

## Librarians' Response to Technological Change: Keep Calm and Carry On

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### INTRODUCTION

As librarians, we always seem to feel caught between the bleeding edge of strange new technologies and the fear of falling into irrelevancy in the dustbin of history along with buggy-whip salesmen, elevator operators, and film projectionists. I believe that fear is unfounded. As librarians, our profession has always dealt with strange new technologies, and as librarians, we have harnessed these new forces to serve our profession and our users. One can imagine our predecessors bemoaning changes to existing practices and threatening new technologies.

In a library in ancient Rome:

First Librarian:           Have you seen the new thing? They call it a "codex."

Second Librarian:        Expletive! First we're going to have to re-do all the shelving – we can't shelve them with the scrolls. These codices will end up crushing them. Yes, a codex can store much more information in a more compact space, but we may need to develop sturdier shelving.

Or in the mid-fifteenth century:

First Librarian:           Have you seen the new thing? Guttenberg calls it a "printing press."

Second Librarian:        Expletive! We could barely keep up with the cataloging and organizing when it was just monks copying manuscripts – how are we ever going to handle all the content a single press of Guttenberg's can produce, let alone multiple presses?

Sound familiar? Librarians have always been in the vanguard of those embracing new technologies, trying desperately to leverage any advance in technology to better carry out the duties of our profession. At library conferences, discussions, papers, and panels on the latest technologies abound, whether it's virtual reference through chat or texting, or making our catalogs and holdings accessible through the latest devices or apps. We continue to do that which we have always done, harnessing these new forces to serve our users and our profession.

A review of some of the heated discussions over the "new" technologies of the late 19<sup>th</sup> century shows that librarians then, the same as now, first grapple with, and then embrace new technologies. Further, it demonstrates that librarians have always tried to wring whatever advantages could be had for our profession from new technologies through exhaustive testing and discussion. In examining the

discussions from the proceedings of the annual meetings in the 1880s and 1890s, we can see that our predecessors were involved in exceedingly passionate discussions regarding the use of typewriters, as opposed to “library hand”, electric vs. gas lighting in the library (and also, which electric lighting system was safest and worked best), and the entire topic of shelving: iron (later steel) or wood, arranged in stacks or galleries, including size and depths of the shelves.

In the late 1800s, librarians were driven to organize librarianship by a variety of forces. The last half of the nineteenth century saw a number of occupations move from the old labor model of “apprentice-journeyman-master” towards a new model of organization and profession. Doctors, lawyers, and others, including librarians, all sought to standardize and develop a set of professional norms through which they could codify and develop knowledge, and control who practiced their occupations. According to sociologist Harold Wilensky:

“Any occupation wishing to exercise professional authority must find a technical basis for it, assert an exclusive jurisdiction, link both skill and jurisdiction to standards of training, and convince the public that its services are uniquely trustworthy. While this traditional model of professionalism, based mainly on the “free” professions of medicine and law, misses some aspects of the mixed forms of control now emerging among salaried professionals, it still captures a distinction important for the organization of work and for public policy.”<sup>1</sup>

Further, this movement required that:

“In the minds of both the lay public and professional groups themselves the criteria of distinction seem to be two: (1) The job of the professional is technical-based on systematic knowledge or doctrine acquired only through long prescribed training.<sup>4</sup> (2) The professional man adheres to a set of professional norms.”<sup>2</sup>

With more libraries being formed in the late nineteenth century, people were needed to work in them. As in many other fields of business, there was no organized training or existing standards of operating a library, merely anecdotal evidence of what had been done elsewhere. This is the vacuum that Dewey, Cutter, Winsor, and the other founders of the American Library Association (ALA) sought to fill when calling for the first meeting of librarians in 1876. Subsequent conferences and discussions would continue to build the profession over the following decades.

## SHELVING

At the 1885 ALA annual conference, held at Lake George, New York, William F. Poole of the Chicago Public Library declared this about shelving:

“I would have no bookcases whose shelves are not moveable. It is not possible to make a scale of distances between fixed shelves which would not occasion serious embarrassment in the system which I use, and which is in general use, of arranging books on the shelves in relative, and not absolute, positions. Books which are on the

lower shelves today, may a month hence be on the upper shelves. If the shelves be fixed, the distances between them must be uniform enough to receive the tallest books. Much space will hence be wasted.”<sup>3</sup>

The public library was a relatively new institution in the late 19<sup>th</sup> century. The 19<sup>th</sup> century librarians who ran them sought to organize, standardize, and professionalize librarianship, or as they referred to it, “library economy.” One of the first problems or questions was shelving for the books. What arrangement was most efficient? Should the shelves be adjustable? Finally, what should the shelving be constructed of?

Early iron shelving from the 1870s was often no better than regular hardwood, given its propensity to warp, making adjusting shelves a more difficult task (one can sand a wooden shelf down a little – not so much with iron). Adjustable shelf supports of ash, iron, or brass were all tried. ALA Secretary and Columbia College Librarian Melvil Dewey noted:

“The best sort of shelf-support which I have seen is a metal pin with an elbow, which enables the height of the shelf to be more nicely adjusted than it can be by common pins in holes occurring at regular distances. We often have a book which is a trifle too tall for the shelf. By revolving the pins, without removing them, we get the small additional height which is needed. The pins are made of bronze or iron, and are of moderate cost.”<sup>4</sup>

Additionally, bookshelves were preferred over galleries. William Poole of the Chicago Public Library believed:

I object to galleries for a good many reasons; and the first I will mention is the toil and trouble of climbing stairs to get into the galleries. It is not a difficult thing to go once into a gallery ten feet high; but suppose you had to do it fifty times a day; would you enjoy the exercise? Suppose that, on your walk to the library, you meet an obstacle in the street ten feet high; How much extra distance on a level would you be willing to walk in order to avoid it? You would walk fifty, yes a hundred feet further, rather than surmount it. If you did not make this choice the first day, you would the second day. If it were fifty feet high (and there is much of this sort of climbing required in our first-class library buildings) you would walk four blocks out of your direct route to escape it.<sup>5</sup>

While galleries had been phased out in more recently constructed library buildings of the late 19<sup>th</sup> Century, a variety of shelving still existed, from Library Bureau steel, to wooden bookcases.

## LIGHTING

With the advent of the incandescent electric light bulb, electric lighting systems began to compete with and eventually replace gas lighting. In the 1887 ALA conference at Thousand Islands, New York, the librarians present heard a paper on experiments that sought to determine if leather (as used in binding) deteriorated due to its proximity to gas lighting sources. In the discussion that ensued, not only were

the potential deleterious effects of gas discussed, but also the possible problems, with electric light, which one pamphlet accused of changing paper to a yellow color. Frederick M. Crunden, Librarian of the St. Louis Public Library began the discussion, followed by Columbia College Librarian Melvil Dewey, and ALA President William Poole, head of the Newbery Library in Chicago:

Crunden: I should like to speak of a letter I have received from Mr. Dyer of the St. Louis Mercantile Library, enclosing a communication to him relating to certain alleged dangers resulting from the use of electric light. The writer had read in *Public Opinion*, of London, an extract from some foreign periodical, which stated that electric light changed paper to a yellow color. Mr. Dyer asks me to bring the matter before the convention and secure a thorough discussion of the subject. He is naturally anxious to get all the information obtainable on this subject, as they are erecting a \$300,000 building and want to have the very best light in existence. If the detrimental effects of gas are matched or exceeded by new dangers from electricity, it is important to all that it should be known. I should be glad to hear from those who can speak from personal observation on this point.<sup>6</sup>

Dewey: Half a dozen people have sent me this same cutting. It has come in original, copies, and translations with a persistence that suggests a wealthy gas company behind its circulation. It must refer to the old arc light. The same thing was said about the injurious effects of the electric light on the complexion – it would produce freckles. But I see no increase in freckles, nor reduction in the number of ladies who use our reading rooms. One who cares for his eyes will surely use the incandescent electric light. We use the Edison system, which is infinitely better than any use of gas.<sup>7</sup>

Poole: This same clipping has been sent to me in various forms, and I assure you there is nothing in it. It does not prove nor even tend to prove that the electric light is injurious. I have had the experience of Edison's. There is nothing better in the world except sunlight. I have been surprised that that paragraph should attract so much notice. It only proves that certain papers made of wood pulp will change color in a strong light. ... I have seen the experiment tried in sunlight with the same result of changing, so that whatever will apply to the electric light in this respect, will also apply to sunlight.<sup>8</sup>

## TYPEWRITERS

Early library education focused mainly on training librarians to write catalog cards properly. With the advent of the commercially available typewriter in the early 1870s, librarians sought to discover whether this new machine would be of use to them. Melvil Dewey, speaking at the ALA Conference at Lake George in 1885, noted:

“I have been experimenting in type-writers, and have tried the Remington, the Caligraph, the Hall, the Columbia, the Sun, and the Hammond. Mr. Richardson has got some good results from the Hall. I did not get very satisfactory results on catalogue cards until I got the Hammond. I still have two Hall machines, - slow, but that is not a

serious consideration in cataloguing, as it would be in commercial matters. The Hammond has an action somewhat like the Remington, but instead of working over a cylinder, it works against a flat surface, thus allowing the best of work on flat, stiff cards. Another peculiarity is, that the whole set of type can be changed in thirty seconds. You can have a special type cut for library purposes, and the manufacturers have now agreed to make for the Library Bureau a special form of machine, containing our special characters, etc., and called the Card Cataloguer. It is very perfect in its action, and gives excellent results. This is one of the library machines that we ought to utilize. The cost is the same as of the Remington.”<sup>9</sup>

Just as with any new electronic device, from tablet computers and smart phones, from chat software to social media, it took a librarian to test every incarnation of a new technology then available, who then reported the findings to colleagues.

Once a new technology has been thoroughly examined and tested, it is put into use, and then becomes the standard. Someday, perhaps, we will stop calling it the “online catalog” and go back to just calling it the “catalog.” Looking at the technology currently in libraries, we see some that dates back to the fifteenth century, such as printed books, some from the late nineteenth century, including electric lighting and telephones (or ‘land lines’ as they’re now called), and some from more recent advances, such e-books, online databases, and chat reference. As a cautionary tale about projecting the future path of technological change, let us examine a paper from the 1883 ALA Conference in Buffalo, New York, by Charles Cutter, one of ALA’s founders. He envisioned the library of 1983 in his fascinating paper.

It was 10 am, Thursday morning, August 16, 1883. The Fourth Session of the Sixth Annual Meeting of the American Library Association, meeting that summer in Buffalo, New York, had just been called to order in McArthur’s Hall, with 90 persons present. Charles Cutter, Librarian of the Boston Athenaeum, opened the session by delivering a paper on “The Buffalo Public Library in 1983.” Cutter described a future where the technological advances of the 1870s provided their future librarian selves with solutions to some of library economy’s most vexing problems of that day. Electricity was plentiful and cheap, provided by the harnessing of nearby Niagara Falls. As for the building itself:

“The library building was near the center of the city. A whole block some 200 feet square had been secured for it. Part was already built upon, and part, reserved for the inevitable extension of a growing collection, was occupied by stores and houses, whose rents were allowed to accumulate for a building fund. Wide avenues gave it air and light, and protected it against fire on three sides; on the fourth, there was space enough between the library and the shops.”<sup>10</sup>

Even with its central location, Cutter noted it was removed, by a few blocks, from the noisiest streets, and that the paving was designed to minimize the clatter of passing vehicles. Cutter was also pleased to find electric lighting throughout the reading rooms and stack areas, which of course, were still closed to the public. Advances in electric lighting had alleviated the problem about how long one could build a

stack of books. This allowed to be built a “gridiron’ of stacks 8 stories high, and 150’ long, allowing for shelving for 4 million volumes, in close proximity to the reading rooms.

Further, the Buffalo Public Library of 1983 is climate controlled: “The air is nearly as good as out-of-doors.”<sup>11</sup> This was first accomplished by an employee who would monitor all the thermometers, hygrometers, and atmosferometers in every room, but later an invention was devised to make every room regulate its own dryness and heat. The Buffalo Public Library of 1983 has a number of branches, all connected to the central branch by telephone. As for library programming, Cutter also foresees a program of education for library users, which he referred to as “bibliokresis” – the use of books – that we now call information literacy:

“These children are not going to borrow books, but to learn how to use them . . . no part of our library work is more effective. I do not hesitate to say that the *useful* reading is quadrupled in any city where such a course is pursued, for the children with whom the method takes grow up as real inquirers instead of being desultory amusement-seekers. The ordinary novel-reader is not done away with, though his tribe may be diminished. But novel-readers come from a different class, and read for a different object. We can never convert them, and often cannot intercept the taste in youth. Our chief work is to bring into the fold those who would not otherwise read books at all. It is not the novel-reader but the newspaper reader that we aim to catch.”<sup>12</sup>

The imagined library of 1983 also has a national interlibrary loan system, although not one bearing any resemblance to 1983, or the present day:

“One other practical point: The fonograf,” I was told, “plays a great part in our library work. If Boston or Philadelphia has a rare book from which we wish extracts, instead of having it sent on with the risk of loss, we have a fonografic foil made of the desired passages, which are read off to us, or, if we pay a little more, are sent on. In the latter case, a duplicate, made by a new process, is kept at the library, so that librarians gradually accumulate fonografic reproductions of all their rarest books, and when they are called for have only to put the foil in the machine and have it read off through the wires to the end of the Union.”<sup>13</sup>

Finally, Cutter reveals how the 1983 Buffalo Public Library (and all libraries) solved a most perplexing problem of library economy: newspapers. In 1983, Cutter foresaw that libraries across the Union would band together in an alliance, and each would collect and safely and securely store only newspapers from their surrounding area.

At the time Cutter delivered his paper, the telephone, fonograf, and electric light had all been around less than a decade. These items (or their descendants) which most of us grew up with were to 19<sup>th</sup> century librarians as the internet, tablets, and e-books are to us. Further, as new technology develops, it often does so in non-linear ways not readily obvious or predictable to those in the present. Cutter envisioned a future library fully utilizing all the recent breakthroughs of his age. But he had no inkling of future technological developments. For instance, only 12 years later, in 1895, when Marconi invents

wireless and the radio age. Or even 20 years later, when the Wright Brothers successfully conduct the first manned flight, which by 1983, means that one can travel across the country in 6 hours instead of 6 days. As to another of Cutter's points, the "most vexing" newspaper storage problem was solved first by microforms, then by online/electronic copies. On the other hand, Cutter was right about libraries banding together to work and cooperate through interlibrary loan and other avenues.

When we listen to such "futurists" today – and you've seen them at conferences and other presentations, sharing their vision of what the library world will be like in ten, twenty, or even fifty years, we would do well to bear Cutter and his paper in mind. Libraries and librarians will be there in some form – librarians and libraries have been around in various forms for millennia. As to what form our collections will take, what tools we will use, or even how we will interact with our users is all dependent upon the next unknown innovation, whatever that may be. Whatever direction history and change may take, be it Vico's upward spiral or Kuhn's paradigm shift, it will probably not be linear, nor will it be predictable. When we remember Cutter, like all good futurists, we remember that he was right about a surprising number of things. Considering the things he missed demonstrates that there is only one constant, in librarianship or in life: that one constant remains change.

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**Submitted:** February 2013

**Published:** May 2013

## REFERENCES

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<sup>2</sup> Ibid.

<sup>3</sup> *Library Journal*, Lake George Conference Number 10.9/10 (September – October 1885), pp. 328-329.

<sup>4</sup> Ibid. p. 329.

<sup>5</sup> Ibid.

<sup>6</sup> *Library Journal*, Thousand Islands Conference Number 12.9-10 (September – October 1887), p. 118.

<sup>7</sup> Ibid. pp. 118-119.

<sup>8</sup> Ibid. p. 119.

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<sup>9</sup> *Library Journal*, Lake George Conference Number 10.9/10 (September – October 1885), pp.320-321.

<sup>10</sup> Charles A. Cutter, "The Buffalo Library in 1883." Papers and Proceedings of the Sixth General Meeting of the American Library Association, Held at Buffalo, August 14 to 17, 1883, p. 49.

<sup>11</sup> *Ibid.* p. 51.

<sup>12</sup> *Ibid.* p. 54.

<sup>13</sup> *Ibid.*