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# Twilight of the Gods? Bibliographers in the Electronic Age

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## ABSTRACT

SPECULATION ABOUT LIBRARIES' FUTURES IS OFTEN SIMPLISTIC, relying on caricature rather than careful analysis. This article looks at bibliographers and collection development in terms of seven sometimes overlapping contexts in order to gauge how and why their roles have changed in the past and to speculate about what we might expect in the future. The dimensions examined here include the system of scholarly communication, the information marketplace, the library and university as organizations, technological change, cooperative programs, the nature and availability of resources, and communities of peers. Shifts within these contexts and the ensuing interplay with basic library functions and with the skills that subject specialists bring to the library table suggest that bibliographers will continue to play a crucial role.

## INTRODUCTION

Life is complicated and change never stops. Simplistic explanations can make it all seem more manageable. School shootings are thus attributed to lax gun control laws or violence-laden media, to campus cultures of exclusion and derision, to broken homes and fractured family values. Nuanced understandings are further impeded as the champions of one or another cause seize upon dramatic events as "evidence" for their absolute interpretations and rigid policy prescriptions.

The future of bibliographers seems hopelessly pallid next to the life and death matters of the nightly news. But too many discussions of the bibliographer's emerging role elicit the same kind of simplistic analysis.

Our ability to anticipate and to act creatively is in consequence reduced. Rather than asserting that electronic information will (or won't) do away with bibliographers, or demonstrating how countervailing forces will shift the balance, this article approaches bibliographers as actors within a web of interdependent agents, institutions, processes, and agendas. This rich complex matrix both shapes the possibilities and establishes their limits.

Bibliographers and collection development are here examined in terms of seven sometimes overlapping contexts or dimensions: (1) the system of scholarly communication; (2) the information marketplace; (3) the library and university as organizations; (4) technological change; (5) cooperative programs; (6) the nature and availability of resources; and (7) communities of peers. Each context is first discussed as a historically informed abstraction. A follow-up review then focuses on the dynamics affecting each one, enabling tentative conclusions that match the attributes of bibliographers with the broader trends now apparent. We begin, however, by considering library collections and bibliographers in their "golden age" from the 1950s through the 1970s. How and why was this such an auspicious time?

### WHEN BIBLIOGRAPHERS RULED THE ROOST

Bibliographers have, for the past fifty years or so, played central roles in research libraries. The period between approximately 1950 and the late 1970s, in particular, was one in which bibliographers and collections were in the ascendant. This situation in the first instance reflected the postwar growth and transformation of American higher education. Public opinion tied advanced schooling to economic and social progress for both individuals and the country as a whole. Practical follow-ups like the G.I. Bill stimulated larger enrollments in the near term and the baby boom then ensured continuing demand for at least two decades to come. New campuses were created and old ones enlarged, and the professorate expanded apace. The system included different kinds of institutions, with research universities at the top of the heap.

The boom in higher education translated fairly directly into new and larger libraries. Libraries were further stimulated by dynamics internal to academe. More scholars both produced and consumed research while broadening scholarly agendas drew upon ever wider ranges of materials. There was a harder edge as well. Cold War fears of a world to be lost led to area studies and scientific programs founded in strategic concerns. For libraries, the preoccupation provoked a newfound emphasis on difficult to acquire materials from unexpected corners of the globe.

As collection development reached its zenith, the number of specialist bibliographers likewise peaked. Some libraries with very broad collecting programs constructed their acquisitions around publishing areas. Their collections specialists were thus expected to identify and acquire all ap-

propriate materials within a specific book market. Another model started instead from subjects and disciplines. Specialist librarians were responsible for all materials concerned with some topic, regardless of language or place of origin. Many libraries combined approaches through market-based collection development departments for mainstream materials in the social sciences and humanities, and subject-oriented units for areas like music, fine arts, or chemistry. In almost all cases, holdings in non-Roman scripts were handled separately as well.<sup>1</sup>

During their extended apogee, bibliographers were arguably second only to library directors in the range and impact of their responsibilities. Collection development specialists, many with advanced subject degrees, worked closely with faculty to establish collecting programs and priorities. Their selection decisions then drove each library's processing routines. With both collections cooperation and interlibrary loan at fairly rudimentary levels, public service relied on local holdings. The centrality of the bibliographers who assembled these materials was again affirmed.

This temporary primacy of bibliographers reflected a particular confluence of circumstances that included university expansion, academic diversification, print-based scholarship, collection-centered libraries, and limited alternatives to local holdings. Library collections of course had far longer histories, during most of which "bibliographers" had not even existed. Collections specialists emerged as a result of changing concepts of the academic library and its operating arrangements. Their relative decline since the 1970s reflects the same kind of process. All these shifts reflect dynamics within a series of underlying frameworks.

## CONTEXTS OF COLLECTING

Bibliographers are embedded in a number of contexts that, independently and also through their interactions, shape their jobs and how they are carried out. Seven such contexts, some overlapping with one another, seem especially important.

### *The System of Scholarly Communication*

Bibliographers, library collections, and academic libraries are creatures of the system of scholarly communication. More than anything else, this system defines what libraries need to accomplish and how they can proceed. Research is carried out by individuals and groups who create, disseminate, and use recorded knowledge. But different research projects involve very different questions, information resources, and means of producing and sharing results. The requirements and solutions have varied over time, between subjects, and across space. The system of scholarly communication encompasses the entire process.

Publications enable academics to share their research results; establish precedence for their ideas, processes, or products; and synthesize

current knowledge. Thoroughly documented monographs comprise the pinnacle of academic achievement. Less ponderous alternatives, especially articles in scholarly journals, complement these canonical tomes. Libraries participate in the system by assembling comprehensive collections of the scholarly record. They also acquire the far more numerous "non-scholarly" books and journals that serve as sources for research. They collect other kinds of recorded information as well, including—to name just a few—microfilms, sound recordings, photographs, music scores, field notes, and electronic products.

Scholarly communication, while relying on its formal record and a broad array of research resources, also includes less structured channels and connections. Workshops, conferences, and seminars are very much part of the process but only sometimes generate publications of their own. The "invisible colleges" formed by networks of specialist practitioners are critical as well.

Scholarly disciplines provide the framework for most academic research. They vary, sometimes substantially, in terms of issues, methodologies, sources, and means to publicize results. Some fields in the humanities, for instance, have traditionally explored and re-explored the same core literature. Studies in the classics were long based on a finite array of Greek and Roman texts plus centuries of overlaying analysis and commentary. Biblical scholarship and theology followed much the same pattern. Research priorities were clear, the sources few, and the urgency of publication relatively low. Monographs, a few journals, society conferences and publications, and personal connections were sufficient to the need.

In many areas of the sciences and technology, by contrast, research dovetails with commercial and military applications. Scholarship moves quickly, relies heavily on experiments that build upon previous research, and is dispersed well beyond academe. More agile means of communication are essential. Journals and pre-prints, ever more in electronic formats (and, again, plus personal contacts) have filled the bill.

Scholarship is, by definition, dynamic, forever questing for new discoveries and wrestling with new concerns. Today's research questions increasingly cut across fields, blurring once clear divisions and at times destabilizing established methodologies and explanatory paradigms. The "culture wars" debate, with its associated frameworks of postmodernism, deconstruction, and de-centered views of the world, is but one highly visible case in point. Changing approaches to research, whatever their nature, can also generate new products and different demands for sources. Even in fairly stable fields like the classics or Biblical studies, archeological evidence now complements canonical texts, while new questions challenge longstanding conclusions.

Innovations in information technologies also affect both research questions and the dissemination of results. Not too long ago, a scholar

could build a respectable career by creating manual concordances to texts. The job is now easily accomplished by machine, rendering the previous process (and professors) obsolete. Different kinds of research products are possible as well, as exemplified by the "Perseus Project's" hypermedia synthesis of the classics (<http://www.perseus.tufts.edu/>).

Scholarship and scholarly communication not only vary among fields but within some specialties can vary across different parts of the world. Regions, countries, and individual institutions may all champion their own questions, methodologies, or interpretations. In economics, for instance, Latin America's "dependency theorists" stand in intriguingly awkward juxtaposition to the neoliberal "Chicago Boys," whose doctrines have been espoused by many of the region's contemporary regimes.

Access to resources also makes a difference. Researchers in developed countries by and large enjoy full-time appointments in universities, corporations, or institutes, and have relatively easy access to the infrastructure of scholarly communication. But academics in other parts of the world are more likely to work part-time in threadbare institutions that lack good laboratories or libraries. These scholars may also find themselves beyond the effective range of their field's principal publications and presses.<sup>2</sup> Their essays, discussion papers, and articles often end up in short-run local journals whose very appearance exudes marginality.

Academic libraries contribute to the system of scholarly communication as they collect research sources and results. The task of identifying appropriate materials was long entrusted to faculty members, usually working in concert with librarians. But new areas of research, ever more inclusive views of the scholarly resources relevant to specific fields, and a growing array of sources in an increasing number of formats led to a different division of responsibility. Bibliographers were thus appointed to interpret and anticipate the flow of scholarly communication, working with and standing in for faculty members and committees. New formats for scholarly information, changing structures of inquiry, and shifting modes of scholarly communication mandate continuing adjustments.

### *The Information Marketplace*

Scholarly communication is characterized by ongoing specialization, diversification, and change. The information marketplace reflects these shifts and adds non-academic elements as well. Production economics, profit margins, legal structures, and distribution systems all come into play.

Scholars conduct research in which they consume the scholarly record and consult ever wider ranges of source materials, and then publish their own results. The number of professors and doctorates is on the rise, and their academic rewards continue to revolve around print publications. The record of scholarship therefore just grows and grows. Publishers, for their part, add value to scholarly manuscripts through screening and editing.

They also print and disseminate masses of other materials, many of which might once have been dismissed as irrelevant to scholarship but are now considered legitimate fodder for research. Libraries, finally, have to sort through both the scholarly record and nonscholarly materials from every corner of the globe. The quantity of potential acquisitions is staggering. Staff specialists balance availability, cost, quality, and demand in order to select and acquire materials that are then organized into collections. The marketplace for scholarly information, thus, is built around scholars, publishers, and libraries.

Intermediary organizations and tools also come into play. For instance, the first step in managing the information marketplace is to discover the resources relevant to some topic or field. National and topical bibliographies, evaluations of sources and scholarship, and specialist booksellers have all carved out their niches. Some of these elements have a very long history. Otto Harrassowitz was an active bookseller as of the mid-nineteenth century, and the first edition of the forerunner to what is still a basic bibliography in the classics had appeared about fifty years before.<sup>3</sup>

The book trade has itself changed substantially over the years. Improved communications, pared back regulations, streamlined operating procedures, and the consolidation of English as a commercial lingua franca have simplified acquisition mechanics. Libraries have helped promote some of these shifts, for instance by nurturing competent booksellers in some developing countries. Local book dealers now provide solid coverage for current publications in many world areas. Approval plans and blanket orders also enable libraries to outsource some of their selection burden and then to shift their internal activities toward quality control and troubleshooting. Some book trades, however, are still complicated enough to require full-time bibliographers. Large-scale collecting programs often require specialists as well.<sup>4</sup>

Publishing and distribution systems have become increasingly commercialized. The results are mixed. On the one hand, the marketplace for print publications is ever more efficient in providing potential buyers with the information they need. But it is also vastly more expensive. Relentless price increases for scientific and technical journals, in particular, have skewed library acquisitions toward high-cost serials. While today's "crisis in scholarly communication" has many roots, publisher profiteering certainly carries part of the blame.

Strains within the print arena overlap with the impact of electronic products, whose marketplace is still immature. Bibliographers emerged when the procedures for handling print were already clear: libraries knew how to organize and then service their incoming books and journals. Choosing maps, sound recordings, or film was often more complicated, in part because the processing routines and service arrangements were less certain. Today's diffuse decision-making for digital products may again re-

flect the challenges of media whose service platforms, technical requirements, and marketplace alternatives are not yet settled. Copyright provisions, especially interpretations of "fair use," are also becoming increasingly contentious as the commodity value of information comes into sharper relief. Licensing provisions, which are common for electronic resources, raise their own host of questions. Chaos in the electronic marketplace is reflected in libraries' diffuse arrangements for selection. Over time, a more orderly universe seems likely to prevail.

### *The Library and University as Organizations*

Systems of scholarly communication and the materials available in the information marketplace largely define the universe from which academic libraries create their collections and craft their services. These collections and the bibliographers who select them, however, are also sited within universities and libraries, each with their own histories, agendas, and demands. Research libraries based in other kinds of institutions are likewise subject to external policies and conditions, all of which evolve over time.

Universities typically regard their research libraries as central to education and research, and budget collections and services accordingly. External funding has also been important. The Cold War boom in area studies and foreign library collections, for instance, was largely based on government and foundation support. Other dimensions of universities and the broader environment, such as expanding administrative bureaucracies and ever more exacting reporting requirements, have had widespread impacts as well.

All libraries also have structures, priorities, and procedures of their own. These are likewise in flux. The focus of internal change has varied over time, responding especially to new technological possibilities on the one hand and to organizational diversification on the other.

Library processing operations had become stable by early in the twentieth century. The ALA cataloging rules and the Library of Congress's program to distribute printed catalog cards had by then ensured standardized bibliographic description. The Dewey Decimal and Library of Congress classification systems were also becoming the norm. More active challenges for libraries instead centered on managing increasingly complex organizations and mastering an ever more complicated information marketplace. The way was clear for collections specialists to become the key figures described in the first section.

By the mid-1970s, however, digital technologies permitted new approaches to processing. The profession was quick to respond. The MARC format, integrated library systems, and online bibliographic utilities transformed cataloging from a local manual operation into an automated process based on streamlined procedures and immense shared databases.

Institutional energy, administrative attention, and new resources were thus directed toward bibliographic technology. Bibliographers and collections, by now predictable elements in a realm that seemed well under control, were pretty much peripheral.

Computers transformed information resources as well as processing routines. While most indexes, bibliographies, and abstracting sources were, in the early 1970s, still distributed as print publications, many were being created from automated files. Electronic communications soon caught up, and the products also became available online. Many of these broad-based resources cut across several disciplines. The print versions had typically been serviced by reference units; their early dial-up counterparts, which were costly and often hard to use, usually stayed in the same place. Public service units and staff thus moved into the vanguard of digital information with collections specialists again on the fringe.

Automated bibliographic technologies and online information focused libraries' energy on processing units and public services. Preservation followed as a third area of growth. Preservation microfilming operations, in part supported by the National Endowment for the Humanities' "Brittle Books Program," were created, consolidated, or enlarged. Units responsible for photocopying, binding, and book repair were often folded into the new departments as well. The libraries that had previously been most successful in building print collections now found themselves devoting special resources to preservation. Bibliographers gradually became more involved in selection for microfilming and in other collection management decisions, but the initial impulse highlighted other parts of the organization.

While collection specialists were fairly peripheral to these areas of library growth, dynamics more closely aligned to collection development also contributed to its fading centrality. Stagnating purchasing power had limited library acquisitions by at least the early 1980s. Simplified procedures for selection and acquisition, such as carefully tailored approval plans, were also coming into place. One consequence was increasing pressure to deploy bibliographers for general as well as specialized reference. Small dollops of selection responsibility were often meted out to other members of the staff in order to enhance job variety, tap "hidden" skills, and more efficiently manage a function that no longer seemed always to require full-time specialists. Collection development became more diffuse while bibliographers' responsibilities related less and less to their specialized areas of expertise.

Broader organizational shifts were also underway. Traditional library structures typically distinguished only between public services, technical services, and (by the 1970s or so) collection development. Automated processing, preservation, and electronic media stretched this simple model. Rapid change also encouraged experiments with new organizational theo-

ries. Strategic planning became ubiquitous, with administrative tinkering almost as common. Advocates of “holistic librarianship” asserted that specialization encouraged staff allegiances to turfs rather than service while also compartmentalizing processes that were really organic in nature. Proponents of “total quality management” promised at once to empower line staff and to revitalize organizations as they flattened hierarchies and tapped workforce insights. Some administrators took the dramatic (or desperate) step of declaring all middle management positions vacant and inviting a free-for-all for replacements. Whether due to structural deficiencies, administrators’ desires to leave a mark, or the frustrations attached to institutions that seemed incapable of rising to repeated external shocks, organizational innovation took on a life of its own. In this case, bibliographers were at one with their colleagues in becoming objects of change.

### *Technological Change*

Formats for scholarly information continue to evolve. The means to codify, describe, communicate, and utilize scholarly resources are shifting as well. Technological changes continue to reverberate through the system of scholarly communication, the information marketplace, and the associated institutions. Digital technologies in particular are revolutionizing how information is created and conveyed even as it becomes ever more clear that books will be around for a long time to come.

Users and their needs shape the ways in which new technologies are adapted in a process whose results may be neither uniform nor preordained. For example, bibliographic automation in the United States (and, by now, many other countries) is based on the MARC format, which establishes the basic record structure to which all viable automated systems must conform. MARC in turn enables the union catalogs and shared bibliographic databases that allow effective resource sharing and cooperative activity. In some other regions, however, the sequence has been different. “Micro-ISIS,” which is especially popular in the developing world, is database management software suitable for bibliographic information whose development and (free) distribution has been sponsored by Unesco. But Micro-ISIS mandates no standard format for its records. The resulting multitude of local approaches means that libraries are now often unable to create effective online union catalogs or to share bibliographic records. The efficiencies of automated processing and the benefits of cooperation have both been compromised because the software—and its recipients—did not anticipate these needs. Bibliographic automation has in these two cases relied on essentially the same digital technology. Different institutional contexts, sequences of adaptation, and perspectives on the process have brought very different results.

New technologies are driving many of the most visible shifts in the contexts most relevant to libraries, collections, and bibliographers. The

outcomes, however, are not automatic. Technology can create new opportunities, but the specific results depend on the imagination and rigor with which the capabilities are converted into practice.

### *Cooperative Programs*

Academic libraries have traditionally looked first to local holdings in supporting their constituents' research and teaching. Changing circumstances are now encouraging broader perspectives, which may eventually transform both the functions of bibliographers and the nature of collections.

Research libraries in the United States had access to the tools permitting cooperation—i.e., standardized cataloging, the National Union Catalog, organizations through which agreements among libraries could be devised—by early in the century. Some of the first cooperative programs, which provided for straightforward divisions of collecting responsibility among libraries in close proximity, were based on successful collections growth.<sup>5</sup> Self-sufficiency, in these cases operationalized as easy access to the largest possible amount of materials, remained the ideal.

The Depression and World War II brought tight times, marketplace disruption, and new motives for collections cooperation. The Farmington Plan, probably the most telling response, established a cooperative mechanism through which North American libraries sought to acquire materials from war-torn countries (and eventually others as well) when normal commerce came to a halt. Autonomy remained the collections ideal, however, as became clear when the plan later on weakened and finally collapsed.

More enduring cooperative initiatives may now be on the horizon, buttressed by two broad shifts. First, online bibliographic databases have made it easy to locate specific items not held locally. Improved, though still pedestrian, procedures to generate and fulfill interlibrary loan requests are also in place. Resource sharing is thus more feasible than ever before. The second shift is less agreeable. Collection development's golden-age luster had generally faded by the mid-1980s as financial constraints, an avalanche of new publications, growing demand, and aggressive publisher pricing together sent materials budgets out of control. Purchases of current monographs were stabilized or cut with retrospective acquisitions eliminated almost entirely. Many libraries froze new journal subscriptions or allowed additions only as old titles were dropped. Repeated large-scale serial cancellation projects were a matter of course. Poverty, not plenty, came to frame collection development.

Ongoing cooperative experiments have offered a more hopeful response. For example, the Research Libraries Group's *Conspectus* was a new (as of the 1980s), rough-grained classification of knowledge through which libraries could categorize the strength of their holdings and signal their collecting intentions in order to then define cooperative policy and

practice. This approach never really took off, though some smaller consortia have had better luck with specialized acquisitions assignments. "Distributed collections" are also being created within some segments of the Association of Research Libraries' "Global Resources Program."<sup>6</sup> In a separate sphere, many buyers' consortia are attempting to negotiate favorable terms for joint access to electronic resources.

Cooperative efforts assume that individual libraries alone cannot satisfy all local demand, that it would be a poor allocation of resources for them to attempt this even if they could, and that clear-cut arrangements to share resources make sense from both economic and service perspectives. These assumptions, and the programs that result, imply changing functions both for bibliographers and for collections as their constituencies and collecting frameworks expand beyond the local setting.

*Resources: What They are and How to Use Them*

Access to resources can liberate or constrain. Two separate but interrelated dimensions come into play. Collections specialists depend very directly on materials budgets, acquisitions staffs, and bibliographic and marketplace information. These resources are as obvious as they are essential, and a great deal of energy goes into making them bigger and better. But the range extends much further. The working capital of collection development also includes such perhaps less apparent elements as booksellers, faculty contacts, and networks of peers. Existing collections are different though similarly important resources whose potential can be taken, for example, through proposals to strengthen or otherwise enhance them with external support. Other resources might be identified or created as well. Using resources to their fullest includes extracting the greatest possible return from those that are already familiar and also imagining the ones that have not yet been perceived.

Research libraries are showing the way as they provide and then draw upon staff training, connections, and skills. For bibliographers, this process has often fostered "new" job expectations that range from designing and implementing cooperative programs to preparing grant applications, from fund-raising to offering courses in research resources and methodologies, from drafting printed collection guides to creating Web sites. Applied throughout the university, the same dynamic of ferreting out and developing all potential resources can pinpoint additional collections, individuals, and academic connections in support of the scholarly process.

The concept of "resource" is being stretched in another way through the World Wide Web, which makes it easy for students and scholars to seek out their own information and contacts. While available to the library, the Web is beyond its control. It is also both inchoate and incomplete. Managing the Web raises a host of questions about how to structure

education and information and about optimum deployments of libraries and information professionals. It is not yet clear whether the Web's role in scholarly communication can be channeled or tamed. Moreover, and hype notwithstanding, the Web still is a supplement to, rather than a replacement for, more traditional media.

Bibliographers maximize, identify, create, and deploy many kinds of resources as they go about their work. The terms by which resources are allocated and the process through which "new" ones may be claimed are crucial.

### *Communities of Peers*

Communities of peers comprise one particular kind of resource. For bibliographers whose subject or linguistic expertise within a library may be unique, specialization can go hand in hand with isolation.<sup>7</sup> Groupings of colleagues are important in reinforcing identities, providing information, defining agendas, and generating collective responses to new possibilities.

Many groups of specialist librarians have banded together to explore common interests and advance joint activities. The early years of some professional organizations were marked by a strong administrative presence, in part reflecting the urgent need for solutions to problems (for instance foreign acquisitions) that were common to many institutions. The same specialized needs that underlay some of these organizations, however, also resulted in the appointment of new staff members. With specialists in place, the managers could return to their other concerns.<sup>8</sup>

Professional groups offer a source of information, a ready-made set of peers, and an outlet for energy. They also provide a vehicle for collective responses to situations for which individuals might lack a voice, and for programmatic initiatives whose scope exceeds that of any single library. For instance, specialist bibliographers are getting older, their positions are not always retained when they retire, and there are fewer and fewer potential replacements in the wings. Individual librarians are limited in how they can respond. But professional associations can develop programs to prepare the specialists that will be needed in the future, highlight the potential contributions of collections specialists within specific institutions, and implement cooperative and other programs to strengthen the demand for specialist staff. Communities of peers enable endeavors that might otherwise remain difficult or impossible.

## LIBRARY DYNAMICS AND THE DIRECTIONS OF CHANGE

We have looked at seven broad, sometimes intersecting, contexts that shape much of the environment within which bibliographers do their jobs. These contexts have all changed over time, and the shifts will continue. This section focuses on the aspects within each context that now seem

particularly susceptible to change. A few of the many possible interactions are anticipated as well. Our sense of the possible may expand as we consider all the dimensions in which we operate. We may likewise avoid some of the hasty measures and oversimplified conclusions that might result from too limited an approach.

*The System of Scholarly Communication*

Scholarly agendas are ever more specialized and ever more diverse. Research is becoming more international, and global collaborations are on the rise. Despite widespread criticism, convincing alternatives to the current publications-based system of academic prestige and rewards have not yet arisen. The ease of Internet communications, on the other hand, may be subverting some of the power previously wielded by “invisible colleges” and similar gatekeeping cliques.

The Internet’s potential role in complementing—or replacing—the academic library’s functions of gathering and organizing recorded knowledge is still unclear. Unresolved tensions include those between the Internet as a commercial medium or an unfettered forum for expression, between organizing its content or foregoing all structure, and between using it to distribute information to a predetermined audience or exploiting its capacities for unlimited access. The Internet’s impact upon scholarly communication will depend on the eventual responses to these and many related concerns.

Changing patterns of scholarly communications present a paradox to libraries and their bibliographers. Libraries are expected to provide ever more of the expanding output of recorded information. These materials, however, account for a decreasing share of all the resources required for research. The process may have advanced furthest in the sciences, where the need for budget-breaking scholarly journals pales toward insignificance next to the cost of specialized laboratories and exotic equipment. Researchers in other fields similarly rely on unique archival holdings, art and archeological objects, raw digital data, site visits, interviews, and other resources either held outside of libraries or not susceptible to codification and control.

Whether one’s point of departure is the Internet alone or the widening panoply of “new” resources needed for research, it is clear that the system of scholarly communication is more and more cluttered and diverse. Libraries continue to have a role in collecting recorded information and can thus expect ongoing demands to acquire, organize, and provide access to locally held resources. They will also need to interpret and then point the way to materials based somewhere else. Moreover, libraries will function as nodes within increasingly diffuse networks of virtual information. Broad “resource maps” that delineate the full range of materials relevant to specific scholarly fields, regardless of format or location, will be essential.

Catalogers have created detailed guides to book collections. Bibliographers, with their special vantage points within the structure of scholarly communication, might do the same for entire fields of study.

### *The Information Marketplace*

Information useful to scholars pours forth in all imaginable formats and from all parts of the world. Distribution channels, however, remain wildly inconsistent. Within the print realm, for instance, some countries can boast comprehensive national bibliographies, an organized internal book trade, and specialized international booksellers. Others lack all three. Libraries whose materials budgets or staff resources are limited may lean toward "easy" acquisitions by focusing on materials that are readily identified and then simple to acquire. When many libraries take the same route, the overall result can be too many collections that resemble one another, and too many materials that are not available at all. Constrained institutions, separately confronting a complicated information marketplace, may thus produce collections that do not fully serve the common interest. Settling for the most obvious and easily obtained resources from some country or field can also reduce the perceived need for specialist bibliographers, further limiting their supply and ultimately reinforcing the focus on "simple" acquisitions. Cooperative programs built around specialized collecting might serve everyone's interests.

Electronic resources only complicate the picture. These products are now fraught with uncertainties having to do with operating platforms, service requirements, user support, file durability, copyright compliance, licensing terms, and so on. Selection decisions require input from numerous staff specialists and invoke considerations well beyond the traditional elements of content, cost, and demand. As electronic media and markets mature, and stronger technical and support services become the norm, this profusion of selection issues should diminish. Some electronic products are also becoming more subject-specific, following an initial emphasis on multi-disciplinary reference tools. Specialist bibliographers, in these cases, are likely to become more central to the digital decision process. Another marketing model, however, centers on inclusive packages of many electronic products—e.g., all of a publisher's e-journals. It is not yet clear whether focused selection within such agglomerations will become possible. Some doubt whether it is even desirable.<sup>9</sup>

Libraries are sponsoring and creating their own information products as well as acquiring those prepared somewhere else. Electronic resources are very much in vogue, but even the simplest scanning project requires specialist judgments to identify plausible pieces and categories. Digital initiatives that focus on visual and sound resources, whose content can be particularly difficult to discern from the written snippets of a catalog record, also depend on specialist evaluations. "Value-added" endeavors

ors that include special indexes or capabilities for user manipulation may challenge and therefore appeal to technical staffs. Here again, bibliographers need to be involved as well.

#### *Organizations and Institutions*

Research universities, the hosts for many academic libraries, are at once secure and under fire. Elite institutions can point to growing endowments and, in many cases, an almost absurd scramble for admissions. But the high cost of higher education is also a source of ongoing complaint and new competition. For-profit universities, corporate training centers, and distance education programs offer easily accessible instruction geared closely to jobs. Traditional professional schools often emphasize vocational training. On the other hand, independent institutes and policy-oriented think tanks, along with centers maintained by corporations and the government, are increasingly active in research. Research universities will certainly endure, but their changing environment may force them to develop different financial models to underwrite original scholarship.

The overall consequences of these more varied models for higher education are still uncertain. How (and whether) the new kinds of institutions will provide library services is likewise unclear. As some systems of faculty compensation move away from a focus on research and publication, the perceived need for very strong libraries may diminish. A more compact roster of premier research collections may ultimately ensue.<sup>10</sup>

Subject specialists can and should respond to many of the possibilities described in this article. These opportunities, however, are arising after a period in which selection assignments were dispersed, positions cut, and many bibliographers' responsibilities diluted. Most subject specialists, like other librarians, are fully occupied with their immediate assignments. Many also lack access to local resources with which to explore new directions. Peer organizations and other extramural outlets can provide a more promising arena for innovation. The rewards for such outside activities, however, must still be mediated through home institutions that may regard them as peripheral.

#### *Technological Change*

Technology will continue to produce faster networks and more powerful computers. The technical means to digitize, transmit, and manipulate essentially all sources of recorded information in two and, to some extent, even three dimensions, will continue to improve. Scholarship will particularly benefit in areas like film, dance, the theater, and media studies, in which many past studies have been limited to written analyses of expressions that are sensory and kinetic. Research libraries will need to accommodate both the sources and the products of these efforts.

Encryption, improved systems for user authentication, and numbingly precise capabilities to charge for use reflect the strengthening technological

means to control access to information. The commodity value of data and the commercialization of the Internet are provoking widespread denunciation and debate as well as localized pockets of glee. Experiments like the Scholarly Publishing and Academic Resources Coalition (SPARC), which seeks to ensure an open and affordable structure for the scholarly record, show some promise (<http://www.arl.org/sparc>). Nonetheless, most of the materials that support research will remain in the commercial realm. The electronic marketplace should, with time, become simpler, but it is unlikely to become cheaper as well.

More sophisticated technological capabilities may encourage new looks at some of librarianship's ongoing preoccupations. Organizing and describing scholarly resources is high on the list. In the first place, the profession is now challenged to knit together metadata about proliferating resources in an increasing variety of formats. Separate systems to describe visual resources, network products, and archival collections are already becoming available. All formats need to be covered, and their separate databases then linked.

More revealing bibliographic records are needed as well. The MARC format, which was created fairly early in the computer age, has benefitted from many refinements since. Nonetheless, MARC may no longer afford the best possible combination of descriptive information, technical elegance, and production and storage efficiencies. A new approach would not just serve theoretical or aesthetic ends. Off-site storage and shared collections have drastically reduced the role of browsing so that good bibliographic information is ever more essential. The users and the creators of catalog records should together assess the descriptive elements most helpful to scholars, and explore whether new approaches (limited scanning of title pages and tables of contents, for instance) might better meet the need.

Another technological issue centers on the long-term maintenance of digital data. Electronic files can be copied exactly and endlessly, but they reside on impermanent platforms and rely on quickly obsolescent software. The data need periodically to be migrated or refreshed, perhaps in conjunction with the creation of "emulation software" for outmoded computer programs. Computer scientists will carry some of the load, but libraries need to develop the complementary organizational, financial, and procedural capacities.

Other needs, for instance for more efficient document delivery, may also find solutions that draw on technology. New approaches in all these areas must accommodate patterns of scholarship and the full range of relevant research resources as well as technical criteria. Subject specialists' contributions are essential, even when other staff members take the lead.

### *Cooperation*

Straitened acquisitions budgets and a burgeoning publishing out-

put have made collections cooperation both logical and necessary. The current rhetoric of "access versus ownership" and routine (albeit sometimes ritualistic) dissatisfaction with volume counts as a primary measure of library quality reinforce the pressure for change. Most plans for shared collections emphasize non-core resources, since every library continues to need immediate access to reference materials and high-use works.<sup>11</sup>

Interlibrary cooperation often begins when a library decides to participate in local, regional, or national consortia for interlibrary loan. Each such grouping typically develops its own means to keep a balance between borrowers and lenders. Bibliographers, while rarely party to these sorts of agreements, are very active in planning cooperative collection development. But their collecting assignments do not necessarily correspond to arrangements for interlibrary loan, so the local benefits of cooperative collecting may end up masked. In any event, bibliographers' roles in devising and then implementing cooperative programs seem both solid and certain to increase.

Internet resources and other shared tools provide different opportunities for cooperation. Many libraries have prepared collections guides to help users navigate their holdings. Distributed collections, shared resources, and Web sites could similarly be described in hybrid products that combine local data with standardized descriptions of the materials available to all. Subject specialists are well situated to take the lead.

Most cooperative programs rely on leaders recruited from member libraries. As the projects become more substantial, many will need their own managerial and administrative staff.<sup>12</sup> Some bibliographers may thus move toward new and broader institutional frameworks. The organizational context will expand even for specialists whose base remains local.

#### *Identifying and Exploiting Resources*

Libraries are no longer self-sufficient, scholarly fields are no longer self-contained, and individuals are mobile as never before. The resources perceived and exploited in the past were usually limited to local institutions and direct contacts. Expanding contexts of scholarship and scholarly communication are now generating additional possibilities and players, domestically and also within an international framework.<sup>13</sup>

New alliances can be built with other libraries and also with inclusive organizations like the Association of Research Libraries or the Council on Library and Information Resources, foundations and other funding agencies, and scholarly associations. Rapid change has created a world ripe with new connections and a wealth of resources yet to be identified.

#### *Communities of Peers*

The expanding range of scholarship and scholarly communication, the growing number of individual and institutional players, and emerging

possibilities for cooperation are also revealing new communities of peers. "Resource maps" for specific areas of study, as they track new resources and agencies, may suggest these potential partners. Collaborative efforts will themselves engender new collaborative opportunities. Subject specialists are in a good position to develop these alternatives. Limited time and energy are likely to prove the most daunting constraints.

## CONCLUSION

This analysis of seven contexts that frame bibliographers' activities suggests that many of these specialists will need to carry on with what they have done in the past. Any prospects for more decisive roles, however, will depend on more than historical continuities. Moreover, all library functions, not just collection development, are adjusting to these shifting contexts. Another approach therefore looks at what bibliographers have brought to the library table and at how their attributes might bear upon functions that are themselves in flux. Selecting and acquiring resources, providing specialized reference service, and constructing cooperative initiatives are some of the activities most closely associated with bibliographers. Will these functions continue to require the same specialized skills, or will collections specialists simply fade away?

Bibliographers offer subject knowledge, often tied to language skills; familiarity with a system or systems of scholarly communication; and mastery of the associated information marketplace(s). They in the first instance apply this expertise to collection development. Most bibliographers also carry responsibilities for specialized public service, originally framed in terms of "interpreting local collections" to students and scholars. The assignment has expanded over time to include the preparation of guides in paper and electronic formats, classroom sessions, and—in some cases—designing and offering courses in research strategies and resources. Bibliographers have also been central in what still tend to be fairly limited programs for collections cooperation and shared resources.

Print publications show no sign of disappearing, though vendors' increasingly refined capabilities may lead libraries to outsource even more of their mainstream collection development. Bibliographers will still be needed for quality control and for more active collection development in areas of intense local interest or in which the book trade remains difficult. Cooperative collecting will require specialists as well. Nonetheless, print collections are losing their one time pre-eminence relative to library holdings in other media. Shared resources and remote digital products are likewise reducing libraries' reliance on in-house collections. Book-based bibliographers are already pretty much obsolete in some natural sciences, and those servicing many other fields are eventually likely to follow suit.

Materials in nonprint media are also acquired and serviced by subject specialists. Music librarians typically select sound recordings as well as scores and texts, and art librarians often collect slides as well as books. Free-standing CD-ROMs, which are often analogous to monographs, are frequently chosen by bibliographers. Decisions concerning online databases and networked digital resources, by contrast, rely more heavily on experts who have mastered the electronic marketplace's bewildering array of technical, legal, financial, and logistical considerations. As these features become more manageable, bibliographers may again become more central. This outcome is by no means automatic, though, given the many package offerings of electronic resources in which piece-level selection is simply not an option.

Researchers' reliance on an expanding range of media, formats, and materials will require intensified reference service from bibliographers who are at home with the dynamics of scholarly communication and with current research issues and approaches. The same specialists will need to orient users to off-site materials. As research resources become more complex, scattered, and diverse, subject specialists are likely to become even more necessary.

Bibliographers will continue to play central roles in collection development for print materials, for non-print media, and for at least some kinds of electronic resources. They will also be called upon to provide intensive reference service. Collections cooperation comprises a third area in which bibliographers are likely protagonists.

Straitened book budgets, easy mechanisms for interlibrary loan, research projects that cut across fields and institutions, and commonly available digital resources all encourage cooperation. Bibliographers will, in most cases, both define plans for cooperative acquisitions and then construct the distributed collections. Reference service could be based on the same networks of subject specialists, perhaps building toward a national or even international division of responsibilities. Individual experts could also focus on formats as well as topics, for instance by preparing guides to Web sites and electronic resources.

We can reasonably predict that traditional book-centered collection development will continue, albeit with a tighter focus and diminishing centrality. The need for informed subject-based judgments concerning non-print materials and electronic resources is likely to increase. Specialized reference services and new kinds of guides to fields and research resources will also become more urgent. And cooperative initiatives will almost certainly intensify. These functions demand subject and language expertise, familiarity with patterns of scholarly communication, and knowledge of specific information marketplaces. Libraries' increased organizational complexity, along with more diffuse information technologies, make another collections "golden age" unlikely. The changing

contexts of collection development rather suggest that collections specialists will be summoned to provide specific kinds of leadership and collaboration. Bibliographers, though no longer exalted, will still be essential.

## NOTES

- <sup>1</sup> The two models, while rooted in different approaches to acquisitions, have consequences for specialized public service as well. Bibliographers who focus on publishing markets are exposed to only some of the materials that bear on a particular discipline or topic. Librarians responsible for selecting broadly within some field, even though they may never master the most exotic selection tools or difficult publication markets, are likely to have a fuller command of the field's information resources and therefore be more effective in specialized reference.
- <sup>2</sup> The Latin American Studies Association, for instance, has responded to this situation with an expanding program of travel grants to enable Latin American scholars to attend its congresses.
- <sup>3</sup> Theodor Enslin's *Bibliotheca Auctorum Classicorum...*, which appeared in 1817 was, after five editions, updated as Wilhelm Engelmann's *Bibliotheca scriptorum classicorum...* See the description in R. Balay. (Ed.). (1996). *Guide to reference books* (11<sup>th</sup> ed.). Chicago: American Library Association, p. 586.
- <sup>4</sup> There are no hard and fast rules to delineate the budget thresholds beneath or above which effective selection requires specialized bibliographers. Any such limits would vary by field, between publication markets, and over time.
- <sup>5</sup> Harvard, the Boston Public Library, and the Boston Athenaeum, for instance, had coordinated their collecting by early in the twentieth century. The divisions reflected categories of materials, eliminating the need for full-scale union catalogs.
- <sup>6</sup> For the Latin American Research Resources Project, see the "Global Resources Program" home page at <http://arl.cni.org/collect/grp/index.html>. Also D. Hazen. (1997). Current issues: The Latin Americanist Research Resources Project: A new direction for monographic cooperation? *ARL: A Bimonthly Newsletter of Research Library Issues and Actions*, no. 191 (April), pp. 1-6.
- <sup>7</sup> Bibliographers are sometimes stereotyped as arrogant or elitist. Isolation, and necessarily close ties with faculty members and scholars, may account for part of these attributions.
- <sup>8</sup> The Seminar on the Acquisition of Latin American Library Materials (SALALM), for instance, began in the 1950s as a combination of library administrators and specialist bibliographers, grappling together with the "acquisition" challenges enshrined in the organization's name. The eventual consolidation of SALALM as an association of specialist librarians has been matched by the almost complete evaporation of an administrative presence.
- <sup>9</sup> The issue is still open, as reflected in online and print discussions of the advantages and disadvantages of marketing arrangements for electronic journals in which publishers only offer their complete lists. Some bibliographers insist that considerations of quality are thereby foreclosed, and that these arrangements allow marginal titles a prominence they don't deserve. Others are inclined to take everything they can get and let users make the choices.
- <sup>10</sup> The growing number of specialized libraries offering travel grants may already reflect this kind of consolidation.
- <sup>11</sup> Many high-use materials will ultimately become available in electronic formats. Some products, like JSTOR, will be marketed through single-institution subscriptions. Others may be available to consortia, resulting in some level of cooperative potential even for high-use resources.
- <sup>12</sup> The Association of Research Libraries' "Global Resources Program" provides one example of an administrative staff that has emerged from within cooperative programs. The Center for Research Libraries, a cooperative membership organization, offers another possible model.

- <sup>13</sup> For instance, the Department of Education's Title VI, Section 606, "Technological Innovation and Cooperation for Foreign Information Access Program," has awarded a grant to the ARL Latin Americanist Research Resources Project in response to a proposal that anticipates several Latin American partners.