes. Perhaps a difference between the perspective offered by Asheim (1975) and the perspective today is that change is no longer seen as causing instability in the educational enterprise. Change presents many challenges, but it presents possibilities for scholarly inquiry and for designing innovative programs. The academic environment of this particular segment of librarianship offers a mission-driven reason not only to focus on education, but also to pursue experiential inquiry related to practice and the relationship between education and practice. Academic librarianship is well-positioned to serve as a test bed for those concerned with the future preparation of librarians and information professionals, regardless of their specialty. Advances in the education for academic librarianship seen over the past 30 years and innovations still to come can extend to the preparation of others entering the profession, whether their goal is to serve school teachers, young students, the general public, or specialized groups, and the model for productive collaboration among the stakeholders would be a valuable contribution to the field.

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The CLIR Fellowship and Academic Librarianship, or Frodo Meets Google

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I. A Tradition of Change

Writing in 1995, what seems from our vantage point an almost primitive moment in technological evolution, hypertext theorist, and fiction writer Catherine Marshall, with her colleague David Levy, presciently described modern libraries;

The academic and public libraries most of us have grown up with are the products of innovation begun approximately 150 years ago. We would find libraries that existed prior to that time largely unrecognizable. It is certain that the introduction of digital technologies will again transform libraries, possibly beyond recognition by transforming the mix of materials in their collections and the methods by which these materials are maintained and used. But the better word for these evolving institutions is “libraries,” not digital libraries, for ultimately what must be preserved is the heterogeneity of materials and practices. As library materials and practices of the past have been diverse—more diverse than idealized accounts allow—so they no doubt will remain in the future (Levy and Marshall, 1995, p. 77).

By reminding us that libraries were always much more than repositories of collated pages of print, Levy and Marshall highlight the characteristics of modern libraries that mark them not as something new and different, but as something wholly in keeping with the diversity of “traditional” library holdings. “Our idealized image of a library imbues it with qualities of fixity and permanence. This is hardly surprising, since the library is considered to be the Home of the Book, and books are by and large one of the more fixed, more permanent types of documents,” the authors write, but “libraries have always contained materials other than books. Special collections and archives are filled with unbound and handwritten ephemera—correspondence, photographs, and so on ... [And] traditional libraries have long contained a diversity of technologies and media; today these include film and video, microfilm and microfiche, vellum and

papyrus” (p.77). Now that libraries contain various forms of digital media as standard parts of their collections (electronic journals, electronic catalogs, digital images, digitized sound files), the distinction between “traditional” and “digital” libraries has lost much of its original use, and so has the distinction between traditional and new types of librarians, the stewards of the libraries in any and all forms.

Much has been written in the professional literature about the transformation of the roles of modern librarians (Bridges, 2003). But some interesting observations have come, as in the case of Marshall and Levy, from sources outside of the profession. Michael Joyce (2000), in his book, *Othermindedness: The Emergence of Network Culture*, eloquently describes the history of libraries by describing the profession they created. Librarianship, he writes, “is a profession of the value of human multiplicity, proximity, and community” (p.73). As an institution “founded on change,” he continues, the “library is an expression of, however oxymoronic it may seem, a tradition of change.” It is precisely this “tradition of change” that has well-prepared libraries to handle the challenges and opportunities posed by the digital era and its many cultural artifacts, textual and visual. While certainly many new interactions and skills are mandated by technological changes (including forms of reference service, cataloging standards and practices, issues of preservation, questions surrounding digital ephemera and the possibilities of archiving them), the fundamental ethics of librarianship—preservation of cultural memory, commitment to the dissemination of information, dedication to scholarship and teaching—will not soon be displaced by something unrecognizable. The biggest challenge, it seems, will come not from the libraries but from the scholars who rely on them with an ever-decreasing awareness of their value in the digital era.

Most modern academic faculty have rarely understood the profession of librarianship or the ways in which libraries on their campuses are run. Apocryphal tales abound of faculty members who believe that they are responsible for collection development, who discount librarians’ roles in undergraduate teaching, who are unaware of and untrained in the most recent and innovative digital resources and teaching technologies. These stories share the same moral, perhaps best summarized by “faculty just don’t get it.” Apparently, this is true. An honest scholar (protected from shame, perhaps, by his fame and status in the field) admitted in a 2004 letter to the *PMLA* that:

one of the hidden scandals of the literary profession is how infrequently those of us who work at the historical end of the spectrum turn for advice to the experts in the field: the librarians who handle an extraordinary variety of books as part of their daily business. While there is increasing public access to a wide range of primary resources through the Internet, electronic texts, for all their virtues, bypass the crucial interaction between academics and librarians. The scarcity of that interaction is perhaps attributable to

academics' fears that their ignorance will be humiliatingly revealed. If my experiences are anything to go by, the fears are fully justified. But the rewards of such an interaction far outweigh the humiliations (Stallybrass, 2004, p. 1351).

The fear of being exposed that Peter Stallybrass, Walter H. and Leonore C. Annenberg Professor in the Humanities and Professor of English and co-director of the Penn Humanities Forum, describes here could well be defined as a faculty form of library anxiety, an emotional or physical discomfort. Perhaps it may be attributed to what Onwuegbuzie (2004, p. 32) describes as “a lack of self-confidence in conducting research, lack of prior exposure to academic libraries, and the inability to see the relevance of libraries in one’s field of interest or career path”. Based on anecdotes circulating in academic libraries, it could be assumed that faculty library anxiety stems from a fear that to express ignorance about libraries in general—how collections are developed, what the library holdings are, how to encourage sound pedagogical approaches to library use, the how and why of new information resources—is simultaneously an admission of ignorance about knowledge. Faculty, for many reasons too complicated to engage here, have been trained in the performance of expertise, in which the admission of ignorance about anything—a book, a film, a critical response, a story on *National Public Radio*—is often perceived as detrimental to one’s professional reputation. As Stallybrass points out, it is this fear that keeps scholars from interacting fully with librarians. And, certainly, the “class” distinction this fosters (that librarians are “merely” service providers to “real” intellectuals) only amplifies the disconnect.

Part of the problem, of course, is a poor marketing of librarianship for which librarians are, for the most part, to blame. Librarians that are more assertive about claiming their rightful place in the campus exchange of knowledge and in its production and dissemination tend to have libraries that are well-funded and well-respected. Librarians that are tired, bitter, or insulated (and isolated) from the intellectual life of the campus (i.e., librarians who wait for patrons to come to them rather than seek out opportunities on campus to promote the ways in which they can contribute and collaborate) tend to have libraries that suffer budget cuts, high attrition rates, and little respect. The causality is impossible to determine—are “unhealthy” libraries the product of or catalyst for “unhappy” librarians? For our purposes here, this doesn’t actually matter: the point is that faculty members and scholars do not always have a clear sense of what librarians do, of their training and expertise, nor of the ways in which they can help advance the goals of teaching and research. And, conversely, there is a fear that to interact with librarians will reveal a faculty lack of knowledge, and so they are avoided for that reason. Either way, librarians—and libraries—are losing opportunities to become collaborators in the development of new scholarly ventures. It was the recognition of precisely this divide that encouraged the

Council on Library and Information Resources (CLIR) to develop and launch an innovative new postdoctoral fellowship program for humanities scholars. To the distress of CLIR and participating institutions, however, the program has been on the receiving end of vehement attacks that accuse the fellowship and the ideas it represents of denigrating academic librarianship and heralding the eventual demise of the profession. As a former CLIR Fellow, it is my hope that this essay will put to rest some of these concerns and highlight the ways in which the program is in fact participating in the “tradition of change” that has for so long been the hallmark of academic libraries in particular, and is, in the end, a most definite advance in librarianship.

II. CLIR in the World of Tolkien

When this essay was inchoate, colleagues made repeated playful references to Tolkien’s band of heroes when I mentioned writing about “the Fellowship,” and I began to realize that in fact the analogy to Tolkien’s world fortuitously captured some essential qualities and realities about the CLIR Postdoctoral Fellowship. The story of the trilogy¹—*The Fellowship of the Ring*, *The Two Towers*, and *The Return of the King*—is, of course, well-known, and I will not attempt a summary here. Suffice to say that the longer I thought on the matter, the more it became clear that the allusion reached beyond the play on the word “Fellowship” and instead gestured toward some of the greater challenges posed *by* the Fellowship and *to* the Fellowship in its first year.² And, in truth, I found the operating metaphors more collegial than the recent one of “feral” and “undomesticated” librarians “raised by wolves” (Neal, 2006).

¹Technically, *The Lord of the Rings* was never written as a trilogy but as one novel published in several volumes.

²The Fellowship is currently in its third year, having recently accepted applications for the 2006-2007 academic year. As a member of the first cohort, I can speak mostly to the conditions of that first year; as a writer and consultant for CLIR, I have been invited to participate in the current activities of the second cohort and have been a part of the conversations regarding changes to the application process and program description undertaken in this third year. This essay, however, concentrates on the first year and first cohort, mostly because it is possible to evaluate its successes and challenges from our current vantage point. At the time of this writing, the second round of Fellows are just 5 or 6 months into their tenures, while the first group of Fellows have either completed their appointments (the one-years) or are reaching the end of their appointments (the two-years).

Tolkien's trilogy, beloved as it is by millions, is also fairly widely criticized by "experts" in literary studies (Birzer, 2003; Garth, 2003). It is not generally recognized as a work of literary art worthy of its reputation, and, many readers will confess, it is not always a pleasure to read. It has been accused of jingoism and of being a stubborn refusal of modern history and literature, a return to a "feudal" literary style (Brogan, 1989). Yet despite its messiness and often plodding progress, the trilogy is still widely read and enjoyed. Tolkien may not have written a work of High Modernism, and he may have escaped into the worlds of romance and fairy tales to champion a heroism lost in the trenches of the World War, but his tales and novels have outlasted many of those of his contemporaries. In his sometimes heavy prose one can discern a passionate defense of the individual and nature against the forces of chaos and destruction that had returned, after that first war, to wage a second. Tolkien's work, as flawed as it may be, forever transformed the landscape of popular literature.

The CLIR Fellowship, it could be argued, is much the same kind of animal, widely criticized by "experts" (librarians), but still celebrated by those who see its "genius," it, too, has been accused of simplistic answers to complicated problems and of a naiveté that borders on the offensive, along with a stubborn refusal to consider dissenting opinions. But like Tolkien's oeuvre, the fellowship is also a passionate defense of individual value (what each Fellow brings to host institutions) and a defense against chaos (the increasing challenges brought by the digital era currently facing academic libraries). While the Fellows may sometimes stumble in their progress, their intentions are always good, just as some of the librarians who have put obstacles in the fellowship's way are doing so with the best of intentions, believing that they are saving the future of their profession.

Navigating its way through the program, the Fellowship, by which I mean the band of Fellows, finds itself like the Fellowship of the Ring on an almost mythical journey. Like Tolkien's band, the Fellowship is comprised of strangers-become-friends, each with his and her own background, set of skills, history, and future. Together, the group makes its way through the perils and beauty of an uncharted course, increasingly feeling the weight of the responsibility it shoulders, which is to encourage collaboration amongst the different players in modern librarianship, scholarship, and teaching. Unified under one purpose, the Fellowship does not always agree about how best to meet its goals yet continues to forge ahead, believing that the change on the wind will have significant and positive effects on libraries, librarianship, and higher education more generally. The Fellows earnestly believe that they can—and should—be protagonists in the narrative of that change. The CLIR Fellowship may not be engaged in a battle to save Middle Earth, but I would venture to say that in many ways it is engaged in a battle of sorts

to change the fate of academic libraries, urging change and innovation as a natural evolution of the profession's ideals.³

The fellowship, by which I mean specifically the salary or remuneration for the Fellows, is in many ways, then, a reward for taking a professional risk—jumping the track, as it were. While each Fellow had differing reasons for applying to the program, all had concerns about leaving the world they had at one time assumed would be their eventual home—an academic department in their discipline at a college or university. Having persevered through years of graduate work with an eye always on the mythical and mysterious “market,” some realized early on that they would want to leave the path toward tenure once they received the degree; others became disillusioned by the randomness of academic success; others landed coveted positions but found the quality of life disappointing; others had become fascinated, through their own research, with questions of librarianship, collection management and instruction; and still others had become increasingly involved in the area of digital humanities and digitization projects and felt that libraries would be an ideal place to learn more about and perhaps challenge work being done in the world of electronic texts and images. Not one of the Fellows, contrary to what many librarians believed, entered the Fellowship Program because they “couldn’t cut it” on the academic market, or because they were “slumming” it for a year until a better prospect came along. Participating institutions provide detailed descriptions of the types of projects Fellows will work on, and applicants are required to describe how their particular background and training

³There are many aspects of the Fellowship and current issues facing librarianship that are too unwieldy to incorporate here. It is worth mentioning, however, that the one topic which deserves closer scrutiny, perhaps in another article in another venue, is that of the concept of the “scholar librarian.” Fellows dedicated a lot of their time over the course of their appointments to learning about and incorporating the traditional ideal of the scholar librarian, an active contributor to professional literature within library science and subject disciplines; practitioner and researcher of trends in pedagogy; and scholar of information technology from the pre-book to the electronic resource. Some of the guest speakers and Fellows advocated for a reconceptualization of the Fellowship as a return to the model of the scholar librarian. Other speakers and Fellows, on the other hand, preferred to maintain the notion of the Fellowship as something meant to “shake up” existing ideas of modern academic librarianship. Similarly, we struggled with the divide of “faculty” vs. “librarian,” as it became clear that not all institutions experience this divide equally, if at all. Related issues are the role of tenure in librarian faculty status; librarian as faculty “in name only”; teaching faculty’s unwillingness to view librarians as colleagues; different publication and promotion standards across institutions, etc. All of these issues found their way into conversations about the concept of the scholar librarian and make a discussion of the topic best served by a separate investigation. These debates, it must be emphasized, were never far from our minds as we attempted to define the CLIR Fellowship for ourselves, to our colleagues, and in our subsequent job searches.

fit these project goals. These are not random selections of unemployed Ph.D.s—rather, skilled scholars are sought by the participating institutions to conduct specific and necessary work in their libraries, and the Fellows must demonstrate the ways in which their backgrounds fill these requirements.

But no matter our reasons for applying or our existing experience in librarianship, digital humanities, archives, research, and teaching, we were not librarians: We had much to learn, and were even less familiar with the rhythms of a non-teaching job. So in accepting the fellowship, we were leaving the well-worn path toward a tenure-track job for the often confusing, winding and unknown path toward a new career while often painfully aware that this path was not one welcomed by many members of the profession. In addition, the fellowship program itself, as a new venture, was one not necessarily guaranteed of a future; unlike Mellon Fellows, products of a widely recognized and established program, we all knew we could be spending a year or two in a program that would not signify in the future.

This path upon which we embarked, to push the Tolkien analogy, is located between and beneath the two towers of academe—the Ivory Tower that houses the scholars and teachers, and what we could call the Tower of Babel, or the various silos, departments, offices, and staff that comprise the modern research library. The often tense relationship between these towers would, we soon learned, cast a shadow on our new venture. New library colleagues sometimes perceived us as interlopers from the other tower of research and teaching faculty while academic departments were not quite sure what a Postdoctoral Fellow was doing in a “staff” position rather than teaching and conducting research. Traces of suspicion on both sides often made the path a difficult one to follow.

In this introduction, I am not attempting to seriously compare the trilogy and Tolkien’s influence directly to the Fellowship, but this playful gesture brings to light the daunting challenges that faced the Fellows and the sometimes unbridgeable divide between the two towers which the Fellows found themselves straddling. These challenges, it seems to me, come down to the vexing problems of style or language that influenced reactions to the Fellowship. The ways in which CLIR chose to initially describe the program and the ways in which the profession interpreted that description created unnecessary animosity that originated, in essence, in a disagreement over language.

A. In a Hole in a Ground there Lived a Hobbit ...

When one pauses to consider the new language of libraries, it is easy to feel overwhelmed by the sea-change they augur in the profession. Electronic resources, open access, digital repositories, metadata, virtual reference, federated

searching, IM and PDAs, METS and MODS and TEI, information commons, information literacy, knowledge management, OAIster, VRA, IT—all are as integral to librarianship as are monographs, stacks, journals, and reference services. The urgency of these changes already transforming the face of the profession is, in large part, the reason that CLIR proposed the fellowship.

In describing the genesis of the program, Deanna Marcum, former president of CLIR and architect of the fellowship, explains that the idea first emerged in conversations about connecting libraries and librarianship to scholarship (D. Marcum, phone conversation, January 11, 2006). The two areas, though interdependent, were becoming increasingly separated in the digital era. CLIR described the context for the program in its first announcement (2003): “We have entered an era characterized by a scholarly knowledge divide. The creators of knowledge (the scholars) and the stewards of knowledge (the librarians) have each become more professionalized and, as an unintended byproduct, have become less engaged in the ways in which the work of each depends on the work of the other.” With Charles Phelps, Provost and Professor of Political Science and Economics at the University of Rochester, Marcum began to investigate ways in which the divide could be breached by creating “a new kind of scholarly information professional” that would have a foot planted in both worlds. The concept of a type of internship developed, in which recent Ph.D.s would be brought into libraries to learn about librarianship and the challenges facing the profession while simultaneously offering their expertise in current trends of research, pedagogy, technology, and the digital format “Libraries would have the advantage of getting someone with a deep knowledge of an academic field *and* expertise in technology and digital issues,” Marcum explains. The program description specifically sought applicants with a strong digital and technology background in addition to their field-specific degrees. For this reason, many of the CLIR Fellows came from humanities computing backgrounds and digital projects; several Fellows had worked with the University of Virginia’s Institute for Advanced Technology in the Humanities (IATH), University of Michigan’s digital endeavors, and Brown University’s digital projects and groups.

The idea was an exciting one, and the first Fellowship came together, a band of sisters and one brother, eager to take on new challenges and to embrace the changes coming to libraries and, by extension, higher education. We felt that we indeed had unique perspectives to offer research libraries as students, teachers and scholars, and we eagerly wanted to learn about librarianship and its histories, traditions, and challenges. We wanted to become what one of the fellows termed “hybrarians”—mixed creatures able to move comfortably in the world of scholarship, research, and digital projects and libraries. We were to be hybrids in identity and in practice.

The program, however, was met with significant resistance. Despite claims to the contrary (that CLIR was developing a program intended to allow participants to bypass the MLS), Abby Smith, former director of programs at CLIR, stated that “We are being deliberately agnostic about the desired outcome. [...] We’re not trying to do anything specific about the nature of the library training or the nature of the Ph.D. involved” (Berry, 2003). CLIR initially and repeatedly highlighted, in its promotional materials and application information, the new and different qualities being sought in applicants and emphasized the need in academic libraries for “change agents,” or those people who could help move libraries in different directions as regards to pedagogical issues, involvement with faculty, and emerging digital tools. Critics of the program, however, interpreted it as an attack on their profession. Bill Crowley (2004), Professor at the Graduate School of Library and Information Science, Dominican University at River Forest, wrote one of the first and perhaps the most critical response to CLIR’s initiative. In his essay for *Library Journal*, he called the Fellowship the equivalent of an apprenticeship and described it as involving “postdoctoral work in an academic library in lieu of earning a master’s degree” from an ALA-accredited library and information studies program. He claimed that the “apprenticeships” were “likely to undermine further the academic librarian’s already unstable place within higher education” and threatened “to create an alternative, even superior, class of librarians who will be superbly positioned by university standards and custom to challenge more conventionally educated colleagues for dominance in the contemporary academic library.” Essentially, Crowley (and many others) feared (and still fear) that the CLIR program, as representative of other efforts to bring Ph.D.s into the library, would create a situation in which MLS-holding librarians are devalued, rendered non-promotable and, eventually, replaceable.

A similar argument was made in the “First Person” column of *The Chronicle of Higher Education* on-line in which Todd Gilman (2005), librarian with both a Ph.D. and MLIS at Yale University (a CLIR Program sponsor) argued that “the library-science credential is essential—unless the Ph.D. really, truly, and demonstrably has the equivalent experience” (Gilman). He supported his claim by arguing that the MLS “continues to serve as both a practical and an intellectual entrée [sic] into professional librarianship. What’s more, the MLIS protects the library profession from becoming degraded in the way that teaching has been in academe.” He claimed that admitting non-credentialed Ph.D.s into the profession “would result in a flooded market and would condemn librarians to experience the same miserable, exploitative conditions so many Ph.D.’s now suffer” and that hiring these non-credentialed Ph.D.s “could create a glass ceiling for librarians who have that degree but no

Ph.D. They would become (in status terms) the nurses to these doctors—even though this particular breed of doctors is not qualified to give orders to such nurses. In fact, the nurses would wind up teaching the doctors their jobs while still being held in lower esteem, a bitter irony that would force library morale down the tubes. And of course the library would then be run by those with the least experience in the profession.”

Finally, Gilman lists in detail those things that MLS-trained librarians have learned that Ph.D.s have not:

Analytical, descriptive, physical, and textual bibliography. The history of books and printing. Issues in cataloging library materials. The book trade—current, rare, out of print, or all of those, including how best to manage vendors, approval plans, and standing orders. How to identify appropriate collecting levels for different subjects in different kinds and sizes of libraries. How to analyze a given library collection for purposes of, say, transfer to remote storage, filling in gaps, or preservation. How to analyze the pros and cons of a given electronic database or reference resource. How to manage acquisitions and other budgets. Digital library initiatives [sic]. The composition and scope of the essential bibliographic utilities like WorldCat, Eureka, and English Short Title Catalogue (ESTC). How best to search any of the myriad electronic databases licensed by the modern library. What archivists do, how they do it, and why. You get the idea.

Gilman’s point is well-taken, and is an eloquent articulation of the concerns many librarians had upon hearing about the CLIR Program. The mistake that is made in all these cases, however, is to assume that the CLIR Fellowship was always intended as a “free pass,” or what one Fellow termed a “rope swing,” into librarianship. Nowhere in the CLIR materials was this claimed and, in fact, at least one university (ironically, Gilman’s own home institution, Yale University Library) promised in its 2004–2005 Fellowship description that “the Fellow will also receive support from a series of seminars and other learning opportunities in librarianship, offered either on the Yale campus or at nearby Schools of Library and Information Science, or both.”⁴

B. “My Precious”

Part of the misunderstanding about the intentions of the Fellowship appears to be a product of CLIR’s initial decision not to include library schools in the program. In doing so, CLIR made a tactical move that inevitably influenced the ways in which the program would be perceived by the profession. In

⁴While these opportunities to take courses or attend seminars at neighboring library schools did not materialize for the Yale Fellow, she was promised that if she in fact desired the pursuit of a library degree, every effort would be made by the Yale University Library to advocate for some course credit for the work she performed while a Fellow.

explaining the decision, Marcum says “we were never trying to change the entire profession; the program was an opportunity to bring a new set of skills into research libraries. The fellowship was not meant to be a replacement or a radical departure from librarianship—it was thought of as an enhancement, a chance to re-integrate libraries into scholarship and into the life of campuses” (phone conversation, January 11, 2006). The decision to create the program separate from LIS programs was made in order to cast a wider net, to appeal to different types of candidates who brought different—not better, just different—skills than those offered in library school. John N. Berry’s 2003 article for *Library Journal* on-line summarized the decision: “Interaction with ALA-accredited LIS programs is a matter for each host institution ... dealt with ‘on a case-by-case basis.’” CLIR did not make participation with LIS programs a requirement but did not object to participating institutions making such connections on their own. In fact, the virtual synchronous lectures and discussions required of all Fellows (described below) were hosted by the University of Illinois’ LEEP distance-education program in library and information science; in that way, at least, all Fellows had a connection to an LIS program.

When asked to respond to the question *Do you think the Fellowship will devalue the MLS?* posed by the author to all Fellows and participating library directors in e-mail interviews in November 2005, respondents offered a range of very thoughtful responses. Dawn Schmitz, Fellow at the University of Illinois Urbana-Champaign, who entered her 2-year appointment (since extended) with both a Ph.D. and MLIS, replied:

In seeking employment as a library professional, experience working in libraries will always trump a credential such as a Ph.D., as well it should. No one ... should hire people with Ph.D.s for permanent positions in libraries who have not proven they have an interest in the profession and a talent for the work. I think that if the MLIS is becoming de-valued and people with Ph.D.s without MLISs are being hired in libraries—and I don’t know that they are—this must be happening because libraries are finding something they like in these job applicants. Perhaps the MLIS education is not meeting the needs of the profession and needs to be improved (Dawn Schmitz, e-mail communication, December 2, 2005).

She continued to say:

If there are academic librarians who are worried about their MLIS becoming devalued, I don’t want to minimize that concern—I understand that they feel their livelihood is at stake. But I honestly feel that the greater concern—for all of us who work in academic libraries—must be making sure libraries and archives continue to be valued and continue to serve their communities of users. Academic librarians must always be looking for ways to stay relevant in the face of changing information technologies. We need to recognize the potential of these technologies and exploit them, or we will be relegated to a small niche on campus, rather than playing the central role we should be playing in higher

education. If the role of libraries becomes minimized, not only will the profession be truly endangered, but our campus communities will be robbed of the skill and unique values we can bring to the organization of information (Dawn Schmitz, e-mail communication, December 2, 2005).

Similarly, Amanda French, Fellow at North Carolina State University, wrote:

I do not think that the fellowship will devalue the MLIS, because I think that if lots of humanities PhDs begin to choose librarianship as a career, it will, if anything, raise the status of librarianship as a whole. If academic libraries began hiring librarians without *any* graduate degree, *that* would devalue the MLIS!" (Amanda French, e-mail communication, November 28, 2005).

In her experience on hiring committees at her institution, she continued, she found that "librarians clearly value the Ph.D. a good deal less than they value the MLIS, and rightly so—but experience trumps any credential, and many of the CLIR fellows had more experience with digital library projects when they began the fellowship than many new MLISs do." Marlene Allen, Fellow at UCLA, feels that the CLIR Fellowship "might cause many Ph.D.s considering careers as academic librarians to pursue the MLS degree." She also articulated a position that had been expressed by other Fellows as well, that "those of us without the MLS degree are not coming into the library thinking that we have special advantage over MLS-holding librarians, but rather see the fellowship as an important opportunity to learn about what academic librarians do" (Marlene Allen, e-mail communication, December 8, 2005). Rachel Shuttlesworth, Fellow at the University of Alabama and currently on the faculty of the UA Department of English, for example, points out that she viewed the fellowship "as creating a type of in-house think tank for libraries, working towards connecting currently disparate efforts within the world of libraries, and between libraries, academia at large, and the growing realms of information technology" (Rachel Shuttlesworth, e-mail communication, December 18, 2005).

Kelly Miller, Fellow at University of Virginia, was one among several respondents who advocated, in the original spirit of the Program, a discussion not so much of the value of the MLS but of the fellowship:

the technical training that the MLS provides will always be valuable, but I think the CLIR Postdoc offers something complementary (and equally valuable): scholarly expertise, highly-developed research skills, classroom teaching experience, and a first-hand understanding of faculty and graduate students' perspectives and needs (Kelly Miller, e-mail communication, December 1, 2005).

Meg Norcia, Fellow at Lehigh University and currently an assistant professor of children's and young adult literatures at SUNY Brockport, described the fellowship as creating a new type of professional who "is a teacher-scholar whose experience as a user of libraries will bring a fresh perspective to discussions about information management and preservation since this teacher-scholar can envision classroom and

research applications specific to his/her field or to humanities more generally” (Meg Norcia, e-mail communication, November 28, 2005). And Ali Anooshahr, Fellow at UCLA, argued that the strength of the CLIR Program “is that it can bring scholars who have enough subject expertise to be able to work on some of the more rare holdings, but also will teach them library standards on the job” (Ali Anooshahr, e-mail communication, November 30, 2005).

Finally, Allyson McCabe, Fellow at The Johns Hopkins University re-focused the debate succinctly: “I don’t think the MLSers are in any danger from the Ph.D.s. They are, however, in danger from the folks with Masters in IT. That’s the new ‘scholarly informational professional’ that I see in demand” (Allyson McCabe, e-mail communication, November 23, 2005). McCabe’s comment echoes those made by several colleagues of the Fellows throughout the year; the demand for IT experts is beginning to overshadow the demand for qualified librarians, and this trend is perceived as a much greater threat to the profession’s longevity.

Because of their experiences in the program, several Fellows have decided to pursue an MLS, which should allay the fears of those in the profession who viewed the program as a devaluation of the credential. While some of the MLS-seekers express very pragmatic reasons for pursuing the degree (the fact that the majority of jobs require an ALA-accredited MLS), they also agree that this is not the sole reason for the pursuit. Amanda Watson, Fellow at the University of Virginia and currently the acting Public Services and Instructional Technology Librarian for Digital Research and Instructional Services, explained that her interests in the MLS are “Practical ones, mostly: it’s a requirement for so many promising-looking jobs that I’m willing to take the extra time to qualify myself. Also, there are areas of librarianship that I’d really like to learn more about, and I think I would benefit from the experience of coursework in those areas” (Amanda Watson, e-mail communication, December 16, 2005). Patricia Hswe, Fellow at UIUC, explains:

I’m pursuing an MLS, because I’ve found in the work I’m doing on our projects that there are “missing links” that I feel the need to fill in. I’m the type of person who, when I’ve found something I really like and enjoy doing, tries to pursue as much knowledge about it as possible. Also, my post-doc is at an institution that is home to what many in the LIS field consider the top library school in the country, and currently as a full-time employee of the university, I can attend library school tuition-free. It’s just too good an opportunity to pass up. Finally, I want to advance as much as possible in this field, and I’m not certain that I’ll be able to do this without an MLS (Patricia Hswe, e-mail communication, December 16, 2005).

Other Fellows have considered pursuing the degree but financial concerns, especially after 5 to 8 years in graduate school, make the prospect daunting. As

Christa Williford, Fellow at Bryn Mawr currently enrolled in library school, answered:

I am interested in getting the best possible job related to my area of specialty as quickly as possible, but I know these jobs are pretty rare. I have loved working with my host institution, but they don't have a large collection in my specialty, so I knew I would have to boost my credentials as much as possible and make a broader range of contacts to get the kind of job I want. Also, I really enjoy learning about certain aspects of librarianship in a formal setting and want to conduct research which marries my subject and library interests. The training offered by the program I have chosen will give me exactly this kind of preparation. Of course, it is a huge financial burden and so in the end it might take me many years to finish. Financial issues are going to be a big factor in my upcoming job search, much [more] than they were when I accepted the fellowship (Christa Williford, e-mail communication, December 16, 2005).

All told, one of the original eleven Fellows entered the program with an MLIS; four have since enrolled in library school; and at least one more is actively considering enrolling. Six of eleven, then, have firmly been converted to the value of the profession and of the degree. It seems apparent that rather than reduce the value of the profession, the program has introduced new scholars to the advantages and professional and personal rewards offered by the field. Additionally, those Fellows who have decided to return to the teaching track are doing so with an awareness of the value of collaborating with librarians and a deeper understanding of the current challenges facing the profession. The remaining Fellows are pursuing positions that combine librarianship, subject-specific teaching, and digital collection development. I cannot imagine a single librarian who could be distressed by these results.

Just as the responses of the Fellows to the debate of the MLS are fairly consistent (and unanimously in favor of keeping the credential, though with some suggestions for curricular improvement and expansion), the library directors who sponsored a Fellow had similar responses to the same question. Charles Faulhaber, Director of the Bancroft Library at Berkeley, and Theresa Salazar, Curator of the Bancroft Collection of Western Americana, describe the debate about the MLS to be "very complex question." They write that "ideally" it would be great to hire Ph.D.s with the MLS, as they "bring both the academic and library methodology to an institution." But there are "many issues on academic campuses related to professional review that hinder or create problems for hiring Ph.D.s without an MLS" (Charles Faulhaber and Theresa Salazar, e-mail communication, December 19, 2005). Elliott Shore neatly summarizes the issues involved in the MLS/no MLS debate. He explains how both the MLS and Ph.D. are "useful for what they are useful for." That is to say, "they each offer certain training, background, and experiences that are valuable, but each is not solely valuable on its own" (Elliott Shore, personal communication, December 14, 2005). Academic

libraries, he explains, need to consider which aspects of the training are best for certain positions and jobs, and decide from there. “It is not about privileging one degree over another or insisting that only MLS-holding candidates can perform a particular job,” he clarifies.

It [the debate] should be about understanding what needs to be done and casting a wide net to find the right candidate. Some positions may require the training that comes with the MLS, but some others may be better filled by someone with the skills that come with the PhD (research skills, awareness of teaching and technology intersection, experience with undergraduate teaching, background in digital projects and their use and development, etc.) (Elliott Shore, personal communication, December 14, 2005).

Most new positions, according to Shore and other respondents, require “an interest in forward-thinking approaches to the changing academic landscape” and current MLS curricula do not always provide the background or experience necessary for developing these approaches. And while not all Ph.D.s have the qualifications to fill these positions, there are those with advanced humanities computing backgrounds, teaching experiences, experience with libraries and their issues, and interest in curricular development that do have the qualifications but are missing the MLS. These candidates, according to one library director, should be considered despite the lack of the credential:

The question librarians need to be asking is should we not be hiring people with the Ph.D., but are there people without the MLS whose skill sets libraries need and should be hiring? Certain jobs in libraries DO NOT need MLS-trained things. We need to put the emphasis on the right things—how do we do what we need to do if we say we won’t hire without the MLS; not everyone (in the library) does work that requires the MLS, and we are missing out on good candidates when we narrow the pool (Anonymous library director, personal communication, November 22, 2005).

Similarly, Paula Kaufman, University Librarian at the University of Illinois at Urbana-Champaign, asserts that:

I don’t think the Fellowships or hiring PhDs without the MLS degree devalues the MLS. Some academic libraries, including UIUC, which has a long tradition of a strong Library Faculty, hire people without the MLS degree [...]. We have also hired as subject expert, people who don’t have much real grounding in their subjects. These hires are successful when we look beyond credentialing to the person him/herself, at the qualities, experiences, personal ethos, intellectual curiosity, and service values that each one could bring to the Library at a particular point in time (Paula Kaufman, e-mail communication, November 20, 2005).

Kaufman adds:

The Library profession comprises truly extraordinary people with wide ranges of skills, expertise, and talents. However, there are not nearly enough of them to replace the many

librarians who will be retiring in the coming years. I think we need to think creatively about how to encourage people who wouldn't have thought about academic librarianship as a career to do so. For most of those folks, the traditional masters degree program will be the right path. But there is a group of highly educated and motivated people who want and need the opportunity to explore academic librarianship through hands-on experience under the watchful eyes of experienced librarians. Some of these people will also decide that our traditional educational model is appropriate for them. However, as a profession, I think we should be open to looking beyond credentialed degrees to other sets of skills and experiences for the people who will make our libraries work well in the coming decades (Paula Kaufman, e-mail communication, November 20, 2005).

Even more emphatic was this response:

I think this notion of devaluing the MLS is ridiculous. It is already devalued in many ways. Or alternatively one might assume that certain Fellows/Ph.D.s who work in libraries will recognize gaps in professional training and decide that the MLS is worth pursuing—based on what they are doing, what they want to do better, and on how MLS-trained colleagues perform their work. If the MLS is so useful, smart observers (like the Fellows) will want one too. They won't have to be shamed into it (Anonymous library director, e-mail communication, December 9, 2005).

Finally, Karin Trainer, University Librarian at Princeton University, emphatically answered “NO [the Fellowship does not devalue MLS]. I don't think the MLS alone can add more value to a candidate who has a certain set of skills and experience that comes from the Ph.D.—but this does not mean that a Ph.D. alone makes someone a better candidate than someone with an MLS—it is about the overall qualifications” (Karin Trainer, personal communication, December 15, 2005).

Of the library directors interviewed, not one agreed that the Fellowship devalued the MLS, and not one argued that the MLS should be abandoned (though several indicated the need for library school curricula to be re-examined). All clearly find value in the credentials and experiences that those with Ph.D.s bring to academic libraries and believe that the key to the future success of libraries is the ability and willingness to seek out and hire those individuals whose qualifications meet the job needs, regardless of the MLS. Interestingly, each director indicated that colleagues and staff members at their libraries expressed a mix of “shock,” “anger,” “resentment,” “surprise,” “enthusiasm,” “curiosity,” and “pleasure” to the idea of the CLIR Program and to the idea of sponsoring a Fellow. Overwhelmingly, the directors claimed that the Fellows smoothed many of the ruffled feathers and egos through the quality of their work, their respect for the librarians and staff they worked with, and their willingness to learn about librarianship. Directors also pointed out that many of the Fellows were soon in high demand because of their skills and experiences, and were asked to serve on multiple

committees. The general consensus was that all expectations for the Program were met or surpassed by the Fellows' contributions to their institutions. Several Fellows were in fact asked to stay on at their host institutions in various capacities, and several sponsoring libraries have re-committed to another round of Fellows, joined by new host institutions.⁵

While the most adamant of opponents may likely never embrace the CLIR Program and other efforts like it, it is clear that a more visible and public accounting of the participants' accomplishments—and their newly-found respect for the profession—will put to rest many of the concerns. In the end, the CLIR Fellowship is dedicated to addressing the various challenges facing academic libraries, and is only one of several attempts to help shape the future of the profession at this, one of its many pivotal moments in its history. Once we move beyond the credential debate we can begin to see more clearly the ways in which the program, rather than disrupt the profession, is a natural evolution of librarianship's long history of meeting, tackling, and successfully integrating change and in our current moment, it is the digital that inarguably poses the greatest challenge to the profession's continuing relevance in higher education.

The CLIR Fellowship was imagined as an experiment, a chance to see what would happen if humanities scholars were given the opportunity to be introduced to the world of academic libraries. Elliott Shore, Chief Information Officer, Constance A. Jones Director of Libraries, and Professor of History at Bryn Mawr College, who serves as the faculty mentor and instructor in the CLIR program, explains that "We're hoping that these people [the CLIR Fellows] become attractive to libraries and that they are attracted to library careers" (Berry, 2003). To ensure that participants get the broadest possible view of academic librarianship and are well-prepared to contribute to their host institutions, Fellows receive rigorous training in the profession before and during their appointments, a training that has not been widely understood by opponents to the program but whose rigor should assure most colleagues.

C. The Adventure Begins: "Library Bootcamp"

The fellowship includes an intensive introduction to the profession of academic librarianship, including its history; its role in higher education; its pressing concerns; its successes; and its areas for improvement. Fellows spend

⁵For more details about sponsoring institutions past and present, visit the CLIR Fellowship Web site at <<http://www.clir.org/fellowships/postdoc/postdoc.html>>

2 weeks before the start of their fellowships together at Bryn Mawr College where, under the leadership of Elliott Shore, they undertake rigorous reading, seminars, and guest lectures by leaders in the profession. They also visit the Library of Congress and have the opportunity to visit with librarians there and learn more about the Library's new initiatives as well as its history. The full syllabi for the program are available for viewing at various Web sites, but a brief list of topics includes—but it is not limited to—the following:⁶

- Changing role of library.
- The digital format and changes in teaching, research, learning, and collaboration.
- Financial concerns in higher education.
- The digital divide and issues of digital equity.
- Strategies for the development of successful digital projects.
- Interdisciplinary collaboration, including partnerships among librarians, faculty, students, and instructional technologists.
- Interlibrary collaboration.
- Preservation and access, including digital and institutional repositories, open-access publishing, archive management.
- Copyright and privacy issues, including Google projects, the Patriot Act, intellectual rights management.
- Acquisitions and budgetary issues, including grant-writing.

Guest speakers have to date included:

- Deanna Marcum, Associate Librarian for Library Services of the Library of Congress.
- Amy Friedlander, former CLIR Special Project Associate at the Library of Congress.
- Alison Cook-Sather, Associate Professor at Bryn Mawr College and Director of the Bryn Mawr/Haverford Education Program.
- Nancy Davenport, President of CLIR.
- Mary Chute, Deputy Director for library services at Institute for Museum and Library Services.
- Debra Bucher, reference librarian at University of Pennsylvania.
- Mark Colvson, Head of Curriculum and Research Support and Head of User Services at Bryn Mawr College.

⁶For more detail visit < <http://www.brynmawr.edu/clirfellows/syllabus.htm>>, <<http://www.brynmawr.edu/clirfellows/seminar.htm>>, <<http://www.brynmawr.edu/clirfellows/course.htm>>, <<http://leep.lis.uiuc.edu/summer05/LIS600clir2/index.html>>

- Rick Detweiler, former President of Hartwick College and distinguished CLIR Fellow.
- Mary Patterson McPherson, President Emeritus of Bryn Mawr College and Vice President of the Andrew W. Mellon Foundation.
- Donald J. Waters, Andrew W. Mellon Foundation's Program Officer for Scholarly Communications.
- Richard Ekman, President of the Council of Independent Colleges.
- David Seaman, Executive Director, Digital Library Federation.
- Tom Phelps, Division of Public Programs, National Endowment for the Humanities.
- Joan Lippincott, Associate Executive Director, Coalition for Networked Information.
- Duane Webster, Executive Director, Association for Research Libraries.
- Nadina Gardner, Program Officer, Preservation and Access, National Endowment for the Humanities (NEH).

In addition to "library bootcamp," Fellows are required to attend monthly synchronous virtual seminars and lectures hosted by LEEP at UIUC. Topics and guests have included

- Changing Roles in Libraries (with Alison Cook-Sather).
- Successful Collaboration and Career Development (with Susan Perry, Senior Advisor for Liberal Arts Colleges at the Andrew W. Mellon Foundation and Director of Programs at the CLIR).
- Institutional Repositories (with Clifford Lynch, Director of Coalition for Networked Information).
- Challenges of Cataloging/The Public and Academic Library Worlds (with Sandy Berman, formerly Hennepin County, Minnesota, Library Head Cataloger and Principal Librarian, and Gary Strong, University Librarian, UCLA).
- Academic Publishing/CLIR (with Michael Keller, University Librarian, Director of Academic Information Resources, Publisher of High Wire Press, and Publisher of the Stanford University Press; and Nancy Davenport, President of CLIR).
- Library Architecture (with Michael Lauber of Ellenzweig Associates and Carole Wedge of Shepley, Bullfinch, Richardson and Abbott).
- The Changing Face of Reference (with Judy Luther, President of Informed Strategies and Library Consultant).
- Archives and Libraries (with Richard Szary, Carrie S. Beinecke Director of Manuscripts and Archives and University Archivist at the Yale University Library, and Matthew Beacom, Metadata Librarian, Yale University Library).

- Text Encoding Initiative (TEI) and Humanities Computing (with Julia Flanders, Director of the Women Writers Project and Associate Director for Textbase Development at the Scholarly Technology Group, Brown University).
- Visual Resources, Cataloguing Cultural Objects, and Metadata (with Ann Whiteside, Director of the Rotch Library of Architecture and Planning at the Massachusetts Institute of Technology).

These virtual sessions comprise a series of distance education-type lectures that allows Fellows to hear from the leaders in the profession and ask questions and offer anecdotes from their own experiences. They have been unanimously identified by participants and sponsors as the most important educational component in the program. Additionally, they have provided the Fellows the “proof” that the program promotes librarianship and values; many of the Fellows’ colleagues have expressed pleased surprise and even envy about the quality of presentations offered and the reading lists that often precede the sessions.

The range of work undertaken by the Fellows is too wide to be addressed adequately here,⁷ but in brief, the Fellows have:

- Consulted on the best, pedagogically sound ways to integrate technology and digital materials into the undergraduate classroom.
- Collaborated with librarians, archivists, and information technologists on the development of writing and research guides for students.
- Participated in the design and implementation of metadata standards for faculty using digital visual resources in their teaching and research.
- Designed improved library sites and portals that take into account user patterns of undergraduates.
- Worked in special collections and rare materials archives, learning and performing tasks including material review and selection, creation of catalogue records, metadata entry, and authoring of abstracts.
- Contributed to conversations about library renovation.
- Authored front matter for printed catalogues in special collections.
- Co-taught honors research skills courses
- Managed digital archives.
- Advised on and contributed to inventories of digital projects in area collections.
- Authored and consulted on grant proposals for digital projects.

⁷See <<http://www.brynmawr.edu/clirfellows/participants.htm>> for more information about projects undertaken by Fellows.

- Presented at national and international conferences in various areas of librarianship, archive management, metadata, humanities computing, and discipline-specific topics.
- Taught bibliographic instruction sections for particular disciplines.
- Proposed new courses which integrate library and archive research into the undergraduate curriculum.
- Promoted the CLIR Fellowship Program through articles, conference presentations, and colloquia.

The new cohort (2005–2006/2007) is at the time of this writing entering its 6th month and its projects are more difficult to summarize. It is clear, however, that the type of work performed and the skills mastered will be at least equivalent to those listed by the first cohort. While the ultimate success of the CLIR experiment remains to be seen, it seems fairly certain, based on the first cohort, that the program promises to indeed be an advance in librarianship.

D. Fellowship

The development of computing technology has made scholarly communication, research, pedagogy, and intellectual communities stretch the limits of what is known and can be known about not just information, but knowledge and the production of knowledge. While libraries have often been integral parts of the developments made, such as at Rutgers University and the University of Virginia, more often than not, libraries have only been included as contributors of material from collections and not equal collaborators and creators of the new digital objects and the scholarship which emerges. Leading scholars in the field of humanities computing have recently noted this oversight, and efforts are being made to correct it. Claire Warwick (2004) from the School of Library, Archive, and Information Studies at University College, London, for example, has written that although “libraries and library schools have long been thought of as bastions of dry traditionalism, recently some humanities computing professionals ... have moved to such departments ... Certainly the library and archives community is increasingly innovative in its use of digital materials in the humanities, and this seems a further area with which humanities computing could communicate” (p. 25). Jerome McGann (2002), one of the most innovative and widely published scholars in the discipline, claims that “digitization is even now transforming the fundamental character of the library ... the chief locus of our cultural memory as well as our central symbol of that memory’s life and importance.

That transformation is already altering the geography of scholarship, criticism, and educational method throughout the humanities and it forecasts even more dramatic changes ahead ..." (p. 4). Arguing that "designing and executing editorial and archival projects in digital forms are now taking place and will proliferate," McGann calls for "restoring intimate relations between literarians and librarians, a pressing current need ..." (p. 8).

In the end, these examples make evident that the greatest challenge facing academic librarianship is not merely the digital, but the new types of collaborations that are required to perceive, evaluate, meet, and overcome the challenges that the digital era brings with it. This collaborative frame of mind is the one shaping the CLIR Fellowship; as a band of Fellows and as intrepid adventurers in the landscape of academic librarianship, we know that we cannot survive without the help and support of colleagues from all parts of the campus. Similarly, those of us who are returning to the tenure-track are fully aware of our need to reach out to and collaborate with librarians, archivists, and information technologists alike if we want to meet our students where they are. That participants in the CLIR program are actively engaging in such collaborations with a renewed respect for and understanding of librarians and their profession is perhaps its greatest success; it would be a shame if the program were to be continually met with resistance rather than embraced for its contributions and its ethos of collaborative integration of scholars, librarians, and teaching faculty into the mission of higher education. Yes, the digital has changed our world and all our professions; everyone's favorite bugbear, Google, is, as most of us know, just the tip of the iceberg. The challenges posed by the changes in our worlds, both professional and personal, are as yet unseen, lurking under the surface, but they can be met successfully once we abandon our dividing lines and instead welcome the collaborative nature of programs like that offered by CLIR, becoming in the process a band of Fellows from across departments, disciplines, and professions. The digital era need not be so intimidating, nor must its challenges be met alone. The digital format could very well be Tolkien's ring; whether it is merely one of the Rings of Power or the One Ring that "in darkness binds them" has yet to be seen, but either way, only a Fellowship can meet the challenge.

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Quality Assurance in Library and Information Science (LIS) Schools: Major Trends and Issues

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I. Introduction

Why evaluate quality in Library and Information Science (LIS) schools? From a historical perspective, quality assurance always has been considered a strategic issue by LIS schools for improvement of the teaching and learning experience and for accountability. Internationalization has added a new role to quality assurance in LIS. In terms of the context of the World Trade Organization General Agreement on Trade in Services (WTO-GATS), LIS is increasingly recognized as part of the knowledge sector. The WTO-GATS has approved a multilateral framework that sets out rules for the conduct of international trade in services, including educational services. The GATS includes both general rules—for example, those related to the transparency of trade-related regulations—and a framework for specific commitments under which countries choose whether, and under what conditions, to allow access to their markets for foreign suppliers. The provisions in the GATS related to trade regulations and ways countries choose to allow access to their markets are relevant to the recognition of international standards or qualifications for professionals. Although not mandatory, international standards are encouraged, both for quality assurance of LIS school offerings in general, and for recognition of a specific LIS school outside its home country. Additionally, in the context of an increasingly internationalized job market, employers need reliable information on how to evaluate specific higher education degrees and assess degrees recognized and granted in their domestic market. The goals are to facilitate the mobility of students and to increase employability. The need to reinforce the comparability of higher education internationally through quality assurance systems is now becoming more pressing.

The concept of quality is twofold: internal and external. Internal quality is based on university regulations and on the LIS school's self-evaluation. External quality is evaluated by quality assurance agencies who examine the relative purpose and perceptions of quality and often base their judgment on standards and guidelines. Whether in local, national, regional or global contexts, all quality assurance agencies have dealt with methodologies responsive to the education needs of professionals. There is a lively debate on who should evaluate quality and what about it is assured. Saracevic (1994) speaks of the "iron grip" on library education held by the Committee on Accreditation (COA) of the American Library Association (ALA). Cronin (2000) claims COA accreditation tends to focus on uncritical veneration of vocationalism, fuzzy values and final homogenization of the accreditation process, wishing that LIS schools would be evaluated by higher education institutions. Gorman (2004) however criticized ALA program accreditation for simply measuring a program against its own mission and vision statements, adding that, due to an increased concentration on technology, curricula in LIS programs today are not adequately addressing the real needs of the profession. Accreditation of LIS school programs seems to be at a crossroad. There is a generally held belief that standards and guidelines have lost their effectiveness in recent years. Unless we consider quality assurance effectiveness, this process is not bound to be useful to improving LIS programs in the future.

The purpose of this chapter is to describe how quality is assured in LIS schools in highly developed countries as well as in a number of developing countries. It is mainly based on the findings of the International Federation of Library Association (IFLA) survey on quality assurance and examines the main challenges in the field of quality assurance of LIS schools, including quality definition, criteria and principles of LIS evaluation, quality assurance procedures and quality performance indicators. Conclusions will deal with the effectiveness of quality assurance and how this could enhance the students' learning experience, their learning outcomes and finally the success of libraries and information services. It will analyze also the internationalization impact on different accreditation approaches.

Within the fundamental concept of quality of LIS education, the author aims to incorporate most of the emerging theories and philosophies of learning, based on reflective practice and lifelong learning. The chapter is also based on the following assumptions:

- Quality assurance models serve as conceptual and communication tools for analyzing, designing and evaluating learning from broad programs to narrow training applications.

- Quality assurance modelling should take into account the multiple backgrounds of learners, the variety of context in which learning is situated and the necessity to guide, manage and communicate the quality process.
- Conceptualization of quality goes beyond accountability and political decisions.

II. Background

Internationally available information on education, and the increased mobility of students and degree holders, point to the need for international recognition of qualifications. With the aim of achieving greater transparency of LIS qualifications and increasing mobility and employability of students through a quality assurance process, IFLA Education and Training Section (ETS) developed a survey on quality assurance during IFLA Conferences, beginning in Berlin in 2003 and presenting a final version in Oslo in 2006 (Tammara, 2006). The survey's objectives were the following:

- To explore the existence of quality assurance systems in LIS schools worldwide.
- To consider the role of different stakeholders in quality assurance.
- To analyze quality assurance models and procedures.
- To evaluate the quality assurance standards, guidelines and quality indicators followed by LIS schools.

The primary purpose of this survey was to gather data from a sufficient number of LIS schools from each region of the world about current quality assurance processes, priorities and concerns. The main research questions were:

- How to improve quality in LIS Schools?
- How to preserve diversity within an international framework of quality assurance?

A. Methodology

The survey has required an investigation of quality assurance models worldwide. The methodology has included:

- A literature and documentary review.
- An analysis of quality guidelines and standards.
- A questionnaire sent to selected LIS schools around the world.

From the first phase of the literature and documentary search of current practice and guidelines in LIS, a taxonomy of quality assurance techniques (Table 1) was drawn. It indicates that different quality assurance approaches relate to different phases of the educational process and to different stakeholders' purposes and criteria for evaluation.

In the second phase, a questionnaire was designed and tested by the IFLA Education and Training (ET) Section Standing Committee during the Buenos Aires (2005) IFLA Conference. IFLA ET Section participants have collaborated to improve the questionnaire. The participants decided not to include analysis of the different levels of the LIS programs as part of this questionnaire.

An analysis of data has been carried out in order to develop a typology of approaches to accreditation, with the aim of understanding their different rationale, perceived advantages/disadvantages, and costs and benefits. The analysis of data has considered:

- the assessor or accreditor of the program;
- the focus of quality assurance;
- the way to measure performance;
- performance indicators and outcomes.

III. Literature Review

The literature search was necessarily selective. The aim was to identify a sufficient range of references to provide a large-scale "map" of the literature based on the identification of two overlapping and interconnected topics: (1) quality assurance and (2) internationalization and quality assurance.

A. Quality Assurance

Quality in LIS is a value judgment, subject to different interpretation by various stakeholders, such as governments, employers, students, administrators and LIS teachers. Since quality is a very subjective concept, it is very important to identify the *accrediting body* in order to understand the purposes of the evaluation as well as to establish the authority, the level and validity of the evaluation.

Evaluation of LIS education has been carried out on different levels, in relation to different choices of criteria and objectives by different stakeholders, using a variety of procedures. In addition, it has been oriented towards different purposes and related audiences. While the purposes and objectives

Table 1
Taxonomy of LIS Quality Assurance Models

	Program-orientation model	Educational process-orientation model	Learning outcomes-orientation model
Assessor or accreditor	Government agency Professional association External review committee University audit	Internal assessment University audit	Professional association Educational providers Students
Purpose of assessment	Accountability Customer protection	Improvement of the learning experience	Improvements in the quality of student achievements, competencies or employability
Indicators	Organizational structure Resources in terms of funding, staff numbers and IT/library facilities Number of students, drop-out rates, recruitment Course content and design Staff competencies	Validation and approval frameworks Level and standards Support for learning Responsiveness to learner backgrounds and preferences, pedagogy	Assessment of student learning outcomes through exams and/or employee evaluations Placement in employment Student evaluation of the learning experience Complaints and appeals
Time frame Typical output Information sharing	Periodic Accreditation of the program Publication of results	Continuous Self-improvement report Internal report	Program lifecycle Certification of student achievements Individual certification Publication of results
Quality concept	Fitness for purposes Value for money	Exceptional Perfection	Transformative

of the accrediting body may be explicitly stated or implicitly derived or assumed, they have to be reflected in the evaluation. As in all systems, objectives in LIS education evaluation occur in hierarchies, and there may be several hierarchies, representing different stakeholders' purposes and criteria, sometimes even in conflict. According to Boyle and Bowden (1997) it is difficult but necessary to identify and define as clearly as possible the different interest groups, opinions and criteria for judging quality.

Any educational system has components of inputs, processes, outputs and feedback. The conceptual framework of quality evaluation has course content as input, objectives and their inherent learning experiences as process, outcomes (achievements) as outputs and feedback for adjusting the system (Hauenstein, 1997). Because of the evident multidimensionality of quality in education, it is also necessary to use multiple forms of evaluation.

One of the major problems plaguing the field of quality assessment is the inconsistent use of the term.

On the other hand, to assure and assess quality we must have a clear notion of what it is. Quality is most often defined in the literature as "fitness for purpose" and is related to the purpose of the stakeholder/accreditor. Quality depends upon a subject's view of the purpose for evaluating education. The stakeholder's purposes cannot be easily identified. Harvey and Green (1993) have listed the following five concepts of quality discernible in higher education and related to different quality criteria:

1. Exceptional: the purpose of the evaluation is on excellence.
2. Perfection: the purpose is on consistency.
3. Fitness for purpose: the purpose is determined by the stakeholders, who have an interest.
4. Value for money: the purpose is related to accountability in terms of criteria such as the efficiency and productivity of the education process.
5. Transformative: the purpose is the empowerment of students and/or for the development of new knowledge.

There are five different methods by which quality of LIS schools is assured: quality assurance, accreditation, quality audit, subject benchmarking and validation.

1. Quality assurance is defined as a planned and systematic review process of an institution or program to determine that acceptable standards of education, scholarship and infrastructure are being maintained and enhanced (CHEA, 2003). This usually includes expectations that mechanisms of quality control are in place and effective. Where the

government leads quality assurance, it also includes the means through which an institution confirms that the conditions are in place for students to achieve the standards set by the institution or other awarding body. Quality assurance is being practiced in a variety of settings but using a common four-step procedure. This procedure is applied by means of a collegial process, which combines institutional self-assessment and critical peer evaluation, based upon given criteria. While these approaches vary among institutions, to suit particular circumstances, shared features include:

- The development of institutional and faculty/department/unit-based quality assurance and improvement guidelines.
- Systematic reporting requirements and public reporting of the outcomes of evaluation.
- The adoption of institutional performance indicators and institution-wide performance analysis.
- The involvement of senior institutional managers in the development, implementation, and review of quality assurance and improvement policies.

Institutional processes share common ground for monitoring and reviewing performance. Nearly all institutions have in place a system of formal, cyclical reviews with the participation of external assessors, such as academic peers and employer representatives, playing a prominent role in the development/evaluation of programs and organizational structures. Other monitoring processes that involve external feedback include periodic surveys. Although quality assurance is not an institutional audit, it is considered to be the basis of self-evaluation and it does ensure that the institution meets minimum standards of quality.

2. Accreditation is the formal or official external recognition of a (validated) program. This may be for funding purposes or it may be the registration of the program as a provider of professional education (which thereby means that graduates have attained a level of minimum professional competence). Accreditation done by professional associations is a common form of assessment of the quality of LIS schools in the United States and Canada.
3. Validation refers to the internal quality evaluation procedures of the institutions, which ensure that a program has fulfilled internal or national institutional criteria and regulations. This process is often an internal process within established parameters and, usually, conforms to explicit guidelines. In some countries the validation process for new programs is not only internal to the institutions but requires

external approval (government, professional associations, etc.), not to be confused with accreditation. Most institutions have processes for periodic validation of existing program of study and of their constituent modules; some others have a validation process only at the start of a new course.

4. Quality audit is a test of an institution's quality assurance and control system through a self-evaluation and university review of its programs, staff and infrastructure. It is designed to provide an assessment of an institution's system of accountability, internal review mechanisms and effectiveness with an external body confirming that the institution's quality assurance process complies with accepted standards.
5. Subject benchmarking provides a reference point against which outcomes can be measured. The primary task of subject benchmarking is to create a set of learning outcomes and related performance criteria for programs that lead to a particular award. They represent general expectations about the standards for the award of qualifications at a given level and articulate the attributes and capabilities that those possessing such qualifications should be able to demonstrate. Subject benchmark statements also provide a means for the academic community to design and describe the nature and characteristics of programs in a specific subject. Subject benchmark statements are often used in the United Kingdom. There the statements provide subject communities that can relate to specific statements with a framework for developing and specifying the intended learning outcomes of programs and provide Quality Assurance Agency (QAA) reviewers with a reference point for evaluating the appropriateness of standards (Jakson, 2001).

Instead of considering quality assurance of LIS education as a bureaucratic exercise, it could be useful to focus on learners' needs. Constructivism is a current theme in professional education. Constructivism is based on assumptions that learners do not passively acquire knowledge but construct their knowledge based on their experiences. Course content is viewed as interconnected concepts rather than fragmented facts, and the curriculum is student centered as opposed to teacher centered (Hauenstein, 1997). It is clear that in managing the student's participation in the education process, the quality of the experience as perceived by them will depend on their values and expectations. Frameworks for use in defining such student expectations have been developed and widely applied, as for example, the well-known satisfaction paradigm Service Quality Model (SERVQUAL)

(Parasuraman *et al.*, 1985). However, a university course is unusual in that the customer (the student) may have only a general idea of what lies ahead and may not comprehend the content or relevance of a course until the later years of study.

LIS degree candidates should be able to choose between different course offerings. LIS practitioners who seek their first appointment or promotion within a library or an information organization should be able to demonstrate that their knowledge, skills and competencies are updated. Two types of measures could be identified in supporting these different needs of transparency: accreditation of educational courses and recognition of acquired competencies. Recognition should motivate and reward practitioners who take their professional education and continuous development seriously. It includes both academic qualifications and continuing professional development (CPD). The professional bodies could be the natural providers of this service because they are independent associations and many of them have demonstrated involvement in accreditation and certification of professional education.

Recognition (or certification) is considered as the “endpoint” in a multistep procedure. The first step involves making the competencies “visible” to everyone as well as being “demonstrable” by the person in question. The second step is the validation of the role which these “visible” and “demonstrable” competencies can play in the choice of further training, the search for work or participation in sociocultural life. The third step is the certification of these “visible” and “demonstrable” competencies. The recognition of acquired competencies is a measure aimed not only at more employability or progress in the career. The recognition of acquired competencies also aims to increase the intrinsic learning motivation and participation in lifelong learning. This is obtained by starting from the continuous improvement of “acquired competencies” and not only from a “lack of competencies,” and by acknowledging the value not only of formal learning, but also of non-formal learning. In the debate concerning recognition of qualifications, we observe that the employability incentive dominates. Therefore the emphasis is placed on labor market-oriented competencies and on the recognition of immediately employable competencies. It is clear that this implies a serious narrowing of the broad competence concept put forward in the academic discussion (Cronin, 2000; Haycock, 2001).

CILIP (Chartered Institute of Library and Information Professionals) (CILIP, 1992) and (ALIA) Australian Libraries Information Association (ALIA, 2003; Ramsden and Martin, 1995) were the first professional associations to start combined accreditation and certification programs. CILIP has a program for the accreditation of LIS courses, following its quality

standards. At a second level, CILIP started a procedure for the verified evidence of individuals' fitness for professional practice. Evidence required is based on the preparation of a professional development report, a portfolio and an interview. Following this, the registration and maintenance of CPD records and fellowship is required at the last level. It should be noted that if the entire process of certification must comply with the guidelines, it would become too cumbersome or costly, and thus will be bypassed. Because the certification system seems too complex and involves fees, LIS schools accreditation is often preferred (Varlejs, 2003).

There was a growing interest in developing lists of competencies, considered important tools for recognition. Webber (1999) analyzes three competency lists: two from Europe and one from the United States. The first is the Council of Europe study, prepared in the context of the new book economy, including media and publishing inside the traditional library and information professional competencies. The second study, by The Fantasy Poker League (TFPL) on behalf of the UK government, is on Knowledge Management people competencies. In addition, a Special Libraries Association (SLA) study was realised only within the professional association. Its target is practitioners, but also is useful to educators, locating the profession in the new environment of the digital library. Webber highlights international issues regarding the lists of competencies as linguistic problems, problems of identifying up-to-date lists of target departments for all countries and problems of cultural identification. They would be compounded by the fact that a much broader range of professions is covered and that there would be a variety of different bodies carrying out the training.

B. Internationalization and Quality Assurance

The lack of a common definition of quality, of similar purposes, and of comparable quality evaluation processes, seems to make an international collaboration on a single accreditation system difficult, and perhaps not desirable. Internationally available information about education and the increased mobility of students and degree holders have resulted in the need for international recognition of qualifications. Other factors impacting higher education include free trade zones, new educational providers and the development of distance education.

Debate about the internationalization of university education has tended to focus on the commodification of tertiary education. OECD (Organization for Economic Cooperation and Development) (OECD, 2003) provides a summary of the progress on OECD/CERI (Center for Educational Research and Innovation) work on mapping trends in international quality assurance,

accreditation and recognition of qualifications. In particular, the OECD forum on trade in educational services describes the work of developing guidelines on consumer protection in cross-border higher education. Relevant issues and a proposed framework for monitoring quality in relation to internationalization are provided by Knight (2003) and Knight and De Wit (1999). Several organizations provide further readings from an international perspective, including UNESCO (United Nations Educational Scientific and Cultural Organization) (UNESCO and OECD CERI, 2004), and INQAAHE (International Network of Quality Assurance Agencies in Higher Education) (INQAAHE, 2005).

Internationalization and quality assurance impact the agreed quality standards for LIS education and the potential for increased international equivalency of qualifications for information professionals. This issue is currently hindering the international mobility of LIS professionals and not protecting students from diploma mills. UNESCO and the Council of Europe have developed a Code of Good Practice in the Provision of Transnational Education. Launched in October 2002, the UNESCO Global Forum on International Quality Assurance, Accreditation and the Recognition of Quality Assurance in Higher Education (UNESCO, 2002, 2004) brought together different stakeholders in higher education from Africa, the Arab States, Asia and the Pacific, Europe, North America, Latin America and the Caribbean, and used the mechanisms linked to the UNESCO regional conventions on the recognition of qualifications. Recognizing that the existing international frameworks need to be reinforced, this UNESCO Global Forum recommended in its Action Plan that regional conventions recognize qualifications and respond to the challenges of quality assurance in cross-border higher education provision, including consumer protection.

In order to develop students' ability to work in a global environment, there is a clearly emerging interest in LIS to better facilitate the participation of international students and to internationalize curricula, as well as to be inclusive in the Knowledge Society (Virkus and Tammaro, 2005; Virkus and Wood, 2004). In Europe, Campbell and van der Wende (2000) explain how higher education is changing due to the focus on quality assurance of the Bologna process (the process of harmonization started after the Bologna Declaration in 1999). Van Damme (2001, 2002) and Westerheijden (2001) provide background, from the European perspective, on the Bologna process to focus on learning outcomes and competencies. ENQA (European Network for Quality Assurance) (ENQA, 2002) presents information on subject benchmarking in European universities. This trend is very important for LIS schools, as some of them have been involved in international panels of external assessors for joint ventures in quality assurance (Westerheijden, 2001).

The IFLA ET Section has been studying the issue of equivalence and reciprocal recognition of academic qualifications in LIS since 1977 and its current activities still include the problems of international reciprocity/equivalency of qualifications and quality assurance. This led to the publication of the *Guidelines for equivalence and reciprocity of professional qualifications* (Fang and Nauta, 1987). Later IFLA started a project during its annual conference in Jerusalem and has accepted the *Guidelines for professional LIS programs* which define accreditation requisites, including core subjects (IFLA Section Education and Training, 2000). However harmonization of the standards required for success in LIS schools, on which the mutual trust between LIS Schools could be based, has failed. IFLA has studied possible methodological approaches to the equivalency of qualifications but the issue of international recognition of qualifications is extremely complex and requires commitment and support from the international community (Dalton and Levinson, 2000).

Harvey reported that a significant number of authors called for uniformity of content and quality measures when establishing international quality assurance (Harvey, 2003). The assumption is that uniformity is important and desirable and that consequently all courses should cover the same content. In a context of rapid evolution of information professions, UNESCO was the first to stimulate reflection on the education of information professionals, which led to the emergence of the basic idea of harmonization, that is, the design of a harmonized program (UNESCO, 1984). The *Guidelines in curriculum development in information technology for librarians, documentalists, archivists*, in which the teaching of information technology was the core of a harmonized program, were published by the General Information Program of the UNESCO in 1986 (Cook, 1986). Cook later writes, for example, that he did not know of a single case where a truly harmonized information technology training curriculum is in use (Cook, 1989). The concepts of a rigid model, prototype or core curriculum developed under the umbrella of UNESCO have become obsolete today. The core curriculum with its connotations of central planning, control and harmonization does not match today's market orientation and globalization trends very well (Kajberg, 2003). The abundant literature produced by UNESCO and international professional associations is sufficient to provide guidance concerning the main factors which determine the structure and content of a program (Courier, 1990). It is now clear that the concept of harmonization is only one element among many others to be considered in the design of an international program. Recognition and accreditation are prominent barriers to internationalization. Diverging program structures, with different approaches to the sequence of specific LIS subjects, create problems for international student exchange. Difficulties arise in establishing the

compatibility of specific course elements and recognizing differences in timing and duration of courses and study periods in other schools.

However, common trends must not be overlooked (Kajberg, 2003). In the field of international recognition of qualifications, the work of the European Council of Information Associations (ECIA) is particularly relevant. In 1994, the ECIA established a certification that allowed experienced professionals to obtain recognition of their level of qualification, even if they did not possess the corresponding diploma. ECIA was able to define compatibility criteria between different certification systems. Next, ECIA carried out Project CERTIdoc; its objective was to define and establish a European certification system, based on the same procedure (Meyriat, 2003). For almost all European countries participating in Project CERTIdoc, there is interest in a European certification with higher levels and expectations to integrate the different professional groups in the information sector (archivists, librarians, documentalists, etc.) (Rittberger and Schmid, 2003). Project CERTIdoc has defined the elements needed for recognition as follows:

Competencies: a set of skills necessary to perform a professional activity and the proficiency of required behavior, which refer to *Euroguide LIS: the guide to competencies for European professionals in Library and Information services*. The components are knowledge, know-how, and aptitudes. These are considered as proficient when put in practice effectively and validated.

Level of qualification: a person's place in reference to a scale of professional qualifications, which divides the knowledge and know-how of an occupation (or group of similar occupations) into different functions. The level of qualification takes into account the individual's competence (especially technical), the complexity of different responsibilities undertaken as well as his/her degree of autonomy, decisiveness and foresight.

Profiles: directory of competencies necessary to exercise a profession. (CERTIdoc Consortium, 2003).

IV. LIS Quality Guidelines and Standards

A review of existing guidelines and standards has been conducted to define indicators used in the LIS sector. The collection and analysis of the LIS guidelines have been compared with the quality framework described before. Particular focus on learning outcomes and competencies seems to be more suitable for international comparability of quality assurance and recognition.

It is important to affirm that, in a strict sense, standards can only be issued by accredited standards bodies, such as the International Standards Organization (ISO). Many of the so-called "standards," specified by LIS

professional associations are actually guidelines, principles or statements of good practice rather than true standards.

All the LIS guidelines are fairly general, open and flexible enough to offer room for different approaches (Khoo *et al.*, 2003). They cover areas such as:

- the context of the program, institutional support, the relationship with the parent institutions;
- mission, goals and objectives;
- curriculum;
- faculty and staff;
- students;
- policy and procedures;
- administration and financial support;
- instructional resources and facilities;
- regular review of the program;
- employment and labor market.

LIS information skills and competencies with a disciplinary approach are addressed by IFLA guidelines (IFLA. *Section Education and Training*, 2000). The disciplines to be included in a core curriculum are listed together with transferable skills, such as communication skills and teamwork, time and task management skills, analytical problem solving. IFLA guidelines give also precise indication about theory and practice and suggested practicum, internship and fieldwork for students. The Australian Library and Information Association (ALIA, 2004) listed additional skills in management; critical reflective and creative thinking; evaluation; valuing professional ethical standards; commitment to lifelong learning; information technology and information literacy. CILIP (1992) added the following competencies: human resources management, training and development, financial and budgetary management, statistical analysis, research methods, project management and language skills.

An analysis of other LIS guidelines has shown that more disciplines or additional skills are included in the core set. However, the criteria mostly used in LIS guidelines are not based on learning outcomes. They often assume that learning would take place if institutions provided certain inputs or resources (e.g., curriculum content, limited class size, full-time faculty, student workload, documented policies, equipped classrooms and libraries).

Quality assurance organizations, such as the National Council for Accreditation of Teacher Education (NCATE) and the American College Personnel Association (ACPA)'s Commission on Assessment for Student Development (ACPA), as well as, in Europe, the Bologna process (Adam, 2004) are now emphasizing the importance of learning outcomes.

This emphasis gives institutions greater flexibility over how they achieve such outcomes. Emphasis on learning outcomes increases the need to consider quality assurance in relation to recognition of qualifications (Tammaro, 2005).

Another approach to quality assurance in LIS is the application of industrial standards, such as ISO 9000, Total Quality Management (TQM) and European Foundation for Quality Management (EFQM) (European Foundation for Quality Management, 1992). The ISO 9000 series intends to stimulate trade by providing assurance of an organization's ability to meet specifications and perform the negotiated standards. The focus is on the basic process control of products and services. The standards are not intended to certify quality of a product or service or whether one is better than another, but the standards relate to an organization's quality system (Lampercht, 1992). Most managers of educational institutions recognize that quality must focus on connections among functions across entire organizations. This is the principle of TQM (Seymour, 1991). TQM combines quality control, quality assurance and quality improvement. It goes beyond traditional customer satisfaction by addressing the needs of internal customers, suppliers and other stakeholders. In trying to use industrial standards in education, it becomes inevitable that education is modelled as a manufacturing process and students are viewed as consumers. The advantage of this point of view is that in order to achieve quality, the students' expectations and satisfaction will have to be taken into account. However, members of the academic community debate the value of students' evaluation of teaching, and the relevance of their judgment on the quality of education (Crumbley *et al.*, 2001). Quality assurance models based on TQM stress self-evaluation and institutional enhancement. Freed *et al* (1997) discuss the implementation of an adaptation of TQM to higher education. Quality management systems (Herget, 2003) offer LIS university departments the possibility to achieve and monitor excellence, by looking at financial aspects, internal processes, efforts for change and innovation, impact of communication and alumni survey results. EFQM is another excellent model for educational institutions to facilitate achievement of best results (Konrad, 1997).

These various discussions of applying business models to higher education may be flawed. Harvey (1995) hypothesized that to implement quality management models, as practised in industry, across all operations of a university, education would have to be more holistic in its approach and not limit its core operations to processes, products or services. The quality of LIS educational programs might benefit from applying some of the practises introduced by these management models. However, the lack of consistent and common standards and guidelines among LIS programs limits the applicability of the quality assurance and comparative evaluation concepts that these models

provide to organizations in more competitive business sectors. For this, we next turn to a review of quality assurance models developed among educational organizations.

A. Quality Assurance Models

Several quality assurance models for the evaluation of LIS education provide a theoretical basis for the evaluation of programs and curricula. They can serve as conceptual and communication tools for analyzing, designing and evaluating learning. For this reason, this chapter offers a taxonomy to use for classifying three models of quality assurance. Through a careful analysis of each model, the taxonomy aims to provide a framework for evaluators both to determine the goals and settings in which the evaluation activities are to occur, and to understand what stakeholders are describing. The taxonomy also will reconcile terminology that is inconsistent from model to model.

The taxonomy examines the following factors for the categorization of each model:

- accrediting body;
- purpose of the person or institution conducting the accreditation;
- typical output, in terms of follow-up occurring after development;
- indicators committed for measurement;
- time frame: number of evaluations conducted during the time considered;
- information sharing or amount of dissemination produced;
- quality criteria and definitions.

Of course, different assumptions could be made about these factors in successfully using the taxonomy. However, the author believes that the analysis presented in this chapter could help users in selecting models of quality assurance that are most appropriate for particular LIS program situations.

Three models of quality assurance have emerged from various LIS guidelines which Knox (2001) identifies as (1) Learning Outcomes Model, (2) Educational Process Model and (3) Program Administration Model. These are described as follows:

1. Learning Outcomes Model

This model focuses attention on explicit and detailed statements of what students learn: the skills, knowledge, understanding and abilities which LIS schools seek to develop and then test. The adoption of a learning outcomes approach focuses on the educational activities of the learner instead of the teacher's. The student centered learning is a new approach in higher education

institutions and it takes into account the lifelong cycle of learning. This approach has also been represented as a paradigm shift from traditional ways to measure and express learning characterized as input approaches (for example, emphasizing teaching hours and counting resources) to output focused methodologies, using learning outcomes and competencies. The emphasis moves from the content (disciplines or what staff teach) to outcome (competencies or what students will be able to do). However it requires beginning the quality approach at the curriculum design level. Although it proposes the teacher as facilitator or manager of the learning process, it recognizes that much learning takes place outside the classroom (Adam, 2004).

In the Learning Outcomes Model, the quality indicators could extend to include the impact on individual professional performance and indirect benefits of library and information services to users. Some indicators relate to assessment of students' learning outcomes as competencies and knowledge mastery, and such critical skills as problem solving and use of practical knowledge. Learning Outcomes Model stresses the transformative concept of quality. The ways to measure quality, according to this model, are based on individual certification and qualitative surveys.

In the Learning Outcome Model, quality assurance can be combined with recognition of qualifications. There are two methods of linking quality assurance and recognition: one is based on a competence-referenced approach; another is based on a criterion-referenced assessment. Many countries have national frameworks of qualifications which include all professional competencies, including all levels of education and training. In the Dutch Higher Educational system, the focus is currently on developing a competence-oriented curriculum also for information studies (Roggema-van Heusden, 2004). A number of English-speaking countries have formally developed and published a national framework of qualifications based on criteria-referenced evaluation. Called the National Vocational Qualifications (NVQ), this framework was introduced in the UK in 1980: the NVQ are work related and represent national standards recognized by employers throughout the country and used as reference criteria for qualifications.¹

¹One leading body of NVQ was set up for the information occupational sector, subdivided into the areas of: information and library services, archives, records management and tourist information. NVQ describes work functions, work tasks and standards of competence, in five levels of achievements, each representing an increasing range and complexity of tasks and greater responsibility within the working environment. Each level refers to a job role or a range of role activities. Individuals complete a set of tasks which are assessed against criterion-referenced national standards and, if deemed to be satisfactory, a national recognised qualification is awarded.

2. Educational Process Model

In this model, the quality indicators include the major decision areas for people who plan and offer education programs and focus on quality management of delivering courses. Most of the guidelines in use are based on industrial standards such as ISO 9000, TQM and European Foundation Quality Management (EFQM). The focus is on the basic process control of products and educational services. Quality indicators can be focused on course delivery, such as: allowing for differences in learning styles, responsiveness to learner needs and preferences, opportunities for varied pedagogy practice and assistance with self-directed learning. There are also some quality indicators focusing on education needs assessment. In this case the procedure includes multiple sources of evaluation. Other forms of educational process evaluation are for program improvement and justification.

3. Program Administration Model

Here, attention is given to functions such as needs analysis, goal setting, curriculum design, staffing, resource acquisition and allocation. A major area of external quality assurance concern is about quality indicators of curriculum design, which are balancing the needs and aspirations of participants and employers; LIS schools purposes and resources; and societal trends. For staffing, quality indicators include attention to teacher selection criteria and use of effective procedures. The Program Administration Model especially stresses accountability. Most of the present accreditation requirements are based on this program administration orientation.

There is a range of variables, deriving from the combination of these models (see Table 1). All approaches should recognize the scope of investigation and evaluation on the part of the learners. Instead of the simple task completion, it must include a critical understanding of the aims and context in which the learning process takes place. For example, Wenger (1998) identifies a range of learner-oriented processes which link the learner to broader practices. Beckett and Hager (2002) propose the concept of *organic learner*, a contextualized practice-based concept of learning. In contrast with the *Cartesian learner* (solitary, self-sufficient, acritical), the *organic learner* emphasizes the activity-based nature of learning which is experiential, collaborative and often activated by the individual learner.

A better understanding of quality values is important because they have an impact on student participation in the education process and student satisfaction. The majority of the values that the stakeholders in higher education have, seem to be those associated with what the courses are designed to achieve (fitness for purposes, learning outcomes), the manner in which

they are delivered and supported (value for money, perfection, excellence) and the commitment required of different participants in the educational process to achieve the learning outcomes (transformative). An accreditor should be in the position of selecting an appropriate model to fit the situation, rather than forcing the situation to fit a model. All methods of accreditation will be costly in terms of resources and time. In particular they need to be explicit and realistic about the time and costs involved, with reasonable evidence of the effectiveness of external evaluation. Like all competent professionals, accreditors should select the right tools for their specific purpose and quality value.

V. LIS School Survey

The IFLA ET Section sent a questionnaire by e-mail to 160 LIS schools worldwide in 2004 to identify current practices in quality assurance. A simplified version of the questionnaire was prepared for United States and Canadian LIS schools, asking them if there were other accreditation systems than those used by the ALA. [Table 2](#) relates the questions posed to the survey objectives.

A. Results

A total of 50 questionnaires were received (between August, 2004 and March, 2005) for a 31% response rate ([Table 3](#)). Thirty-three questionnaires were never delivered due to having invalid addresses. The response rate is low, and might be due to the following reasons: (1) many (21%) of the e-mail addresses were invalid; (2) some (0.6%) respondents were not able to return the questionnaire by e-mail for technical inexperience; (3) use of only English language on the questionnaire was difficult for some to respond; (4) the questionnaire was sent to LIS school faculty, many of whom considered quality assurance as an administrative task and thus ignored the survey; (5) some selected respondents forwarded the questionnaire for reply to their administration and it was lost in transmission or ignored and (6) some reluctance to reply about quality may exist, especially in cases when there was no quality assurance in existence in the LIS school.

The replies have been aggregated by the five IFLA regional areas and, more specifically, by countries within each region. Replies were received from 45 countries. The United States is considered as a single country, being regulated by a single quality assurance system.

Table 2
Survey Questions Addressing Survey Objectives

Survey objectives	Survey questions (as numbered on questionnaire)
Confirm existence of a quality assurance systems and their accreditors	1. Is the LIS program evaluated by a body outside the school?
Identify ways to review performance	2. How often does a formal evaluation of the LIS program take place? 4. Is a self-evaluation report delivered to the evaluating body? 5. Do site visits take place? 6. What standards and guidelines are used for the LIS program evaluation? 7. Is a follow-up evaluation report made publicly available, not limited to school/university
Identify ways to look at performance indicators and outcomes	3. What aspects of the LIS program are evaluated?

The replies have been analyzed considering the objectives of the survey. The analysis has considered:

- the assessor or accreditor of the program,
- the way to measure performance,
- performance indicators and outcomes.

B. Assessor or Accreditor of the Program

Most of the countries surveyed have a national and university quality assurance system, only 10% have no evaluation or accreditation of quality (see Table 4). The quality assurance process is at present driven by government or government-funded agencies (64%), and for 36% of the respondents, the process is combined with an internal quality audit. The other model present in library schools (14% of respondents) sees professional associations leading the quality assurance process.

Table 3
Questionnaires Returned by Region

Area	Number of questionnaires sent by region	Number of sampled countries by region	Number of questionnaires returned	Percentage of total returns by region	Number (%) of sampled countries responding by region
Africa	15 (9%)	12 (7%)	2 (13%)	4%	2 (4%)
Asia and Oceania	21 (13%)	15 (8%)	7 (33%)	14%	6 (13%)
Europe	33 (21%)	33 (18%)	27 (82%)	54%	27 (60%)
Latin America and Caribbean	33 (21%)	19 (11%)	9 (27%)	18%	7 (15%)
North America and Canada	58* (36%)	100 (56%)	5 (9%)	10%	3 (7%)
Total	160 (100%)	179 (100%)	50 (31%)	100%	45 (100%)

*A modified version of the questionnaire was sent to the United States and Canada, asking for accreditation other than ALA COA.

Table 4
Accreditors by Type

Assessor or accreditor of the program	Replies	%
No accreditors	5	10
Government or a body funded by the government	32	64
University quality audit	18	36
Professional association	7	14
Other stakeholders (like external assessors, employers, alumni, etc.)	10	20

N = 50, respondents could select more than one choice and thus percentages do not total 100%.

Table 5
Accreditors by Type and Region

Area	No accreditors	Government agency	University quality audit	Professional association	Other stakeholders
Africa	1	1	1		
Asia and Oceania	0	6	3	2	1
Europe	3	20	10	2	6
Latin America and Caribbean	1	5	2	1	1
North America and Canada			2	2	2

Some (20%) of the responding library schools have other external assessors, including representative employers of alumni, an international panel of assessors, and past students and alumni associations. The Subject Review Audit done in the UK for subject benchmarking is a particularly relevant example of an alternate method of external assessment.

The differences in ways of assessing quality assurance by regional area are noteworthy (see Table 5). Africa is the region where quality assurance seems least attended, with 50% of respondents noting that their school has a quality assurance system; note, however, that only two countries have replied to the survey in this region. Respondents in both North America (100%) and Europe (89%) indicate having a generally applied internal and external quality assurance system, composed of a multiple stakeholders approach. In North America and Canada, the Professional Association Model is most frequently identified as used by respondents, while in Europe, the

Government Agency Model is most popular among respondents. Respondents from Asia (100%) also indicate that an organization for quality assurance exists in their institutions, citing the Government Agency Model most frequently, and the Internal Quality Audit Model second most often. Asian professional associations are beginning to evaluate library schools. Latin American library schools (according to 86% of respondents in this region) have a quality assurance system, with the government leading the evaluation, and professional associations less frequently involved.

C. Ways to Review Performance

The most frequently used quality assurance procedure consists of four steps (see Table 6):

1. periodical-evaluation process,
2. self-assessment,
3. site visit,
4. follow-up report.

The quality assurance process takes place every 2 to 5 years (according to 66% of respondents). More than half of the respondents (58%) note that self-assessments and site visits are combined together by institutions conducting quality assurance evaluations. The follow-up report is not often produced and with limited publicity (according to only 38% respondents).

Table 6
Quality Assurance Procedure

Ways to review performance	Replies	%
Periodicity		
• Annually	5	10
• 2 to 5 years	33	66
• Over 5 years	1	2
• Other	4	8
Self-assessment	30	60
Site visit	29	58
Follow-up report		
• Publicly available	19	38
• Not publicly available	6	12

N = 50, respondents could select more than one choice and thus percentages do not total 100%.

Most of the respondents said that guidelines are followed. Typically the guidelines are part of an accreditation handbook or policy manual that contains a description of the accrediting process, the eligibility requirements, relevant policies that institutions must address in their self-study reports and other documentation developed to assist institutions that are preparing for self-study and conducting evaluation and assessment exercises. The quality policy generally elucidates standards and relates to their application.

The quality assurance process in four steps is used, with slight variations, in all the regional areas and seems to be recognized as a best practice to be followed (see [Table 7](#)). Differences between regional areas remain for the follow-up of the quality assurance evaluation, as the reports are not always published and if they are, they rarely are distributed to the public.

D. Performance Indicators

Quality assessment criteria and indicators could promote ongoing dialog about quality. [Table 8](#) groups and lists in decreasing order the aspects of quality assurance that the respondents have indicated to be most important. The most frequently cited indicators by country are both resources (in terms of funding, staff numbers, and information technology and library facilities), and content design (respectively 64% and 76% of responding countries). This is consistent with the fact that input measures are more diffused among respondents than other indicators.

Quantitative and demographical data on students are also considered quality indicators by 52% of responding countries. Other indicators, which were cited in the replies received, refer to the following:

- Academic and service staff quality (e.g. professional experience, academic background, contribution to the professional development).
- Research productivity of faculty.
- Value-based education.
- Cultural meetings and other continuing education efforts.
- International activities.
- Value of teaching materials.

A review of the importance attached to these indicators, by region, show some stark differences (see [Table 9](#)). For instance, the curriculum design and content are considered the most important indicators by 100% of all countries responding; only Europe and Latin America rank resource indicator at about 80%.

Table 7
Quality Assurance Procedure by Region

Region	Periodicity				Self-assessment	Site visit	Follow-up Report	
	One	Two to five	Over five	Other			Public	Not public
Africa		1			1	1		
Asia and Oceania	1	5	1		6	6	3	1
Europe	4	19		4	16	15	12	2
Latin America and Caribbean		6			5	5	2	2
North America and Canada		2			2	2	2	1

Table 8
Performance Indicators

Ways of looking at performance	Replies	%
Resources in terms of funding, staff numbers and IT/library facilities	32	64
Number of students, drop-out rates, recruitment	26	52
Other	12	24

N = 50, respondents could select more than one choice and thus percentages do not total 100%.

Table 9
Performance Indicators by Region

Region	Resources in terms of funding, staff numbers and IT/library facilities	Number of students, drop-out rates, recruitment	The design and content of the program	Other
Africa	1	1	1	
Asia and Oceania	6	6	6	2
Europe	19	14	24	6
Latin America and Caribbean	4	3	5	2
North America and Canada	2	2	2	2

E. Ways to Look at Outcomes

The outcomes focus is less frequently cited than input measures (see [Table 10](#)). Students are involved in quality assurance according to only 66% of responding countries. However, learning outcomes are used according to only 59% of responding countries, at different levels of intensity.

A regional review of the importance attached to these factors show more similarities than differences (see [Table 11](#)). The learning outcomes approach is cited by respondents in Asia, Africa and North America (100%), while student evaluation is less popular. In Europe and Latin America, respondents report that student evaluation is favored, while learning outcomes assessment is less used. It should be noted that the Bologna process intends to focus on this latter approach in the future, when the situation in Europe can change. In Latin America, outcomes-based approach is very weak, as evidenced by responses citing learning outcomes (40%) and students' satisfaction (40%) as

Table 10
Outcomes

Ways of looking at outcomes	Replies	%
Student evaluation of the learning experience	29	58
Assessment of student learning outcomes through exams and/or employers evaluations	26	52
Other	9	18

N = 50, respondents could select more than one choice and thus percentages do not total 100%.

Table 11
Outcomes by Region

Region	Assessment of student learning outcomes	Student evaluation of the learning experience	Others
Africa	1	1	
Asia and Oceania	6	4	2
Europe	15	20	4
Latin America and Caribbean	2	2	1
North America and Canada	2	2	2

less used. In North America the outcomes-based approach is very popular and diffused according to responses to the survey questionnaire.

- Other indicators which were cited in the replies are related to:
- Staff teaching evaluation for promotion.
- Average number of students working after graduation.
- Curriculum content relevance to labor market.
- Research done by students.

F. Discussion of Survey Objectives and Findings

Six survey objectives are discussed here in regards to the findings from replies received.

1. To record specifics on existing quality assurance systems in LIS schools worldwide

Most of the LIS schools participating in the survey have a quality assurance system, but 10% of respondents have no evaluation or accreditation of quality.

2. To consider the different stakeholders role in quality assurance

Quality assurance has been considered of strategic importance for LIS schools in at least two contexts: (1) the professional association accreditation of the program and (2) the government agency accreditation of the program. There is a third quality assurance approach, guided by university and quality audits and with a focus on educational standards, but this is less used in LIS schools (according to only 36% of respondents).

3. To look at quality assurance models and procedures

The survey has shown that the following four steps are followed as part of the procedures for quality assessment, according to 66% of respondents: (1) external evaluation always begins with self-evaluation, (2) site visit (evaluation by impartial experts, usually from the field of study concerned) using LIS or general guidelines, (3) public reports are done and (4) follow-up reports are also prepared after the initial assessment.

4. To consider the quality assurance standards, guidelines and quality indicators

Regarding what quality assurance covers, it can be said that quality assurance in LIS is more frequently focused on resources and curriculum design than on outcomes and student evaluation.

The main result of the survey has been the development of a quality model, which is based on a taxonomy covering quality criteria/processes/definitions to describe, specify and understand critical properties, characteristics and metrics of quality in LIS education. Three models of quality assurance have emerged from various LIS guidelines and standards: (1) learning outcomes, (2) educational process and (3) program administration. Analyzing the survey results, the author suggests that there are different quality indicators, relating to the different phases of the educational cycle. In each phase of the course lifecycle there are more than one stakeholder, with different values and concerns. For this reason, the LIS schools' quality assurance processes should necessarily reflect a multiplicity of points of view, as well as the stakeholders' purposes and responsibilities.

Responding to the survey research questions, one can say the following.

5. How to improve the quality assurance process in LIS schools?

The Learning Outcomes Model could be helpful for improving quality in LIS schools. Graduate outcomes are a critical indicator of how effectively universities are defining and instilling the skills and attributes expected of their graduates, with success in the labor market being the most obvious indicator of successful outcomes. Research training, the provision of lifelong learning opportunities, and skills upgrading, play significant roles in the interface of the higher education sector with the economic, social and cultural needs of the Knowledge Society. Therefore another key indicator is the active participation of graduates in the quality assurance process.

The difficulty is to find if there is an impact of the Learning Outcomes Model on monitoring the quality of student learning. Harvey (1995) proposes this model for the transformation of quality evaluation, now most frequently informed by accountability and control, and thereby making little contribution to any effective transformation of the student's learning experience. As expected, in a diverse higher education system where different stakeholders have distinctive purposes and goals and collaborate in quality assurance, universities vary in their approach to defining, starting in the phase of curriculum design, the learning outcomes they expect of their graduates. Learning outcomes modelling should take into account the multiple backgrounds of learners, the variety of context in which learning is situated and the necessity to guide, manage and communicate the quality process.

This survey's results suggest that quality assurance assessment has very little effect on the impact LIS school programs have on student learning. However, further discussion about the question of the difference it might have in the future is particularly important for two reasons. First, it stimulates further research and perhaps the need for a more research-informed approach to quality evaluation.

Second, it is worth questioning why improvement in student learning outcomes has been a secondary feature of most external review systems.

6. How to preserve diversity within an international framework of quality assurance?

Putting together quality assurance and international recognition of qualifications, the Learning Outcomes Model seems to be the preferred approach to address diversity of programs, while developing internationally coordinated quality assurance in LIS programs. Several key issues continue, however, to challenge resolution of this seeming dilemma. One is the extent to which an accreditor specifies

the particular learning outcomes or allows complete institutional discretion. Second, a quality assurance focus highlights the extent to which an accreditor (for example, a professional association) is concerned about either individual student competencies or overall program effectiveness. And third, attention to the quality assurance process questions the extent to which an accreditor examines direct evidence of student achievement or the adequacy of the programs and processes used to assure particular levels of student attainment.

Internationalization pushes for common mutual trust zones in LIS schools. These zones of mutual trust in many cases lack the stability provided by strong institutional and legal frameworks which makes them vulnerable and requires some agency support. The question remains in meeting the demand for international and national accreditation and recognition, whether the professional associations should have the role of safeguarding the professionals, or whether some other agency should. In other words, stimulating collaboration and sharing of best experiences among the grass root levels of LIS schools together with the professional associations could create a much needed peer review networking team. Such a common effort could be desirable as well for subject benchmarking.

G. Further Study

A number of questions remain for further study. Can coherence between a domestic/national system and an international policy framework actually strengthen national quality schemes, instead of weakening them? Do we want competition or collaboration among LIS schools? Do we consider accredited LIS programs competitive with other LIS programs in a country? Do we think quality assurance could be helpful to improve LIS programs?

There may be an alternative approach to considering the evaluation of LIS programs, different from the focus on the schools and their curriculum that has been reviewed in this chapter (Pors, 2001). Should quality assurance of LIS education be linked to recognition of professionals having successfully completed the courses that LIS schools provide? There is a synergy between recognition for professional purposes and recognition for academic purposes in the work done by some library and information associations and also by IFLA (Dalton *et al.*, 2000), illustrated by the following connections. The development of high-quality information sources improve knowledge of the different educational systems within the LIS sector. The establishment of academic and professional networks inside IFLA serves as a mechanism for the exchange of information between academics and professionals in order to

obtain a more thorough knowledge of the issues surrounding the various forms of recognition. The comparison of course quality assessment systems, present or future, by members of the professional and higher education worlds may offer insights for innovation and improvement of the educational system. The IFLA ETS should seek, via these paths, both to strengthen the initiatives it has already undertaken in the area of improving international LIS programs, and to establish new ones coming under its purview.

VI. Conclusions

Given the importance and changing nature of quality assurance in higher education during a period of continuous change, it is important to systematically monitor its development. The opportunity of a Learning Outcome Model has been stressed, as it would mean a decisive innovation in the current practice of quality assurance. First, the Learning Outcomes Model goes against the fragmentation of initiatives and division between professional associations and LIS teachers. The benefits of cooperation regarding the recognition of qualifications includes the ease of access to a standard qualifications framework, cost-effectiveness of quality assurance methodologies, recognition of competencies, and facilitation of employment and career advancement of information professionals. Second, a learning outcomes approach is, by definition, an approach with a lifecycle perspective. This means that, in addition to immediately employable competencies, attention should also be devoted to the continuous development of learning and career competencies. The recognition of competencies is therefore a possible component or instrument of career guidance and development. Third, the Learning Outcomes Model is not limited to the final phase of the course but should start with the design of the curriculum, based on achievement indicators, and including pedagogy and delivery methods.

Internationalization pushes not only for harmonization of curricula but also for quality assurance and recognition of qualifications. Today in Europe there is the chance to work within the internationalization framework of the Bologna process. In this context, the current trend is to consider quality assurance in education and training holistically, taking together recognition of qualifications and quality assurance which are necessary for facilitating lifelong learning. The driving force of the European Union policy is the mobility of students and workers, but the efforts are towards increased quality, transparency and visibility of competencies at sectoral, national and then international levels. We need a broad definition for CPD in LIS and a development plan to identify LIS personal careers, using a portfolio.

The challenges of internationalization and a rapid change in economies and occupations have given rise to the development of sectoral qualifications, both in business and the public sector. This has led to the development of international training modules, assessment standards, assessment methods, curricula and qualifications, and/or competencies. Knowing what others are doing and learning from these experiences has a tremendous potential. Subject benchmarking seems to be an important tool for learning outcomes, and curriculum design and evaluation. It could help both LIS faculty in curriculum design and quality agencies in curriculum evaluation.

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