Getting it Right - the Evolution of Reference Collections

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SUMMARY. Reference works were present in the earliest libraries; and their numbers have grown inexorably ever since. They consume an increasing share of library acquisitions budgets. This article traces the evolution of reference collections, drawing on experiences at the author's library. The author concludes that while reference questions will always be with us; it is perhaps less certain that they will always be answered from "reference works" in collections labeled "reference."

KEYWORDS. Reference collections; history of reference works; reference media

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INTRODUCTION

Libraries build their collections to represent all points of view. Libraries collect good books. Bad books. Biased books. Unbiased books. We don't tell users which poetry books hold good poems and which bad; and we know that comprehensive research collections need to include the nasty, inaccurate, and biased books as well as the good stuff.

Reference collections, though, are different. We do tell users which sources are the best; and we strive to achieve collections unsullied by marginal, biased, outdated, or poorly organized works.

According to the *Oxford English Dictionary* reference is "the act or expedient of referring or submitting a matter, esp. a dispute or controversy, to some person or authority for consideration, decision, or settlement."[1] Reference books, in short, are supposed to get it right.

Reference books over time change their shape. They change their format. They change in content. But they don't change their core purpose--to connect the user to the information they need.

USERS AND THEIR REFERENCE NEEDS

Users often don't know that what they need is a reference book. Most user requests are for books or journals. It frequently requires a reference librarian to connect a user to a reference book—which works well for users who come to the library—and less well when they visit electronically.[2]

The initial reference tactic favored by users (even perhaps by librarians) is to run through a mental list of people who might know, so as to avoid looking it up. If this tactic fails, users look around to see what they can find. They may find nothing, or they may find, especially online, information ranging from the obviously nutty to the possibly authoritative.

At this point, people do various things (mostly at the last moment). Many go to Barnes & Noble. We hope that users will think of the library; and we would like to increase the number who do. Users have choices–can we get them to choose us?

By looking at what libraries have offered in the way of reference in earlier eras, perhaps we can glean ideas as to directions for the future.

REFERENCE WORKS IN EARLY LIBRARIES

Reference as a place with a sign saying "Reference" is a 19th century innovation. Reference sources, though, are part of the written record as far back as it goes.

King-lists, genealogies, lists of place names, and dictionaries of foreign words were found in the libraries of Assyria, Egypt, Greece, and Rome. In what clearly constitutes a reference collection in every sense of the word, Athens in the fifth century B.C. placed copies of the authoritative texts of Sophocles' and Euripides' plays in public collections for consultation.

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Egypt protected the accuracy of religious texts in the same way, as did early Hebrews the Ark of the Covenant.

Libraries today struggle with concerns which have always been issues. The library at Nineva, developed by Assurbanipal into one of the greatest of the ancient world, held over 30,000 tablets in a series of rooms, each containing works on a particular subject. The cuneiform tablets were kept in jars arranged on shelves, with a shelf list inscribed on the wall near the door. Each tablet was tagged as to the jar, shelf, and room it belonged in; and the library offered the reference tool most characteristic of libraries - a catalog. Well-worn tablets, evidently heavily-used, contained lists enumerating the title, the number of tablets, the number of lines, opening words and a location symbol for each work.[3]

The division of collections into books that circulate and those that don't (both librarians and users tend to equate "non-circulating" with "reference") has long-standing precedent. The librarians at an Athenian library c.100 A.D. swore an oath "No book shall be taken out, since we have sworn an oath to that effect." And Marcus Aurelius wrote to a friend in search of a title suggesting that though the library holding the book in question didn't allow circulation, one might be able to bribe the librarian.

FORMAT CHANGE

Books began to be housed in bound codices made of paper rather than on papyrus rolls around 200 AD; but new formats, even improved ones,

can be slow to replace older ones. It took around 300 years for the new form to establish itself. And as it did, sadly, access to books became more limited than it had been earlier. Literacy levels were low and written materials scarce. The typical European library contained fifty to a hundred books housed in a couple of chests in a monastery chapel. In what, again, certainly feels like a reference collection, some books were chained in order to curb the temptation towards unauthorized circulation. And just as libraries today keep key works behind the desk, medieval libraries invented the 'book wheel.'[4]

A few libraries, towards the end of the middle ages, had built larger collections. The Sorbonne, established in 1289, left a catalog showing 1,722 volumes split between circulating copies (300 volumes, some listed as lost), chained (300 volumes), and closed stacks (1,086 volumes).[5]

Some books had a reference element added in the form of comments, or 'glosses,' written in the margins and in the spaces between the lines. These interlinear bits of helpful information and assistance with unusual or foreign words were common in scholarly books.[6] And there did exist books conceived solely as reference works, Cassiodorus' *Institutiones Divinarum et Saecularium Litterarum* being the most famous. After establishing a monastery at Vivarium in southern Italy around 540 A.D., Cassiodorus built a library and authored a guide to daily monastic life containing instructions on how to correct, copy, and repair manuscripts. Of most interest in our context, it contained a clear reference source, an annotated bibliography of the best literature of the time.[7]

For scholars, the core issue was identifying and locating the handful of books which existed on a given topic. Once those books were absorbed, the reader could expect to have a comprehensive knowledge. Though it's difficult now to comprehend such an ambition, the notion that one person could know everything lasted into the early 18th century.

PRINT MEANS MORE COPIES OF MORE TITLES

Printing spread at a pace hard to imagine. Gutenberg's 42-line Bible was printed c. 1455. Remainders were invented less than fifty years later. Tens of thousands of titles and at least ten million volumes had been printed by 1500; and there was already a supply of unpurchased books which on eBay would create scores of instantly famous libraries.[8]

There's not a lot of difference for the user between reading a text as a manuscript volume and reading it as a printed one. But the switch does have a marked effect on book prices, which in turn affects who learns to read and how much reading material they are able to obtain. Reference books, like other titles, became less expensive and easier to come by, so that small libraries and individuals who weren't wealthy might own a few titles.

REFERENCE BECOMES OFFICIAL

In 1876, at a conference of librarians in Boston, Samuel Swett Green of the Worcester Free Public Library offered a proposal titled: "The Desirableness of Establishing Personal Intercourse and Relations between Librarians and Readers in Popular Libraries."

Green's words have not dated (nor have Samuel Rothstein's essays on Reference.)

> The more freely a librarian mingles with readers, and the greater the amount of assistance he renders them, the more intense does the conviction of citizens, also, become, that the library is a useful institution, and the more willing do they grow to grant money in larger and larger sums to be used in buying books and employing additional assistants.[9]

Gradually, libraries began to offer reference help. Academic libraries were slower to do so. They were small (students relied on textbooks) and it was assumed they had no great need for a library. Faculty were thought better prepared to help students than were librarians. Nor was it believed that faculty themselves needed assistance in using a library.

However, in an 1882 report of the Harvard College Library, Harvey Ware wrote:

> A new life and spirit seem to pervade the place; and it is safe to say that a public library does not exist in which readers are more cordially welcomed, or more intelligently and courteously aided in

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> the researches, than the library of Harvard college under its present enlightened and modern management.[10]

The term '"reference work" appeared in the index to Library Journal for the first time in 1891. And '"reference" grew rapidly in popularity to become the archetypal thing-that-librarians-do.

GROWING PRINT REFERENCE COLLECTIONS

The number of print reference titles published has over the years increased at a rate that shows no particular signs of abating. Bill Katz, in *Reference Books from Cuneiform to Computer*, counted entries in OCLC whose titles include the word "reference." He found 230 such works dated between 1400 and 1700, 330 dated 1700-1800, 13,402 from 1800-1900 and 100,974 from 1900-1996.[11] *WorldCat* has since, as one would expect, added a few titles for each of the earlier periods; and it shows 15,506 titles for 1997-2003. How many of these works do libraries add to their collections?

In a 1985 study by Mary Biggs and Victor Biggs, libraries were queried as to reference collection development polices and about the size of their reference collection. College libraries reported a median of 5,000 titles, while master's and non-ARL doctoral institutions reported 12,000. ARL libraries reported a mean of 28,000. The authors concluded: "Although use of the reference collection is usually believed to be rather low, most

collections appear to be unmanageably large." They questioned whether collections had grown too big for librarians to know them well enough for maximum effectiveness.[12] The size of reference collections reported might arguably be related more to the size of the acquisitions budget than to any other consideration.

Print reference collections might or might not have continued to grow. We will never know, because even as collections grew, usage shifted to electronic sources.

The effects of "automation" on reference, though, substantially predated reference sources in electronic format. Telephone reference made it possible for users to get answers from outside the library; and public libraries developed ready-reference collections on revolving stacks which sat (and sit?) next to staff desks. Copying technology (photocopying, fax) meant users in search of personal copies were no longer technologically constrained. And as libraries could more easily obtain copies of articles from other libraries, users gained access to a wider range of journals. Transmission from library to library to user, though, remained print-based, or reasons that were as much economic as technical.

INTIMATIONS OF CHANGE

By the late 60s, it became obvious that computers would impact libraries in a major, but somewhat mysterious, fashion. Automation hadn't reached

widespread visibility, and working librarians were not yet devoting significant thought to the issues soon to preoccupy the profession.

A handful of librarians and faculty experimented with automated searching, mailing off search requests and receiving (two to four weeks later) a stack of key-punched cards, each carrying a citation.

The first publicly-available system was *MEDLARS* (Medical Literature Analysis and Retrieval System). The National Library of Medicine repurposed the machine-readable tapes that it created to print *Index Medicus* and used them to run *MEDLARS* searches. A medical library could mail searches to NLM. One reel of tape held a month's worth of I*ndex Medicus*, so that to search for information published over four years, you ran 48 tapes. At $250 an hour, batch processing –gathering together enough searches to make a run feasible–was a necessity. Demand peaked in 1971, when 18,000 searches were performed in the United States,[13] a number that looks ridiculously tiny today. Other publishers (mostly scientific) followed suit. Studies differ on how many databases were available; but the number seems to have gone from under 25 in the mid-60s to 50-100 in 1970.[14]

The University of Utah Medical Library saw itself as an early adapter and in 1973 sent a librarian to UCLA for *MEDLARS* training. She trained all day every day for three weeks.[15]

In retrospect, much of what we do today is obviously descended from those searches. At the time, it simply seemed a new and quite wonderful thing.

AUTOMATION IMPROVES THE CURRENCY OF PRINTED REFERENCE WORKS

Automation's initial impact was gradual and not immediately visible to users. The time line from author to published product shortened, as did time elapsed from publication to library shelf.

In 1976, Tobin wrote: "In the late 60s and early 70s, it took two years to produce a 600-page *Encyclopedia of Associations*. Today it takes less than half that time to produce a 3,000 page, three-book set." The 1975 issue was the first to mention photo-composition and it was then that *EA* began to be issued annually.[16]

Books had always moved from publisher to library at a stately pace - under a year from publication was reasonably prompt. Cataloging was also time-consuming, and large backlogs in acquisitions and cataloging were the norm. As computers became (just barely) affordable in the 70s at larger libraries, and as OCLC arrived on the scene, titles reached the shelf faster.

Owning computers also allowed libraries to themselves become reference publishers, albeit in a somewhat primitive way. Printed lists of journal subscriptions became popular. We called ours the P.S.L. (Public Serials List). And new books lists became easier to generate. The on-order file itself, now often on microfiche, became a useful tool at reference desks.

All of these applications, though, employed batch processing - gathering together a batch of orders, reports, searches, etc and sending them to the computer, usually once a week. This worked fine for ordering books and printing lists of book or journal titles. But it wasn't compelling as a reference technology - print indexes remained a quicker and cheaper way to search the periodical literature.

LIBRARIES and COMMERCIAL SEARCH SERVICES

In the early 70s, commercial search services became available and libraries were among their earliest users. DIALOG and SDC's ORBIT both launched in 1972. A librarian stationed at a terminal connected by a dedicated phone line to a search service could enter the search; and the results could be printed out on the spot.

These services were made possible by improvements in storage technology - hard discs meant that the computer could move directly to information stored anywhere on the disc. Batching searches was now a thing of the past. A searcher could now experiment and try different search strategies - though given that the user was paying a search charge based on how many minutes the search took, there were real limits to this. It also made it possible to search every word in a database, so that full-text searching first became a possibility. At the same time, network infrastructures improved and networks became faster and more reliable.

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These systems were, though, as far from user-friendly as it comes; and neither end users nor most librarians chose to learn to use them. To keep costs down, much preliminary work had to be done before "dialing up." Users desiring a search couldn't just walk in - they needed to make an appointment; and they left with a stack of printout and a bill.

In the mid-70s, search requests were growing fast and holding long searcher/patron conversations at a busy desk already prone to queuing was proving to be awkward. Academic libraries concluded that they needed a new electronic reference department.

LIBRARIES ADD "COMPUTER AIDED REFERENCE" DEPARTMENTS

By 1980 the reference desk and the automated searching area were two separate entities. A new job description emerged, "Online Searcher." Searching was viewed as a major research tool; but it would be a mistake to envision it as a pervasive technology. A 1984 survey of 376 higher education institutions found that less than half the libraries (though all the large ones) offered online searching. Among those offering online searching, only 5.8% reported more than 1,000 searches a year.[17,18,19]

As an example of these new departments, the University of Utah established the "Computer Aided Reference Service" (CARS). It was a smallish room with a terminal and a couple of desks. Users made appointments and often had to wait a couple of days, as CARS could handle only one user at a time.[20]

Computer-aided reference had almost no impact on the purchase of print collections, on undergraduate library use, or on the organization and staffing patterns of libraries. Automated searching appealed to some faculty, the occasional graduate student, and to community users - geologists and lawyers - who did not find the idea of paying a charge for a search new and distasteful.

Libraries continued with the purchase of voluminous print and microfilm sets; and there were a lot of them. One of the most eagerly anticipated was the *National Union Catalog, Pre-1956 Imprints*, begun in 1967. In 1981, the Library of Congress published the last of 754 volumes. Well before it was completed, LC had realized that it would be dwarfed by OCLC. In fact, of course, it was pretty well forgotten by then and not much note was taken of its completion.[21]

LIBRARIES TAPE LOAD DATABASES LOCALLY

There was a fairly brief period during which it looked as if libraries were headed towards widespread local tape loading of databases on library computers. This required that the vendor mail bulky reels of machine-readable computer tapes to the library, and that the systems staff then mount each tape to be read into the computer's memory. It was from the start a problem that library computers simply were not big enough to house many databases in this fashion. But there were advantages.

Users kept asking for campus-wide access; and this looked like a way to provide it. Many librarians and technical staff worried that the Internet would never be able to provide the capacity needed to search a growing body of remotely housed databases with acceptable response times. Databases were slow and were down for substantial periods. Stuff worked, but not always.

For some consortia and for larger academic libraries, this was (and is) a sometimes attractive option. Smaller libraries lacked the hardware and technical staff to make it feasible.

In Utah, tape loading was the first statewide initiative. The Wilson Indexes were mounted at Utah State University. The first couple of years were rocky and complaints were loud and frequent. Later, as the technology stabilized, complaints dwindled and, for the most part, librarians seemed no longer to even be aware that the Wilsons were off two hours away in Logan rather than locally loaded. And as it became possible to send the files from publisher to library via FTP, the process became less onerous for the hosting library.

REFERENCE and STAND-ALONE CD-ROMS

The University of Utah was in a particularly austere budget stretch as CD-ROMs began to appear in the mid 80s. We read about them. We couldn't afford them.

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Our introduction stemmed from an item in a technical magazine belonging to one of the (two) systems people, referencing *About Cows*. It cost $15. It described the various breeds of cattle; and had pictures (in color) which would even, in theory, moo. I do not remember why, but they would not moo for us.

CD-ROM databases reversed the direction towards separate electronic and print reference areas. Librarians liked CD-ROMs and wanted them at reference desks. At first, only staff could use them, but users were soon invited. Not so many were initially interested. Interfaces were clunky, and many users had little background familiarity with computers to draw on. Besides, there were queues. A 1989 memo from Marriott Library's Head of General Reference noted: "Please remember that we only have one machine with a CD-ROM drive, and limit your searching time to 15 minutes."

There were problems–new databases started with current information and went forward, lacking the back run depth to be really interesting. Non-Roman fonts did not exist, nor did anyone seem sanguine about the possibility that they might. Many CD-ROMs required software which had to be loaded on each user's machine, and most users did not yet know how to do this on their own.[22]

On the other hand, CD-ROMs offered a much wider title selection. There began to be dictionaries and encyclopedias, software manuals, atlases and directories. Academic libraries didn't quite know what to do with these, but public libraries did. They bundled them up in bright attractive packages and started circulating them.

Automation had not yet much affected daily life at the Marriott Library. The reference collection kept growing. Desirable titles continued to far exceed budgets. The *Guide to Reference Books*, a highly selective source, in its ninth edition in 1986 grew to 14,000 titles. Psychology titles listed went from three, in 1908 with Kroeger as editor, to 8 in Mudge's 1936 edition, 43 in Winchell's 1951 and 157 in Sheehy's 1986 edition.[23]

MULTIPLE CD-ROM DRIVES and the IMPACT OF EARLY NETWORKS

As libraries figured out how to network CD-ROMs, more users tried them. Undergraduates discovered periodical indexes–and though they offered little full text, the abstract often seemed to suffice. Faculty, as more indexes became available and backruns grew, demanded their purchase with an urgency libraries had not seen before and weren't quite used to. And the libraries themselves began to internalize the idea that electronic reference would pretty much supercede print.

The ability to wire drives together meant that a stack of CD-ROM drives could be connected to each other and then to a terminal and a printer. Each reference desk had its own little system, with a set of its most important databases.

Shortly after, it became possible to create a CD-ROM LAN. The stacks of drives moved to Back of the House and their contents could now be used from several locations throughout the building, with the added advantage that more than one user at a time could search a disc.

Quoting the Marriott Library CD-ROM Database Network Report, May of 1990:

> Students and faculty have been quick to embrace this new tool. Several classes now have assignments requiring students to use CD databases. Many students specifically ask to use CD-ROM databases and are offended if they must use a printed index. Several students have remarked that they were able to complete days or weeks of research in less than an hour![24]

There were not nearly enough drives to mount all the desirable databases; and committees evolved to "rank' databases. The highest-ranked got slots in the "tower.' New discs arrived quarterly or monthly and were checked in like journals and mounted by the systems people–a process that was supposed to be routine, but wasn't always so.

Libraries developed concepts such as "Infogate" and "MarrioNet" (the Marriott Library Network), a single location online where users could see a listing of all available databases. Connecting from outside the building to some databases was both possible and allowed by the publisher, but it was tricky; and the problem of PCs versus Mac and UNIX access dominated many decisions.

Like many libraries, we tried to help users cope and published the University of Utah Information Systems Handbook[25] in 1995. It held descriptions of 150 or so databases, with charts showing the "means of access," which search software was used, and which reference desk to call for help. The "means of access" included:

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Remote access via IBM-Compatible

Remote Access via Macintosh

Accessing the Marriott Library Gopher

Telnet

Accessing Eccles PC Local Area Network

Accessing Eccles Health Science Library Gopher

These systems required a pretty determined user.

THE KRISPY-KREME ERA

In a final glorious burst of too-many-CD-ROMs, there was the "Krispy Kreme" era: 240 CD-ROMs, arrayed in a doughnut shape, and housed in a metal box. Systems staff wired three or four juke boxes together and linked them to PC networks.

They were great when they worked; but they were finicky and often didn't; and Systems offered user support from 8-5 Monday to Friday. The big general databases - IAC's Infotrac, UMI, and a nascent EBSCO product - provided an increasing amount of full text and were instantly beloved by students. Faculty weren't very interested yet as the title and full-text selection were so limited.

In 1994, Utah installed jukeboxes at Brigham Young University's Lee Library and at the University of Utah to supply academic libraries throughout the state with the UMI ProQuest system.

PRE-WEB PUBLISHER HOSTED DATABASES

As publishers began to host their databases on their own servers, libraries responded with cautious enthusiasm, though it didn't solve the PC/Mac problem; and Mac users grew increasingly vociferous about their second-class status. And there was still concern that it might not be possible to maintain acceptable response times as use of the Web grew. Early licenses were all over the place–some allowed access on a single terminal, some only in one building. Some based pricing on the FTE of the Chemistry Department and others on the library's acquisitions budget. When asked about a state-wide license, publishers had no clue as to what to say. Nor did libraries know what it would be reasonable to offer.[26]

Decisions focused on the interface - SilverPlatter, CAS, EBSCO. For the first time, content was not necessarily the driving force in reference purchases. Databases were still mostly indexes, but other titles started cropping up. A full-text facsimile of the *Pennsylvania Gazette*. Complete works of philosophers. Perseus, for material on ancient and modern Greece.

In early aggregated full-text databases, a search might yield 20 citations, maybe two of them with full text. This was for many users more frustrating

than no full text at all. But the balance has gradually shifted. Databases now are seen by users not just as an alternative to the reference collection. They now seem to many users a sort of pre-packaged rival to the whole idea of coming to the library to research a paper.

As use of electronic sources has risen, queues at reference desks have dwindled. ARL stats show that circulation transactions began to drop in 1996 and reference stats in 1998. In 2000, both figures were for the first time below 1991 levels. Between 1991 and 2002, the number of reference transactions dropped by 26%.[27]

Libraries gradually canceled print indexes. There was a belief though, that important print journals could never be cut. Nor did it yet seem feasible to consider doing without any major reference work in print solely because the library also had electronic access. Partly this was due to a queasy feeling about the permanence and stability of online sources. And partly, perhaps, because use statistics were so hard to come by and so little standardized that it seemed as yet unwise to put much confidence in their accuracy.

DATABASES on the WEB

As librarians began to hear about the web, it was somewhat difficult to envision just what this thing was or how it would work. You needed to see it. But it very soon became clear that the Web would be a godsend.

Libraries were quick to move databases from CD-ROM or tape loads to Web interfaces. Finally, the PC/Mac problem was solved for most users.

Web search engines don't yet offer the same level of sophistication as non-Web interfaces–a cause for consternation among some librarians, though users seem largely oblivious. Users also seem alarmingly willing to settle for the content found online and to skip retrieving journal articles not available online. Librarians had thought that users, especially researchers, would always want comprehensive searches, but now we wonder.[28]

In "everything's a serial" mode, one-time book and reference set purchases are being replaced with annual database subscriptions.[29] This makes it mathematically certain that unless expenditures go up very fast, the number of titles purchased will go down.[30] For years research libraries have been cutting both book budgets and journal subscriptions to cover price increases in journals. Today, many are also cutting to pay growing (but unfunded) technology infrastructure bills, and to pay database subscriptions.[31]

New reference products are emerging in subject areas and formats for which libraries may not have previously budgeted major sums. It is difficult to see how libraries will afford humanities and fine arts resources currently being developed; many of these will clearly be costly endeavors priced in the arena formerly dominated by scientific and business titles.

CONVERGENCE

The line between reference and full text has blurred as rapidly increasing amounts of full text are linked to indexes and from one text to another. New online collections offer access to printed monographs and to primary source materials, and may include encyclopedias, biographical sources, dictionaries, and specialized subject reference works.

Many printed reference titles were important to us as a way to keep track of what's in other books or in journals. The ability to search full text, though, turns every collection of online texts into a reference collection and provides an automatic concordance for every title.[32] Titles can no longer be tidily separated into "reference works" and "general collection."

In the past, a reference simply pointed the way. Now users expect to be taken there. As a result, electronic statistics are rising at a quite spectacular rate, while print reshelving statistics are dropping. At the Marriott Library, reshelves were down 9% in 2001-2002 and another 3% in 2002-2003. This year's figures are dropping at a rate of 9-10%; and the decline is almost entirely in reference and bound journals.[33] Some reference departments are pushing the printed reference collection off towards the stacks, in order to place user workstations and users who may need assistance close to the desk. Perhaps it is not too much to hope that one day those users who have since the advent of the first libraries been frustrated by non-circulating titles might be permitted to take a few of these home. Maybe even overnight.

CONCLUSION

What will be the next step in the evolution of reference collections? It seems evident that there will continue to be reference librarians, though perhaps they will use some other title. Reference collections, though, might be a less certain bet.

Why will we move away from "reference collections?" Partly because, given the convergence among formats, we can't recognize a reference book when we see one. Nor can its electrons be pinned down to a "reference collection."

Why will we still need "reference librarians?" Because users frequently need more, rather than less, assistance to find needed sources and information. The needle in the haystack was hard enough to find when there was only one haystack. Now the number of haystacks is multiplying.

Too many choices can be even less appealing to a library user than too few. There are many examples of this with printed collections. We have always known that many college students complain with their feet–and take themselves off to their local public library. And at my library, with nearly two million volumes in our library, the students complained that they couldn't find anything to read. So a Browsing Collection was instituted. Less choice of titles has made for more choice in leisure reading.[34]

Too much information has, with online sources, become a core issue. Libraries (as well as Amazon.com, Google, and Microsoft[35]) are exploring federated search engines and portals, and are increasingly integrating full text within other, broader contexts.

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Technology has made people more independent when it comes to their research and reference needs. But there will always be users who welcome assistance. These users either cannot find what they need on their own, or they want to be certain that their results are conclusive and complete – and the best way to do that is likely to continue to be to consult a reference librarian.

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[2] The author enquired among users as to their definition of "reference". The most common answer was, "It's the books the librarians lock up and won't let me take home and it is very irritating."

[3] Michael H. Harris. *History of Libraries in the Western World*. 4th edition. (London, The Scarecrow Press, 1995): 10-63. As another example of a persistent issue, Harris noted that intellectual freedom hadn't made much headway. Assurbanipal's librarian is reported to have said "I shall place in it whatever is agreeable to the king; what is not agreeable to the king, I shall remove from it."

[4] Lionel Casson. *Libraries in the Ancient World*. (New Haven, Yale University Press, 2001): 97 - 132. Casson lists the advantages of the codex form. It holds more - several rolls fit in one codex; and readers can move about easily within the text, book marking as needed. Their covers make them easier to transport and sturdier; and the title can be written on an edge. He also described the 15th century book wheel, holding about 15 books, each chained to its own small shelf.

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[18] Dorothy B. Lilley and Ronald W. Trice, *A History of Information Science: 1945-1985*, (San Diego, Academic Press, 1989).

[19] Edwin M. Perry, "The Historical Development of Computer-Assisted Literature Searching and Its Effects on Librarians and their Clients," *Library Software Review*, 11(1992) 18-24.

[20] The author is indebted to Ann Marie Breznay, Marriott Library, who searched the library archives for relevant documents, compiled a time line, and provided her usual high level of editing, proof-reading, and moral support. As did a number of Marriott Library colleagues.

[21] John R.M. Lawrence, "The Bibliographical Wonder of the World": *The National Union Catalog,"* in James Rettig, ed., *Distinguished Classics of Reference Publishing*. (Phoenix, Oryx Press, 1992): 170.

[22] The author particularly remembers a reference CD-ROM in Hebrew. It came with a small plastic black box which had to be attached to the back of the PC. The directions on how to do this were in Hebrew. This was a problem.

[23] Donald C. Dickinson, "The Way It Was, the Way It Is: 85 Years of the *Guide to Reference Books,*" *RQ* 27#2(1987): 220-225.

[24] Michael Noe, *Marriott Library CD-ROM Database Network Report*. (Salt Lake City, Marriott Library, 1990.)

[25] Kenning Arlitsch, Ann Marie Breznay, and Ruth Hanson, *Information Systems Handbook.* (Salt Lake City, Marriott Library, 1995). Four editions,

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1995-1997, also online at the Marriott Library Gopher for those who knew what a Gopher was.

[26] David Densmore of the Institute of Physics mentioned recently to the author that he recalls an early visit to the University and being asked what it would cost to get all the IOP journals online. He said he had no idea what to say, as no one had ever asked that; and IOP did not suppose there was a library which would want every one of its journals. So he went away and thought up "the Z package" over lunch.

[27] Association of Research Libraries, "Service Trends in ARL Libraries," http://www.arl.org/stats/arlstat/graphs/2002/2002t1.html.

[28] At Marriott Library, informal surveys by Barbara Cox show that reshelf stats are falling about as rapidly for journals which are not available electronically as they are for journals which are available.

[29] Second Edition of the *Oxford English Dictionary* is
Available in print – twenty volumes for $895 on Amazon. For the library, though, it is now a subscription – priced for a large institution at $4,166 a year. Worth every penny of it, too.

[30] Take as an example Safari Books. This product aggregates relatively inexpensive but high demand titles such as "JavaScript by Example." The University of Utah pays $6,598 for 170 titles and 3 simultaneous users. The per use cost is going down. The overall cost is going up.

[31] Landesman, Margaret, "The Cost of Reference," *Library Journal*, 11/15/2001 Supplement, Vol. 126 Issue 19, 8.

[32] Katie Hafner, "A New Way of Verifying Old and Familiar Sayings," *New York Times*. February 1, 2001. G8. This article shows how JSTOR, used as a concordance, is useful in researching the origins of the saying, "There's no such thing as a free lunch." An earlier researcher used it in

the same way to look for the earliest uses of "hopefully" as an adjective. It also works for "impactful" as a new and unwelcome adjective.

[33] University of Utah Marriott Library statistics. Ian Godfrey.

[34] Barry Schwartz, "A Nation of Second Guesses," *The New York Times,* January 22, 2004. A.27. Schwartz is the author of *The Paradox of Choice: Why More is Less.*

[35] John Markoff, "The Coming Search Wars," *The New York Times*, February 1, 2004.

> The company [Microsoft} has also been pushing hard to find new sources of information to index, beyond material that is already stored in a digital form. In December, it began an experiment with book publishers to index parts of books, reviews and other bibliographic information for Web surfers.
>
> And Google has embarked on an ambitious secret effort known as Project Ocean, according to a person involved with the operation. With the cooperation of Stanford University, the company now plans to digitize the entire collection of the vast Stanford Library published before 1923, which is no longer limited by copyright restrictions. The project could add millions of digitized books that would be available exclusively via Google.