

# The Tradition of Library Catalogs

What follows is a review of the evolution of catalog librarianship and library catalogs. This review reveals that the tradition of library catalogs has drifted from a clear emphasis on the convenience of the reader to an emphasis on the efficiency of the systems that create library catalogs.

## Starting in Babylonia

The first name recorded in the role of librarian was the Babylonian Amilanu.<sup>1</sup> He worked around 1700 BCE. Recording the contents of libraries was commonplace by then, so we can reasonably assume that one of his roles was to make notes on the contents of his library's collections so his readers would know what he had collected.

The task of recording the contents of libraries is more than an instinct or a compulsive tic exercised by librarians; it began as a way to broadcast to readers what is available among the stacks of materials. The tradition of open stacks of printed books is paradigmatic to modern American library users, but ancient libraries featured stacks of clay or pre-paper scrolls that resisted browsing. And even into the age of books and printed journals in the following twenty-one centuries, many private and public libraries did not allow their readers to browse the stacks. The librarian with a deep knowledge of the contents of the collection (and the collections of kindred institutions) was the guide to what the reader could borrow, and it was through an interview with the librarian that the contents of the collection were fully revealed. However, recorded catalogs were an invaluable tool for librarian and reader alike. The catalog provides a permanent record of the collection over time and changing library staff.

So the recording of collections on clay, paper, and later, electronic media is more than an instinct; it has always been a valuable tool for creating a permanent memory and map of the collection.

The historian of cataloging, Dorothy May Norris, tells us that the first known recorded catalog was written directly on the walls of the library of Edfu in Upper Egypt.<sup>2</sup> If one's goal is to broadcast the contents of the collection to readers in the library, the painted catalog is remarkably effective. This is a positive founding principle of the catalog: write down what is in the collection so your readers will know what you have—and in the Edfu case, do it in a way that broadcasts the details to all who enter the building.

The earliest librarians created rules for how to record the details of the catalog. By 700 BCE the Assyrians followed the rules set down by the Babylonians. The seventh century BCE Babylonian library in Akkad was lead by the librarian Ibmissaru who prescribed a catalog of clay tablets by subject.<sup>3</sup> Subject catalogs were the rule of the day, and author catalogs were unknown at that time. The frequent use of subject-only catalogs hints that there was a code of practice among early catalog librarians and that they followed some set of rules for subject assignment and the recording of the details of each item. These rules created efficiency through consistency—the catalog librarian knew how to record each item without reinventing the rules each time, and the reader knew what to expect with each visit.

It is interesting to note that catalog librarians now have at least 2,700 years of experience creating rules for how to record the details of what is in a collection. And some of the principles, such as the value of subject description, have retained value for all of that time.

The first known catalog on paper was in the library of the Ptolemies at Alexandria, Egypt, around

280–240 BCE.<sup>4</sup> It was written in ink on rolls of papyrus. Thus were the first hand-crafted catalogs painstakingly created and corrected as the collection was pruned and amended.

## Medieval European Catalogs

In summarizing the history of medieval European catalogs, Norris describes things with this economy of words: “The first ten centuries of the Christian era tell us little of libraries or their catalogues.” She guesses that “they are still buried beneath the dust of ages and awaiting the spade of the archaeologist and the antiquarian.”<sup>5</sup> However, there are two notable catalogs from that era that seem to have taken inspiration from the ancient catalog of Edfu in Egypt, the catalog that was written directly on the walls. The first was engraved in marble for all to see, and the second on paper, but in verse to inspire the spirit and capture the imagination of scholars.

The librarians at the Church of St. Clement in Rome, working for Gregory the Great, took the effort to engrave their catalog in marble and wrote, in part:

The people of Israel in the country used to offer to the Lord, one indeed gold, another silver, some also bronze, some indeed, the fleeces or skins of goats. But I, unhappy that I am, Gregorius First, Presbyter of the fostering apostolic seat, and bearing the responsibility of this blessed title, the highest client of Clement, offer to Thee, O Christ, from the treasuries, these little gifts in the time of the most Holy Zacharias, the high priest. I offer [these treasures] through Clement, thy witness and saint, by whose merits may I deserve to be free from my sins and to enter into a blessed and eternal life. Thou hast said the Kingdom of Heaven is worth all thou hast. Receive these books, Lord, I beg, as the mite of the widow—these books of the Old and New Testaments, of the Octateuch, Kings, Psalms and of the Prophets, Solomon, Esdras full of stories therein found. Seek, reader, the continuance of these syllables.<sup>6</sup>

This is cataloging through prayer, and the last sentences that describe the collection don’t appear to follow any scheme for cataloging rules, but certainly contribute to the art of describing a collection. Demonstrating a similarly grand approach to describing a collection, Alcuin of York used poetry to describe the books of the monastic library in the monastery of St. Martin’s of Tours in York around 782. There he wrote the verse that begins

There shalt thou find the volumes that contain  
All of the ancient fathers who remain;  
There all the Latin writers make their home  
With those that glorious Greece transferred to  
Rome;

The Hebrews draw from their celestial stream,  
And Africa is bright with learning’s beam.

Here shines what Jerome, Ambrose, Hilary,  
thought

Or Athanasius and Augustine wrought.  
Orosius, Leo, Gregory the Great,  
Near Basil and Fulgentius coruscate.  
Grave Cassiodorus and John Chrysostom  
Next Master Bede and learned Aldhelm come,  
While Victorinus and Boethius stand  
With Pliny and Pompous close at hand.

Wise Aristotle looks on Tully near.  
Sedulous and Juventus next appear.  
Then come Albinus, Clement, Prosper too,  
Paulinus and Arator. Next we view  
Lactantius, Fortunatus. Ranged in line  
Virgilius Maro, Statius, Lucan, shine.  
Donatus, Priscian, Probus, Phocas start  
The roll of masters in grammatical art.  
Eutychius, Servius, Pompey each extend  
The list. Communion brings it to an end.

There shalt thou find, O reader, many more  
Famed for their style, the masters of old lore,  
Whose many volumes singly to rehearse  
Were far too tedious for our present verse.<sup>7</sup>

There we have the first and perhaps last catalog in verse and an early admission that there might be too many things for the catalog librarian to describe—therefore only the most critical or in-demand titles are immortalized in this literary catalog. Both of these examples of early catalogs demonstrate a commitment to visibility. It’s quite possible that they are exceptional, that they demonstrated a unique drive to capture the attention of the reader and sit above a history of written catalogs less visible and available to readers. Whatever the case, they demonstrate a desire to broadcast, or market, the library’s content to the reader in the most effective means available.

## The Card Catalog

Eventually the mechanization of the modern era brought the efficiencies of card catalogs. It was around 1780 that the first card catalog appeared in Vienna.<sup>8</sup> It solved the problems that were present in the structural catalogs in marble and clay from ancient times and the later codex (handwritten and bound) catalogs that were manifestly inflexible and presented high costs in editing to reflect a changing collection. Slightly earlier, Conrad Gessner, the sixteenth-century Swiss botanist and proto-catalog librarian, described the process of “cutting up pieces of information on paper so as to (re)arrange them more readily.”<sup>9</sup> Again, this was an advance over the codex approach to catalogs, which did not allow efficient sorting and resorting. The Viennese librarians of the eighteenth century

took this principle one step further and efficiently put their slips in cabinets. In his book *Paper Machines*, Markus Krajewski marvels at the efficiency of this process: “What differs here from other data storage (as in the codex book) is a simple and obvious principle: information is available on separate, uniform, and mobile carriers and can be further arranged and processed according to strict systems of order.”<sup>10</sup>

Thus, “systems of order” are advanced from the written word in a codex into sorting and searching systems that provide massive efficiency to the catalog librarian. For the reader, the benefit is secondary. Compared to the codex, the card catalog can be created and updated much faster, and the presentation of the data is uniform across the catalog. Catalog librarians have rules for the description of bibliographic items and a highly efficient method for describing them. This science of catalog librarianship matures and becomes a significant component of investment for the library. And as collections grow and mechanized printing expands dramatically, the tasks before the catalog librarian also expand. As with the medieval librarian whose bibliographic poem ends after he tires of recording the lesser-known authors, we see the first risk—that the reader fades from focus and the maintenance of the infrastructure becomes the primary task.

In the United States in the 1870s, Melvil Dewey led the charge for scientific management of catalogs and the general library infrastructure. He also presaged the rise of union catalogs of cataloging data by a hundred years when he wrote, “Cataloging, indexing and the score of things which admit, are to be done once for all the libraries.”<sup>11</sup> Matthew Battles quotes Dewey’s biographer in his book *Library: An Unquiet History*: “He was convinced the best way to maximize the library’s potential was to create effectively uniform collections of quality materials and increase service efficiency by standardizing internal library procedures with common forms, appliances, and rules and systems of arrangement.”<sup>12</sup> And in an echo of a debate that carries on today about how much effort to put in customization of library data, Battles observes, “To Dewey, local interests and special needs were less important than the efficient movement of books into the hands of readers.”<sup>13</sup>

“The efficient movement of books into the hands of readers” could have easily become an operating principle of libraries, but there is little evidence that it did. The history of the coming hundred years of librarianship is one of increasing focus on efficiency and service to the infrastructure.

## Library Automation

Christine Borgman, who is now the Distinguished Professor and Presidential Chair in Information Studies at

UCLA, has studied the history of library automation and points out that in the United States and Europe during the 1960s, there were several forces that enabled libraries to once more dramatically improve their efficiency in catalog management: the availability of advanced computer technology, “long traditions of shared and distributed cataloging,” and “ready access to highly developed telecommunications infrastructure.”<sup>14</sup> All of these factors made it possible for library leaders to invest in automation of library processes and in the movement from purely paper-based systems to mainframe-based systems with significant processing power and data storage capabilities. For libraries, this meant a significant advance in the ability to store and duplicate catalog data across systems. It also meant the ability to improve the speed of some routine transactions and perhaps reduce the possibility of transaction errors.

During this period, libraries invested in the efficiency of internal workflow functions: circulation, acquisitions, serials control, and cataloging. It was also the birth of systems that allowed libraries to share catalog data at large scale to reduce costs for all in the sharing network. Borgman’s summary of the period tells us that this happened in the United States beginning in 1967 with the advent of the alphabet soup of data-sharing networks: OCLC, RLIN, and WLN.<sup>15</sup> Similarly, in the United Kingdom, the BLCMP and CURL networks were organized, and the PICA system in the Netherlands did the same to offer the benefits of data sharing at scale to Dutch libraries.<sup>16</sup> All of these systems take advantage of expanded computing power to reduce costs and calling back Dewey’s idea that cataloging “be done once for all the libraries.” In all of this, there was no significant focus on direct improvements for readers—the focus was on system efficiency and cost savings. In fact, it is interesting to observe that this period in the development of professional librarianship represented a significant investment in the industrialization of the library infrastructure. Cost savings, efficiency, reduction in transaction costs—all were designed to save the librarian effort and to meet the demands of the dramatically expanding world of published materials. Curiously absent is a direct and explicit focus on the needs of the reader in this effort.

Because bibliographic data was now being stored at a larger scale in computer systems, it quickly became clear that there would be advantages in standardizing the specifics of how that bibliographic data was stored and exchanged between institutions. Borgman explains that the late 1960s saw the birth of standard formats for the efficient storage and exchange of cataloging data.<sup>17</sup> The Library of Congress was the first to invest in a study and pilot of standardized machine-readable cataloging (MARC) in the mid-60s. By 1968, it had a service in place to distribute these MARC records to libraries and partners at

scale.<sup>18</sup> Soon after, it collaborated with the producers of the British National Bibliography to produce a variant suited to the needs of the UK library market.<sup>19</sup> In the 1970s, the International Federation of Library Associations (IFLA) sponsored an effort to develop a system of machine readable cataloging that suited the particular requirements of European libraries that they called UNIMARC.<sup>20</sup> Previously, in 1969, IFLA had sponsored an important effort to finally standardize the rules for cataloging into the International Standard for Bibliographic Description (ISBD).<sup>21</sup> ISBD had a particular emphasis on the order of bibliographic elements and standardization of punctuation as these were essential elements for promoting uniformity on catalog cards. Clearly, global librarianship was fully invested in the industrialization of library infrastructure and in particular the efficiency of catalog building and data operations.

Almost exactly a hundred years after the introduction of the card catalog in Austria, libraries realized that these computer systems for catalog automation could be used to allow readers and not just library staff to search and discover what is in the library's collections. This happened in the 1970s for both academic and public libraries. The Ohio State University introduced the first of these catalogs in 1975 and the Dallas Public Library did the same in 1978.<sup>22</sup> Even with the simple non-keyword searching mechanisms that were in place at the time, libraries realized that automated systems had advantages over the physical card system for readers. Matthew Battles tells the story of the American librarian Edmund Pearson, who in 1909 fretted for the reader trying to use the old card catalog: "Harried individuals are seen trying to think if the name of Thomas De Quincy will be found in the drawer marked De or that labeled Qu. Then they make the choice—always wrong—and are seen, with pain only too apparent on their brows, dashing off to the other drawer."<sup>23</sup> The automated catalog brought the promise of eliminating those kinds of problems.

Automated catalogs evolved through the next two decades and finally offered some benefits to the reader: truncated phrase searching, keyword searching, and permuted keyword searching where the order of the search terms didn't matter. All of these improvements made searching easier and more fruitful for the reader. These were the first significant advances in catalog technology that benefited the reader in a hundred years. And in an age where the library was seen as the essential source for resources that the reader needed, that was a leap forward. As we know now, by the 2000s readers no longer see the catalog as the primary place for discovering things, but in the days when the print collection was everything and the library catalog was the primary tool for discovery, automation meant progress and improvements for the reader.

## The Internet

By the late 1990s, the Internet age dawned and libraries quickly saw the value of making their catalogs available to their peers and the world. They did this first through text-based catalogs available over Internet protocols like Telnet, and then in the mid- to late 1990s via the web. For readers there was little change in the features they used for searching, but the ability to access the catalog through a web browser from anywhere provided convenience and flexibility. It also improved access to library catalogs around the world. For the serious researcher this was a benefit. However, it's debatable how important it is for readers to see catalogs with materials they don't have immediate access to, but certainly for advanced scholars this was a useful change, and it marks a recognition that the web is an important venue for discovery.

The most recent advance in library catalogs that offered advantages to readers came in the mid-2000s. At that time library technologists began to follow the trends in searching on the web and the technologies available for indexing textual data. This is the same time that the search engines were demonstrating that search could be accomplished with enormous advantages for the searcher. Relevance ranking and the full embrace of keyword searching became the dominant model for searching, and the library's approach to complex keyword and phrase searching began to look more like the card catalog than a modern search interface. Library users brought these expectations with them to library catalogs, and the catalogs did not look appealing after the comparison. It was at this time that next-generation catalogs were introduced by libraries willing to experiment with new systems and entrepreneurial library systems vendors. These systems that were not based on the library's local inventory management system succeeded in introducing several new features for readers: better indexing, relevance ranking, "Did You Mean" features that mitigated the failures of the reader to consistently spell common and uncommon words,<sup>24</sup> and finally the introduction of integrated databases of articles. Given the enormous importance of articles to academic library users, this was a significant step forward.

However, as good as these systems were for readers, they still didn't bridge the gap between searching on the web and searching the local catalog where readers could find the full details of the collection and availability.

## Notes

1. Dorothy May Norris, *A History of Cataloguing and Cataloguing Methods, 1100–1850: With an Introductory Survey of Ancient Times* (London: Grafton, 1939), 1.

2. Ibid., 3.
3. Ibid., 3.
4. Ibid., 4.
5. Ibid., 7.
6. Ibid., 7.
7. Ibid., 9–10.
8. Markus Krajewski, *Paper Machines: About Cards and Catalogs, 1548–1929*, trans. Peter Krapp (Cambridge, MA: MIT Press, 2011), 37.
9. Krajewski, *Paper Machines*, 3.
10. Ibid.
11. Matthew Battles, *Library: An Unquiet History* (New York: W. W. Norton, 2003), 141.
12. Wayne Wiegand quoted in Matthew Battles, *Library: An Unquiet History* (New York: W. W. Norton, 2003), 141.
13. Ibid.
14. Christine L. Borgman, “From Acting Locally to Thinking Globally: A Brief History of Library Automation,” *Library Quarterly* 67, no. 3 (July 1997): 215–49.
15. Ibid., 220.
16. Ibid., 220.
17. Ibid., 220.
18. Ibid., 220–21.
19. Ibid., 221.
20. Ibid., 221.
21. Ibid., 221.
22. Online Public Access Catalog, last modified 10 February, 2016, [https://en.wikipedia.org/wiki/Online\\_public\\_access\\_catalog](https://en.wikipedia.org/wiki/Online_public_access_catalog).
23. Edmund Pearson, quoted in Battles, *Library*, 14.
24. Kristen Antelman, Emily Lynema, and Andrew K. Pace, “Toward a Twenty-First Century Library Catalog,” *Information Technology and Libraries* 25, no. 3 (2006): 128–39, <http://dx.doi.org/10.6017/ital.v25i3.3342>.