

The Shock of the Familiar: Three Timelines about Gender and Technology in the Library

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Abstract

Widespread ideals about libraries are in conflict with deep-rooted gender-based inequities within the library and gendered perceptions of libraries and librarians by the larger public. These contradictions are particularly striking when we look at gender in conjunction with information technologies that help to structure work-roles in the library, especially as these change. This article uses conventional and “fictional” timelines to survey the historical junctures of gender and technology in the library and to speculate about the future of the academic library, with particular attention to deployments of the digital humanities in the library and its potential for disrupting these long-standing gender patterns.

As an institution that is defined by information technologies and as a workplace where women have been in the majority for over a century, the library offers a unique perspective from which to view the evolving relations of gender and technology.^[1] Widespread ideals about libraries as “essential to the functioning of a democratic society...the great symbols of the freedom of the mind” are in conflict with deep-rooted gender-based inequities within the library and gendered perceptions of libraries and librarians by the larger public — and can only be enacted through technologies that are now in flux, like books, catalogs, databases, and the internet.^[2] In other words, library ideals are stressed along gender lines and in terms of technological practices. This juncture, where gender and technology meet in the library, thus deserves our particular attention, not only for feminist analyses of technology and technological culture, but for ongoing debates about the identity of the library in a period of technology-driven transformation.^[3]

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This juncture is equally important to the identity of the digital humanities, given the library’s complex and symbiotic relationship to the digital humanities. Practically speaking, the library, especially the academic library, is the space where many institutional embodiments of the digital humanities are staged, in digital humanities programs or centers that are located within the library or congruent to it; this means that many practitioners of the digital humanities work in libraries or in units that rely on libraries. Indeed, the digital humanities center in/adjacent to the library has emerged as a key paradigm not only for the implementation of the digital humanities but also for library responses to the changing information environment.^[4] The library serves symbolically as the founding genius loci of the digital humanities, as an inter-disciplinary laboratory and repository — but it is also perceived as an agent of the “old” humanities, structured by traditional disciplinary distinctions, one-way communication systems, slow technology, and fixed professional identities. The library is responsible for some of the confusion about the very definition of the digital humanities, as the host of many of the digital tools, digitized resources, digitization programs, and digitization specialists that make the digital humanities possible, but are not in and of themselves expressions of the digital humanities...except for when they are. Finally, library ideals — the library as guardian of free speech, information safe-haven, repository of cultural memory, and nursery of self-determination, dedicated to serving community needs — engage values that are also associated with the digital humanities, whose practitioners often claim commitments to public discourse, open access, and service to a broadly defined interdisciplinary community. Because of this operational interdependency and congruency of principles, questions about gender and technology in the library matter to the digital humanities and vice versa — and gain new urgency when we imagine a future in which technological change continues to influence both libraries and the

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digital humanities.

One way to think our way into these connected futures is to survey their histories for predictive patterns. The timeline, a visual representation of chronological time, offers a means of discerning such patterns by sequencing thematically connected but temporally distant moments within particular stretches of history. The timeline's signature rhetorical elements — the indicative presentation of a single date and fact, multiplied and ordered in a supposedly unassailable progression — implicitly assert its completeness and accuracy, creating the illusion of a record so fully mastered it can be delineated in a few strokes, like a connect-the-dots picture, and freed from the usual proof obligations, such as footnotes. While the selectivity, linearity, and compression of the timeline can reify the historical status quo, resulting, for example, in a "traditional and parochial display of Eurocentrism regarding the history of science and technology," the timeline can also be a tool of revision: by identifying and linking isolated bits of data within a mass of accumulated historical phenomena, timelines can help us see and tell new stories [Ihde and Amato 2000]. Timelines can even serve as "interpretationally flexible" devices for feeling our way towards an understanding of events that are not yet finished.

[5] It is in the spirit of this latter conception of a timeline's utility that I offer the three timelines below. [6]

Timeline I — not a conventional timeline at all — sets up the symbolic landscape: how library ideals function within a civilization's self-description, as they appear in one representative sci-fi future. In this biased bullet-point recap of a particular speculative fiction, library ideals that come into view as mere background to the plot can be seen as significant vehicles of gender patterning with respect to technology. This timeline-that-is-not-one thus also helps illustrate the narrative losses and gains of the timeline as a device.

Timeline II, organized into three chronological periods, reviews selected events in library history since the mid-nineteenth century. Each set of events is brought together by a focus on the library identity that has been created by historically specific imbrications of gender and technology. While I make this focus more legible at the end of each set and then reduce the whole chronological stretch into a few key points, the events themselves may seem to exceed the interpretation I extract from them — as indeed they should. I hope that readers will feel free to skim, skip, or dip more deeply into events, or identify missing events, to corroborate or question my historical deductions.

Timeline III returns to the mode of speculative fiction: how might different configurations of gender and technology play out in the library of the future? Three possibilities for the academic library are described — three versions of the future, circa 2030 — each with a title that again names a particular library identity. For each, I have attempted to draw out what particular library commitments might mean for gender roles within the library, for the digital humanities, and for disciplines more generally. Here again the governing structure is less a conventional timeline than a "time outline," each a model of an idea about the future. Multiple options again offer an invitation to the reader: to contest or embellish these models, propose others, or refigure their gender and disciplinary implications.

All of these timelines employ to a degree the genre's indicative mood and fantasy of comprehensiveness, but I have attempted to frustrate these properties in several ways: by adding commentary and interpretation; by including historical events that do not exactly adhere to the interpretive scaffolding I have put in place, and that therefore gesture to other possible stories; and of course by turning the instrument of the timeline towards chronologies that are incompatible with its factual arrays, ie, fictions and suppositions.^[7] Most importantly, because we are still immersed in the sequences they chart, these timelines cannot be conclusive — in the case of the final three possibilities, we have not even reached the temporal horizon they depict. They are necessarily shaped by weighted interpretations of history and current concerns; they inevitably are or will be "wrong," according to the criteria of a later analysis.^[8] To compound the inaccuracy by setting these timelines within the fixed frame of a traditional argument seems to me both unwise and, ultimately, antithetical to their more open-ended purpose: to use the past to refocus our view of the present and our possibilities for the future. So, in place of a thesis statement, I offer the guiding questions below — and, at the very end, a proposal for a possible, partial remedy for the gender fractures in library ideals, and their disciplinary and technological repercussions. My aim is not to suggest a single answer, but to prompt a more explicit conversation about the relationship between the library and the digital humanities in terms of gender and technology.

First, the questions that have shaped this selection of timeline events. Where do gender stresses in libraries come from,

how have they shifted, and in what forms do they persist — despite decades of feminist attention? What is the history of technology in the library, especially those technologies that are indigenous to the library and those in the deep background of digital poesis? Does the history of gender in the library look different when we examine it in tandem with the history of technology? Does the future? What does the rise of the digital humanities in the twenty-first century augur for libraries in terms of these long-standing gender stresses? In short, why do we who work in libraries — which have been, historically, on the front lines of “the shock of the new” when it comes to information technology — still experience “the shock of the familiar” when it comes to gender?

Timeline I: Back to the Present, 2077 to 2013

- **March 14, 2077.** It is sixty years after a nuclear war with a race of aliens called Scavs. Earth is a wasteland.
- Technician Jack Harper is two weeks from the end of his five-year mission, monitoring and repairing the drones that defend the coastal water rigs that deliver fusion energy to the human colony on Saturn’s moon Titan, established after Earth became uninhabitable.



Figure 1. Jack Harper repairs a drone with chewing gum. [Kosinski trailer 2013]

- The other member of the tiny “mop-up team” of two is Victoria, Jack’s communications liaison and girlfriend. They live in a tower high above the planet surface. While Jack visits the surface every day to work on drones, Victoria stays in the tower to coordinate the directives conveyed by their commander from the Tet, a space station.



Figure 2. Victoria in the Tower. [Kosinski trailer 2013]

- On this day, Jack is eager to complete the day's patrol. But Earth is a dangerous place. Jack has to fend off guerrilla Scavs who attack him and his drones while he navigates a landscape rife with peril. The blue planet is a desert; a radioactive zone impedes travel; cities are buried in sand from the massive earthquakes and floods that restructured the terrain after the Scavs blew apart the moon.
- Jack tracks a missing drone to a sinkhole and lowers himself in after it, where he lands inside the damaged but still recognizable Rose Reading Room of the New York Public Library.



Figure 3. New York Public Library Reading Room. [Kosinski trailer 2013]

- Jack's visit to the library is cut short by a crisis, as you might expect, but he does manage to borrow a book on his way out: Thomas Babington Macaulay's *Lays of Ancient Rome*, a series of poems about heroic Roman feats. (In later scenes, we see that Jack's copy, a leather-bound volume with raised headbands and gilt decoration, looks a lot like the first edition of 1842.)



Figure 4. Jack Harper finds Macaulay's *Lays of Ancient Rome*. [Kosinski trailer 2013]

- Back at the tower, Jack is drawn to one particular verse: “And how can man die better / Than facing fearful odds, / For the ashes of his fathers, / And the temples of his gods” (XXVII).^[9]
- **The next day.** Jack brings *The Lays* to his hand-built secret hide-out by a lake in a lush green canyon far from the tower, where it joins a larger collection of salvaged media and technologies: LPs, a turntable, lots of other books.



Figure 5. Jack's hide-out. [Kosinski trailer 2013]

- **In the end.** The hide-out — a repository of the past out of which Jack rewrites his present — becomes the origin for a new future for Earth: in the film's final scenes, it is where Jack's daughter is born and where a human resistance to a controlling artificial intelligence gathers force.

What is the New York Public Library doing in the sci-fi future of *Oblivion*, a 2013 action-movie vehicle for Tom Cruise? It is there to flaunt its symbolic capital as a metaphor for civilization and, specifically, civilization's continuation over time. Many of the library's iconic features are present in the set: stone arches (carved with the words “New York Public Library,” just barely legible); the long tables and lamps of the reading room; a wooden book cart; a large globe; shelves; books.^[10] While Jack's hide-out has all the accoutrements of a beloved personal library, at the other end of the public-private spectrum, the two spaces are connected by the books themselves — these are the true “temples” for the “ashes

of the fathers.” *Oblivion* incorporates many of the preoccupations of mainstream science fiction: a deep ambivalence about technological change, for one thing — excitement about its promises coupled with fears about its potential effects; a tenacious attachment to traditional gender roles, for another. Jack’s and Victoria’s respective relationships to the technologies of the mission are illustrative. Jack descends every day from the tower to the surface, which he reaches via the gyroscopic spaceship that he flies with aplomb; he fixes drones with chewing gum and gins up pre-war record players in his secret lake house. In contrast, as communications officer, Victoria ascends every day to the top of their Jetson-style quarters — a domestic pedestal far removed from the contradictions of the surface. Victoria dresses more like a sexy secretary à la *Mad Men* fantasy than a military staffer; in her tight, pale skirts and silver shoes, with a delicate radio transmitter on one ear, she sits at her hi-tech podium and moves icons around on its many screens, mediating between Jack and mission control, uploading and downloading data, watching his activities through grainy video feeds, and losing contact with him when he goes rogue. Like most films of its ilk, *Oblivion* assures us that the future, with respect to the ways gender animates technology, will look a lot like the present: Jack hacks; Victoria yacks.

One key exception to this rule is signaled by the library.^[11] It is Jack who is interested in yacking with the past through old technologies, who creates his own library of rescued books and LPs so he might mine them for a connection to history and a better future. It would even be possible to argue that Jack himself represents a kind of human library, an archive of personal memories that are preserved (as we eventually learn) through many iterations of Jack clone bodies. As for the scene set in the ruins of the NYPL, it is important that *Oblivion* offers clues for recognizing the actual building, for it is a structure that symbolizes two of the library’s most admired missions: it is a democratic institution that is also a precinct of scholarship. Given its age — the building was designed in 1895 and opened in 1911 — it serves perfectly as the emblem of library ideals that were articulated in the late nineteenth century, through the public library movement and the professionalization of librarianship, and have come to define “the library” as an institution. But all of the library scenes in *Oblivion* — the NYPL, Jack’s hide-out, and a collection of books and works of art maintained by the Scavs — express enduring and cherished conceptions of the library as a storehouse of human knowledge and achievement, and by extension, of democratic principles. The library, then, is a storehouse not just of cultural matériel but of cultural memory itself, and thereby its promise of continuation — it links a civilization’s past and present to its future. These are functions the film suggests are timeless, sacred, and worth dying for.^[12]

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In keeping with its reiteration of time-honored library ideals, *Oblivion* also replicates the gender stresses that are, in fact, as intrinsic to the library’s actual operations as the library mythos is to the values it protects. These stresses, originating in patriarchal systems that regulated women’s legal rights, work, education, and self-determination, took on forms specific to the library with the advent of the public library movement, when the articulation of modern library ethics and a related practical expansion opened up librarianship to women. That shift led in turn to feminized definitions of library work and public perceptions of the library, which secured the library’s “inferior and precarious status.” [Garrison 1979, 174]. Not only does the film recreate for the future the present’s yack/hack technological gender divide, but its representation of the library as a masculine preserve — the NYPL a stage for Jack’s action, his private hide-out a cultural refuge — echoes long-standing anxieties about librarianship’s gender, and reiterates moves made throughout the twentieth century to rescue it from the damaging effects of a feminized professional identity.

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Timeline II: Some Scenes from History, 1841 to 2014

Part 1: The Professional

- **1841.** Anthony Panizzi, a sub-librarian at the British Museum, develops “Ninety-One Cataloguing Rules,” which provide the foundation for succeeding cataloguing rules and digital cataloguing elements.
- **1848.** William Frederick Poole, an undergraduate, publishes his first general index to periodical literature. A new edition supported by the American Library Association (ALA) is published in six volumes between 1882 and 1908; with the release of the final volume, the index provides article level indexing by subject matter to 482,000 articles and 378,000 subjects in 12,241 volumes of 479 British and American periodicals from 1802 to 1906.

INTRODUCTION.

ALTHOUGH we have every General Index that has been issued by the publishers of the several Reviews and Magazines, yet several hundred volumes of Standard Periodicals in our Library, are comparatively useless, as works of reference, from the want of proper Indexes. Nearly all these have been issued within the last twenty years, and contain the most elaborate discussions of those questions that have interested the literary and political world, during that period. The object of this work is, to bring within the reach of the general reader, the contents of these volumes.

The following table contains the Titles of the Works referred to, the Abbreviations, and Editions used:

North American Review.	N. A. Rev.	Boston.	36-66	41
Edinburgh Review.	Ed. Rev.	Edinburgh.	51-59	36
		New York.	36-56	6
Selections from Edinburgh Review.	Selec. Ed. Rev.	Paris.	1-6	6
London Quarterly Review.	Quar. Rev.	New York.	60-81	21
Foreign Quarterly Review.	For. Quar. Rev.	London.	1-16	38
		New York.	17-38	48
Westminster Review.	West. Rev.	London.	1-34	16
		New York.	35-48	22
British and Foreign Review.	Br. & For. Rev.	London.	1-16	22
American Quarterly Review.	Am. Quar. Rev.	Philadelphia.	1-29	10
Democratic Review.	Dem. Rev.	New York.	1-21	9
New York Review.	N. Y. Rev.	New York.	1-10	7
Southern Review.	South. Rev.	Charleston.	1-8	3
American (Whig) Review.	Am. Whig Rev.	New York.	1-7	3
Brownson's Quarterly Review.	Bro. Quar. Rev.	Boston.	1-3	5
Edinburgh Monthly Review.	Ed. Month. Rev.	Edinburgh.	1-5	4
Walsh's American Review.	Walsh's Rev.	Philadelphia.	1-4	3
Literary and Theological Review.	Lit. & The. Rev.	New York.	1-3	3
Blackwood's Magazine.	Black. Mag.	Edinburgh.	1-38	62
		New York.	39-62	30
Knickerbocker Magazine.	Knick.	New York.	1-30	13
Eclectic Magazine.	Ec. Mag.	New York.	1-13	7
New England Magazine.	N. E. Mag.	Boston.	1-7	12
Analectic Magazine.	Anal. Mag.	Philadelphia.	1-12	16
Metropolitan Magazine.	Met. Mag.	N. E. & N. Y.	1-16	5
Fraser's Magazine.	Fras. Mag.	London.	24-28	5
Dublin University Magazine.	Dub. Uni. Mag.	Dublin.	18-22	10
Quarterly Christian Spectator.	Chris. Spec.	New Haven.	1-10	4
Bibliotheca Sacra.	Bib. Sac.	Andover.	1-4	5
Quarterly Register of Ed. Society.	Quar. Reg.	Boston.	9-12	5
New Englander.	N. Eng.	New Haven.	1-5	4
American Eclectic.	Am. Eelec.	New York.	1-4	3
American Quarterly Observer.	Quar. Obs.	Boston.	1-3	3
American Biblical Repository, 3ds.	Am. Bib. Rep. 3ds	New York.	1-3	37
Museum of Foreign Literature.	Mus.	New York.	1-37	29
Pamphleteer.	Pamph.	London.	1-29	5
Am. Lib. of Useful Knowledge.	Am. Lib. U. Kn.	Boston.	1-5	5
Oxford Prize Essays.	Ox. Prize Em.	Oxford.	1-5	10
Miscellaneous.				560

Whole number of volumes, 560

To all the above works that are still published, the Index is brought down to January, 1848, and in several instances, to April, 1848; and it is needless to add,

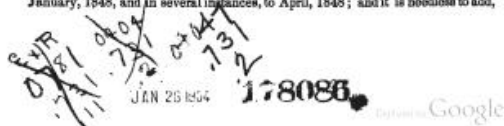


Figure 6. William Frederick Poole, from the "Introduction to An Alphabetical Index to Subjects Treated in the Reviews and Other Periodicals, To Which No Indexes Have Been Published." [Poole 1848]

- **1852.** "The first woman clerk is hired at the Boston Public Library; by 1878 fully two-thirds of the library workers there are female. In 1910, 78.5 per cent of library workers in the United States" are 8 women, the third most "feminized" profession after teaching and nursing. By 1920, 90 per cent of librarians are women, and librarianship "employs a larger percentage of women than either social work or teaching" [Garrison 1979, 173].
- **1853.** The head of the Boston Athenaeum describes his card catalog at a library conference. Versions of card cataloging date back to 1789, but it does not become widely adopted until the 1860s, overtaking other cataloging systems like the Rudolph Continuous Indexer.



Figure 7. A 12-tray Library Bureau card catalog belonging to Norman D. Stevens, circa 1903. Image via [Library History Buff]

- **1876.** The American Library Association (ALA) is founded at the centennial celebration in Philadelphia; the society endorses two standard sizes of catalog cards. Melvil Dewey, who helped launch the organization, also unveils his Dewey Decimal System of classification (DDC). By 1927, over 90 per cent of American public libraries employ the Dewey Decimal System.
- **1879.** At the annual meeting of the ALA, William Frederick Poole makes recommendations for the modern library building: book-stacks arranged by classification, work-space divided by function.
- **1881.** Melvil Dewey incorporates the Library Bureau, a business supplying library “fixtures, furniture and fittings.”



Figure 8. A Library Bureau postcard showing the company's main building in Iliou, New York, circa 1911. Image via [Library History Buff]

- **1887.** The School of Library Economy is established at Columbia University. “Library handwriting” becomes a part of its curriculum, and the student rule book describes best practices for a fast, legible hand to be used in writing out catalog cards. Typewriters gradually replace manuscript as standard library equipment in the early twentieth century.

- **1892.** The motto for the ALA is adopted: “The best reading, for the largest number, at the least cost” [ALA Mission].
- **1893.** A report issued by the U.S. Bureau of Education on the number of volumes in major libraries reveals that quantity in many libraries has doubled or even quadrupled since 1876.
- **1893.** A survey reveals that out of 146 public libraries, 75 percent have an age limit barring children below the age of 12, or in some cases 16. Within the next decade, children’s services are seen as an important part of the public library mission and are largely administered by women.
- **1895.** The International Institute of Bibliography (originally Institut International de Bibliographie) is established in Brussels.
- **1897.** Herbert Putnam invents Library of Congress classification, which offers more categories and sub-categories than the Dewey Decimal System. Like the DDC, it is theoretically a “universal classification” system to cover all subjects, but is essentially descriptive — that is, it is an inventory system for actual books. It therefore lacks epistemological capacity.



Figure 9. George Herbert Putnam, Librarian of Congress from 1899 to 1939. Photographer unknown. Image via [Cole, De Sa, and Mangin]

- **1899.** The main theme of the International Council of Women’s congress is “Women in the Professions.” It is the first international women’s meeting to feature a session on librarianship as a career. Technical professions are not so welcoming: one French delegate remarks, “It is not forbidden for a woman to be an engineer, but because there are no courses available to prepare her for this goal, it is absolutely the same as if this profession was barred to her” [Maack 2000, 58–59].
- **1899.** A Harvard University professor notes the chief metaphors used to describe a university library — “the laboratory of the Humanities,” “the heart of the university,” “the brain of the academic body...no longer a mere storehouse of books, but a great workshop” — in the course of complaining about an inadequate library building. Also in use are the phrases the “center of the university” and “storehouse of knowledge” [Rothstein 1971, 214].
- **About 1900.** The Newark circulation system is invented. Borrowers are issued library cards with a unique registration number. Each book in a library’s collection is equipped with a pocket holding a standardized book card. When a book is checked out, the library attendant records on the book card the borrower’s

registration number and loan period; the card is then filed by call number under each due date. This system is widely adopted, prevailing over older ledger book-keeping systems and “indicator” systems.

- **1904.** The floor space occupied by card catalogs is identified as a serious problem for library architecture.
- **1908.** The President of Harvard University gives a series of lectures about the problems of storing rapidly expanding book collections.
- **1911.** Theresa West Elmendorf, the first female president of the ALA, takes office.
- **1912.** Librarians receive less pay than teachers and work longer hours. By the 1920s, as more employment opportunities for middle-class women open up, a “vicious cycle” is established: “library work does not attract men, and salaries remain low because they are paid to women” [Garrison 1979, 226].



Figure 10. Interior of Broadhead Public Library, 1912. (Wisconsin Historical Society, University of Wisconsin Digital Collections, Image 63779)

- **1923.** C. C. Williamson writes a report for the Carnegie Corporation called *Training for Library Service*, which calls for more standardized, academically rigorous, and professional librarian education: programs should be integrated into universities, clerical studies should be eliminated, and a national certification board should be created.

In the latter half of the nineteenth century and the first decades of the twentieth century, the American librarian became a “professional,” part of a “national movement towards occupational cohesion” [Garrison 1979, 7]. Professionalization transformed librarianship from a job variously undertaken by clerks, amateurs, and scholars into a specialized work-role. Key to this shift was the development of a library association, training programs, and a classification “science.” In a parallel move, attitudes about library architecture turned away from the alcoves and galleries of older libraries towards large buildings spatially organized by distinct library functions — reference, cataloging, business departments — and by the classification of books.

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Late nineteenth-century professionalization helped to advance a vigorous “masculine” culture of enterprise, in opposition to “feminine” genteel culture. This conflict had special consequences for librarianship. Women in the library work force were perceived as important custodians of morality and providers of service who could enhance the

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credibility of the new public library movement, especially as agents of the civilizing influences of reading; at the same time, by “feminizing” the profession, they undermined the library’s contribution to “masculine” projects such as serious scholarship, civic engagement, science, and business. By the early twentieth century, women dominated the work force in public libraries and librarianship’s low pay and low status were secured.

The professionalization of librarianship in these years coincided with an unprecedented expansion of print culture. The industrialization of print technology that began in the early nineteenth century led, by century’s end, to new techniques of mass production and complex trade networks. Within these networks, librarians had to invent new tools and systems for selecting, ingesting, storing, organizing, and circulating books and periodicals, as both the quantity of material and patron traffic increased. The need for automation thus became apparent.

Part 2: The Librarian

- **1926.** The ALA publishes a two-year survey of adult education programs in public libraries, recommending that “the public library should lay most stress upon service to the individual, and should concentrate its attention upon serving the adult education programs of other groups rather than sponsoring ‘library’s own’ programs” [Stone 1953, 439]. “Reader’s advisory” bureaus, begun in the late nineteenth century, grow into full-fledged public services: librarians make suggestions and help patrons find particular materials. Numerous studies thereafter track the numbers of patrons requesting help and their requests.
- **1928.** A graduate library school is established at the University of Chicago with a million-dollar grant from the Carnegie Corporation. The program offers the first Ph.D. in library science and is meant to attract male students, but most practicing librarians believe that research is less important than training for librarians. Early faculty members are men with advanced degrees, not practicing librarians. The first person to earn the Ph.D. is Eleanor Upton in 1930.



Figure 11. Eleanor Upton, seated in center, dressed as Agamemnon for a play, June 1899. (The Upton Family Papers, 1853-1937, Sophia Smith Collection, Smith College)

- **1931.** The Gaylord book charging machine is invented, automating the Newark book charging procedure. A punch-card double charging system is adopted at the University of Texas in 1936. Photo-charging is introduced at the Gary Public Library in 1940.
- **1933.** Pierce Butler publishes *An Introduction to Library Science*, which introduces the term “library science” and advocates for a philosophy of librarianship as a quantitative, social scientific approach to practical problem-solving [Butler 1933].
- **1935.** Newspaper preservation on microfilm begins with the filming of *The New York Times* by Kodak. University Microfilms International (UMI) is founded in 1938; it starts a dissertation publishing program the following year and a newspaper preservation program in 1940.

Microfilm Reader

Microfilmed material containing letters less than 36/10,000 inch high can be read or copied on photographic paper with a projector that reduces eyestrain. The machine is designed for business use in reading and copying 16-mm. microfilm. An iris diaphragm enables the reader to control the illumination. One motor with four speeds carries the film through the machine, making it possible to reach an approximate location at high speed and then switch to a slower scanning speed. Copying the film on photographic paper can be accomplished in two minutes without a darkroom.



Figure 12. Microfilm reader in an issue of *Popular Mechanics*, 1948. Image via [Burmeister 2010]

- **1938.** The American Documentation Institution is created to deal with the challenges that non-book and non-periodical materials present to bibliographic control.
- **1943.** The young adult novel *A Tree Grows in Brooklyn* is published, about a girl who wants to be a writer; its portrayal of early twentieth-century Williamsburg includes a callous lady librarian [Smith 1943].
- **1944.** *The Survey Report on the Army Medical Library* recommends a classification system for medical information, modeled on the Library of Congress system. It is organized by physiological system, regions of the body, and related specialty or specialties [Metcalf 1944].
- **1944.** In *The Scholar and the Future of the Research Library*, Fremont Rider predicts that library holdings will double every decade or two, outpacing storage [Rider 1944].
- **1946.** In Frank Capra's *It's A Wonderful Life*, Jimmy Stewart's character understands that his life has value when he learns what would have happened to his wife without him: "She's an old maid! She never married!...She's just about to close up the library!" [Capra 1946].
- **1950.** The general report of the Public Library Inquiry of the Social Sciences Research Council concludes that the public library fails as an agent of mass communication.
- **1951.** The 38 branch catalogs of the King County Public Library are published in tabulating-machine format and updated every six weeks, in order to facilitate exchange with the other branches.

JUNIOR ROLLING TOTAL TABULATOR

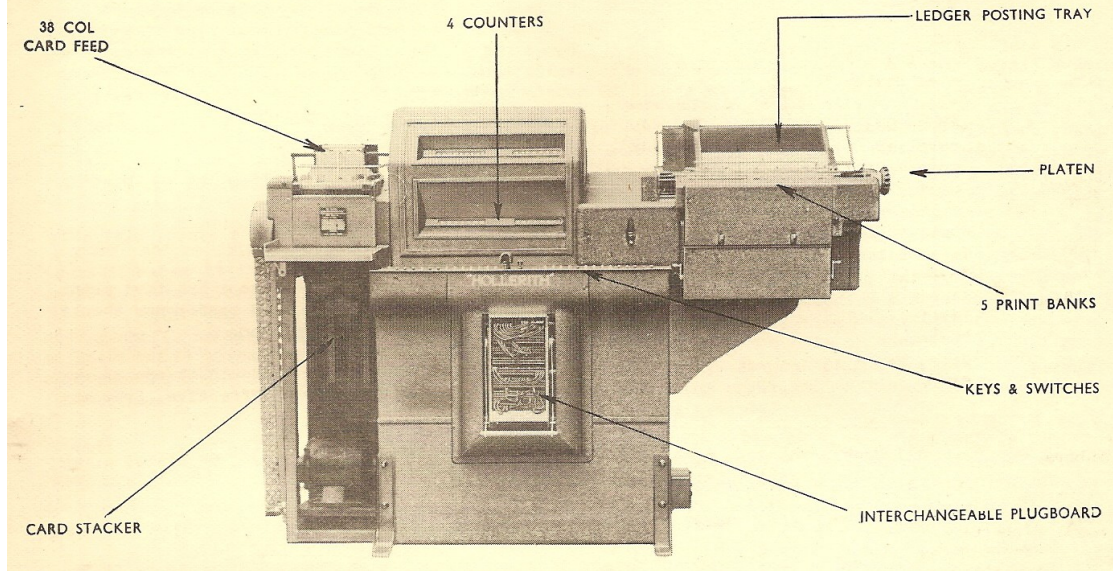


Figure 13. IBM Junior Rolling Total Tabulator, 1951. Image via [Early Office Museum]

- **1952.** The inaugural issue of *Library Trends* is published, to answer a need for “synthesis and interpretation” of library research and developments and to provide “a well-rounded view of the state of the progress” of different areas of librarianship [Downs 1952, 3].
- **1955.** William J. Barrow writes *Manuscripts and Documents: Their Deterioration and Restoration*. Although his studies on acidic paper and document repair began in the 1930s, this work does not reach a wide audience until the 1950s and '60s [Barrow 1955].



Figure 14. William J. Barrow in his laboratory conducting tests on the folding endurance of paper, from the Council on Library Resources' Fourth Annual Report, 1960. [Church 2005]

- **1956-57.** The Adult Services Division and Reference Services Division of the ALA are created, part of a restructuring of the organization that emphasizes “type of library” and “type of activity” divisions, following a report by a management consulting firm — a sign that “services” are increasingly important.
- **1957.** The musical *The Music Man* opens on Broadway, featuring Marian the Librarian, and is adapted into a film in 1962 [Willson 1957] [Willson 1962].
- **1957.** The film *Desk Set* is released, about the romance between the reference librarian at a broadcasting company, played by Katherine Hepburn, and an “efficiency expert,” Spencer Tracy. Tracy’s character uses an “electronic brain” to measure productivity at the library [Lang 1957].
- **1958.** National Library Week is inaugurated; the first slogan is “Wake Up and Read!”

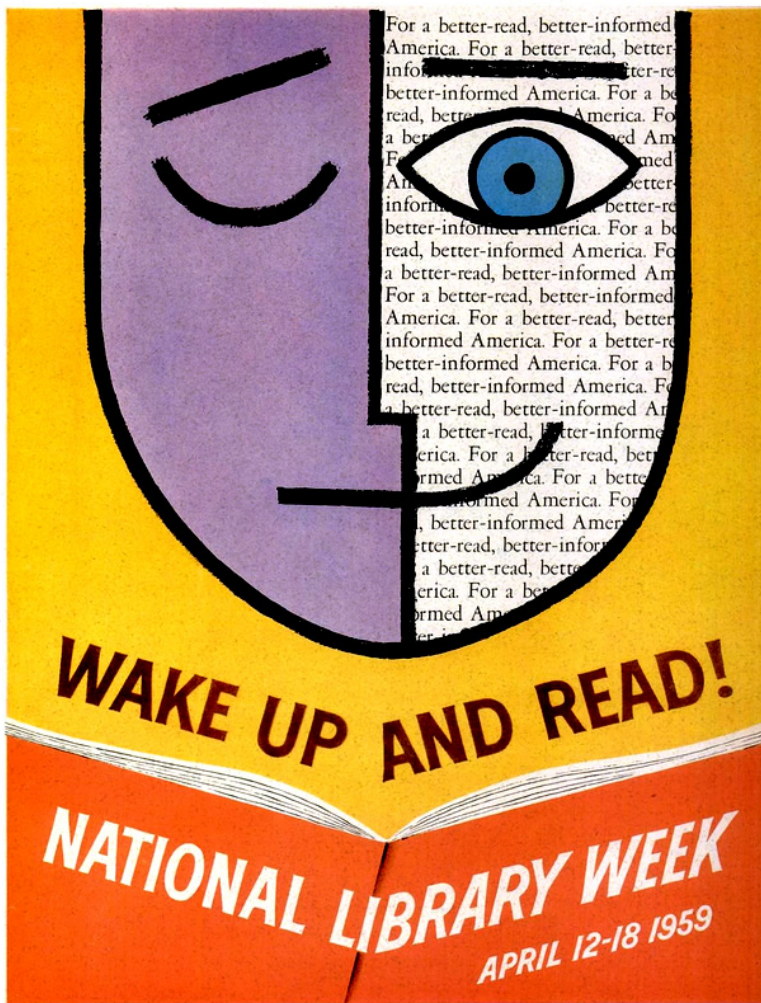


Figure 15. National Library Week poster, 1959. Image via [History of Libraries]

- **1967.** The Anglo-American Cataloguing Rules (AACR) are first published, covering “the description of, and the provision of access points for, all library materials commonly collected at the present time” (AACR2).

The mid-twentieth century could be called the golden age of “the librarian” — the bookish spinster as a recognizable pop culture figure. In contrast to the prevailing image of the generic “shush lady,” part clerk, part bluestocking, however, librarianship became more specialized and systematic as libraries had to adapt to changes in the knowledge economy and escalating demands for services. As research with an emphasis on empirical detail assumed a central role in academia, university library collections expanded and use intensified. New management problems arose from the growth not only in the number but of types of items in libraries. And the aging of library materials led to the recognition of the need for conservation and preservation programs, adding to the obligations of good stewardship.

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The administrative challenges of providing ongoing access to an increasingly complex and sizeable set of print materials affected classification, cataloging, circulation, and preservation methods. In these arenas, new protocols developed from bureaucratic innovation and experimental competition: different methods and tools were tried out over time, until a particular method or tool became dominant. Librarians studied, reported on, and debated these practices in new professional journals and library groups, which served as fora for developing consensus. Automated and mechanized processes were embraced to save time, money, and labor.

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This approach to information management — a problem-identifying and problem-solving process which favored technical, pragmatic, and standardizing solutions — also influenced the approach librarians took to public service. Service to library patrons gained momentum through the adult education movement, but this also created distinctions:

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librarians would not serve as teachers in their own right. Rather, as “readers’ advisor” became a common duty central to librarianship, readers’ and reference services were codified through the development of definitions, guidelines, and standards.

Librarianship was still tied to the ideals of self-improvement and public education that motivated the public library movement of the late nineteenth century, but library leaders wanted to modernize the work force by defining a distinct area of library expertise and building up professional credentials. This set of pressures led to a turn away from the older idea of the librarian’s educational role and towards an identity that prioritized access to information and the librarian as a service provider.

Part 3: The Information Specialist

- **1962.** At the Seattle World’s Fair, the ALA puts on a “Library 21” exhibit featuring a Sperry-Rand Univac Solid State 90 computer that answers “ready reference” questions to visitors by providing instant, annotated bibliographies. The 84 librarians staffing the exhibit are largely unpaid, making the “value of human labor” uncertain [Downey 2007, 37].



Figure 16. Univac computer, American Library Association exhibit, Century 21 Exposition, 1962. (University of Washington Libraries Digital Collections Image SEA2419)

- **1963.** The Council on Library Resources gives the Library of Congress a grant to study the feasibility of automated library systems; a pilot project is underway by 1966, and a MARC operational system is launched in 1969. The author of MARC (Machine Readable Cataloging) is Henriette Davidson Avram.



Figure 17. Henriette Avram presents a roll of magnetic tape holding over 9,000 bibliographic records to Richard Coward of the British National Bibliography, 1967. [Rather and Wiggins 1989]

- **1966.** In response to a petition drive, the Information Science and Automation Division of the ALA is established. The issue of how to become a part of ALA is “complicated by the fact that automation crossed over various organizational lines... Acquisitions, serials control, and cataloging fell within the responsibilities of the Resources and Technical Services Division (RTSD), but circulation and general management came under the Library Administration Division. There were also information retrieval or ‘documentation’ committees in several divisions and an Interdivisional Committee on Documentation” [Salmon 1993, 16].
- **1966.** A Data and Computation Center is founded at the University of Wisconsin, which includes a Data and Program Library Service division, in response to a need for “assistance in social science research problems related to large-scale data collection and computation” [Robbin 1982, 408].
- **1968.** The American Documentation Institute is renamed the American Society for Information Science, reflecting in part the importance of automated systems for information storage and retrieval. In 2000, the name is changed again to the American Society for Information Science and Technology.
- **1969.** The National Women’s Liberation Front for Librarians is formed as a joke, but it becomes an official committee of the ALA the next year, called the Status of Women in Librarianship. In 1980, it is renamed the Feminist Task Force. In 1976, the Committee on the Status of Women in Librarianship (COWSL) is formed.

WOMEN IN LIBRARIES

NEWSLETTER OF THE
ALA/SRRT TASK
FORCE ON WOMEN

Vol. 6 No. 1

September 1976

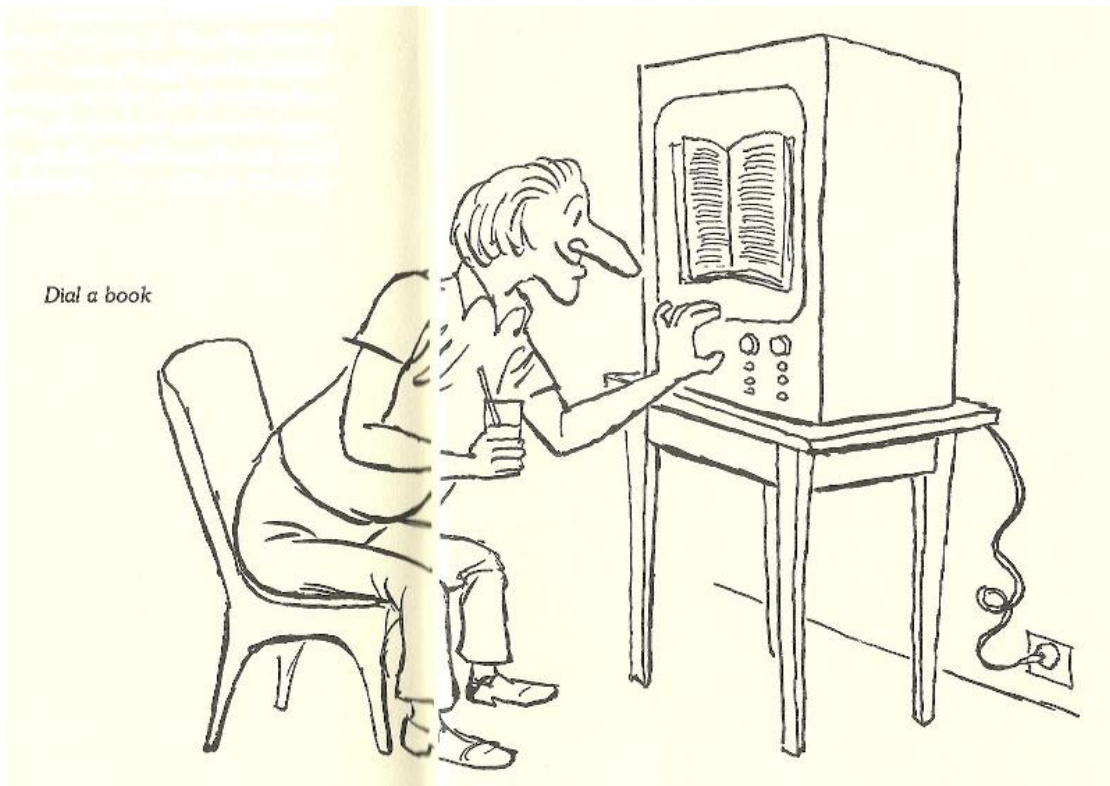
Ed. Kay Cassell

"ASSESSMENT: WOMEN IN ALA" -- A REPORT

A one-day women's workshop devoted to strategies for working with- in ALA was held on Sunday, July 18, at the Eleanor Association by the SRRT Task Force on Women. Kay Cassell gave a history of the Task Force on Women (reprinted in this newsletter). Pat Schuman discussed the political structure of ALA. She stressed that the goals of ALA are institutionally oriented. It is an association of libraries and librarians. Two key committees are COO (Committee on Organization) which decides on what units can be formed and COPEs (Committee on Program Evaluation and Support) which decides on all budgetary matters. The Executive Board is where things start and is a policy making body of the association. Council must pass on all policy. Pat suggested that the Task Force should send a list of qualified women to the incoming ALA President each year, should have a group working on resolutions during the year, should make suggestions for ALA staff appointments and should formalize a lobbying network. Liz Dickinson presented a report on the proposed ALA Standing Committee on the Status of Women in Librarianship. This report was passed by Council on Tuesday. The report's summary is reprinted in this issue.

Figure 18. Newsletter of the ALA Task Force on Women, 1976. [Cassell 1976]

- **1969.** A study suggests that librarians are not perceived as professionals, since “the public is not convinced that there is a basic science of librarianship; the skill is thought to be only clerical or administrative” — a perception also noted in 1921 [Harris 1992, 6].
- **1970.** Anita R. Schiller publishes “The Disadvantaged Majority: Women Employed in Libraries” in *American Libraries* [Schiller 1970].
- **1971.** The “social responsibility of the librarian” is defined as “the collecting, organizing, servicing and administering of the graphic records of civilization”; therefore, “he cannot be an educator in the proper sense” [Shera 1971, 10].
- **1973.** The Association for Literary and Linguistic Computing is founded; its name changes to the European Association for Digital Humanities in 2011.
- **1974 – 1979.** Father Roberto Busa publishes a database version of his concordance to the works of Thomas Aquinas, considered to be the first electronic text project.
- **1975.** The first online public access catalog (OPAC) is developed at Ohio State University. By the end of the 1980s, commercial systems have mostly replaced library-built systems and complex search functions are common.
- **1976.** A humorous library history called *The Happy Bookers* predicts that in the future “the onetime library patron will press a button and turn a dial on his TV, whereupon the requested book, in the desired language, will appear on the screen...” [Armour 1976, 132].



Dial a book

Figure 19. Campbell Grant, "Dial a book." [Armour 1976]

- **1976.** Clara Stanton Jones, the first African-American president of the ALA, takes office.

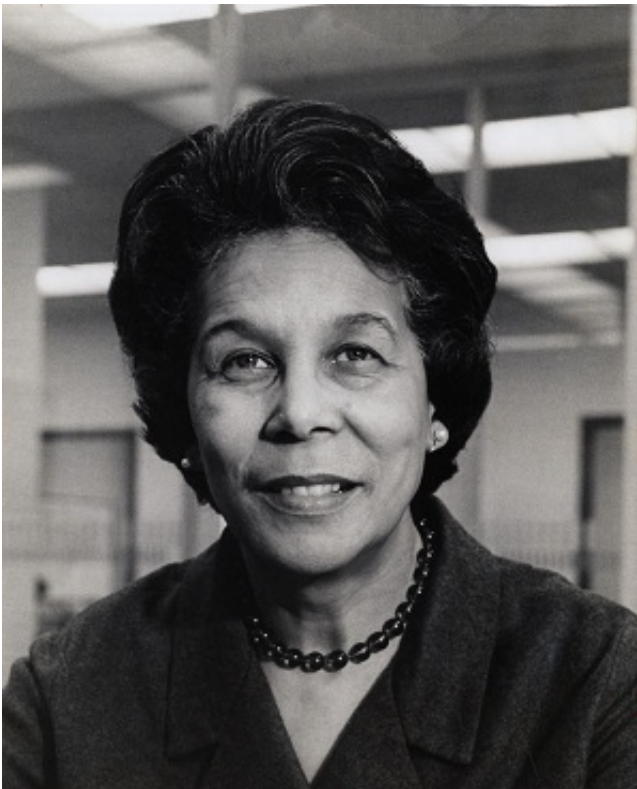


Figure 20. Clara Stanton Jones. Image via [Wheeler 2012]

- **1978.** The Association for Computers and the Humanities is founded.

- **1979.** *The Role of Women in Librarianship, 1876-1976: The Entry, Advancement and Struggle for Equalization in One Profession* is published [Weibel and Heim 1979].
- **1979.** *Apostles of Culture: The Public Librarian and American Society, 1876-1920* is published; its author recommends that librarianship rest “on a systematic body of theory and scientifically based abstract knowledge” and expertise to compensate for the profession’s low status and pay related to the “feminization” of its work force [Garrison 1979, 186].
- **1982.** The status of “information science” continues to rise in relation to “librarianship”; by 1982, 50 percent of ALA-accredited library schools have added the term “information” to their titles.

TABLE 6

Institutions with Information in Their Title

	Number of ALA-accredited schools	Number of schools with information in name	Percentage of ALA-accredited schools
1977	64	16	25%
1982	69	35	50%
1987	60	49	81%
1992	58	49	84%

Figure 21. “Institutions with Information in Their Title.” [Blake 2000]

- **1982.** A study notes that the composition of library school faculties appears to be shifting: 75.4 percent of deans and directors are men, and men make up a majority of full and associate professors, but 57.2 percent of assistant professorships are held by women [Heim 1982, 309].
- **1983.** The Committee on the Status of Women in Librarianship (COWSL) publishes a study showing that almost half of the male members of the ALA are administrators, even though only 21.7 percent of the members are men. The study also finds that “being male is significantly associated with receiving a higher salary even when personal, professional and organizational variables are comparable to those of females in the sample” [Heim and Estabrook 1983, 37].
- **1983.** A study finds a 21.5 percent disparity in salaries between teaching faculty and librarians at academic institutions that grant faculty status to librarians; there is a 24.6 percent disparity at academic institutions that do not grant faculty status to librarians. Overall, mean salaries for librarians lag behind teaching faculty salaries by 29 percent. In 2008, the disparity between mean salaries has grown to 32 percent [Perret and Young 2011].
- **1984.** Seeking to understand how the gender ecology of a workplace — whether it is male- or female-dominated — affects job satisfaction, a study finds a correlation between gender and job satisfaction when male and female librarians are compared to male and female faculty; both male librarians (in the minority) and male faculty (in the majority) report higher rates of job satisfaction than female librarians (in the majority) and female faculty (in the minority). The study also shows that greater autonomy and decision-making power are correlated with job satisfaction [Rockman 1984].
- **1986.** Survey results published in *Academic and Public Librarians: Data by Race, Ethnicity and Sex* indicate that academic and public library staffs are 88.5 percent white, and that top managers are disproportionately male and white [Guy 1986].

TABLE 3
 DISTRIBUTION OF TOTAL WORK FORCE
 BY RACIAL/ETHNIC/SEXUAL GROUP
 FOR LIBRARIANS IN ACADEMIC AND PUBLIC LIBRARIES

		ACADEMIC		PUBLIC		TOTAL	
		NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
AMERICAN INDIAN/ ALASKAN NATIVE	F	10	0.1	20	0.2	30	0.2
	M	5	0.1	7	0.1	12	0.1
	T	15	0.2	27	0.2	42	0.2
ASIAN/ PACIFIC ISLANDER	F	214	3.2	283	2.3	497	2.6
	M	91	1.3	51	0.4	142	0.8
	T	305	4.5	334	2.8	639	3.4
BLACK	F	218	3.2	756	6.2	974	5.2
	M	56	0.8	119	1.0	175	0.9
	T	274	4.1	875	7.2	1149	6.1
HISPANIC	F	61	0.9	162	1.3	223	1.2
	M	37	0.5	77	0.6	114	0.6
	T	98	1.5	239	2.0	337	1.8
WHITE	F	3943	58.4	8504	70.1	12447	65.9
	M	2115	31.3	2153	17.7	4268	22.6
	T	6058	89.7	10657	87.8	16715	88.5
TOTAL	F	4446	65.9	9725	80.2	14171	75.1
	M	2304	34.1	2407	19.8	4711	24.9
	T	6750	100.0	12132	100.0	18882	100.0

Figure 22. "Distribution of Total Work Force by Racial/Ethnic/Sexual Group for Librarians in Academic and Public Libraries." [Guy 1986]

- **1986.** The journal *Literary and Linguistic Computing* publishes its first issue; the editorial team of eight includes three women.
- **1987.** The Text Encoding Initiative is launched; the first version of the TEI Guidelines is published in 1994.
- **1988.** The possible first use of the term "digital library" in print occurs in the title of a report published by the Corporation for National Research Initiatives.
- **1989.** A dozen authors and 40 publishers sign an "acid-free paper pledge" at a New York Public Library ceremony [Sagraves and Welsh 1995].
- **1992.** A study of gender and salary data from 1972-1990 reveals that a disproportionate number of systems librarian positions (those who install, maintain, and develop library computer and telecommunications systems) go to men. For both men and women working as systems librarians, salaries are significantly lower than for computer scientists in general [Bergman 2005, 119].
- **1992.** The Institute for Advanced Technology in the Humanities is established at the University of Virginia, and is physically located in the university's library.
- **1993.** The National Academy Press (later the National Academies Press) puts its materials on the web for free, initiating the open access model of publication.
- **1993.** The Library Support Staff Interests Roundtable (LSSIRT) is established as an official group within the ALA, officially signaling a turn towards the hiring of paraprofessionals for jobs that formerly required a library degree, and fueling librarian anxieties about the "de-professionalization" of librarianship.
- **1997.** The Library of Congress's Network Development and MARC Standards Office develops Document Type Definitions (DTD) for Standard General Markup Language (SGML).

- **1999.** The President of the American Society for Information Science defines information science as the combination of “two fundamentally different traditions: a ‘document’ tradition concerned with signifying objects and their use; and a ‘computational’ tradition of applying algorithmic, logical, mathematical, and mechanical techniques to information management. Both traditions have been deeply influenced by technological modernism: technology, standards, systems and efficiency enable progress” [Buckland 1999, 970].
- **1999.** The National Library of Medicine Classification guide is published for the last time in print. Beginning with the 2002 edition, it is published in electronic form only and updated annually.
- **2000.** The Coalition for Networked Information and the Digital Library Federation establish the Open Archives Initiative (OAI); the following year, the OAI develops its Protocol for Metadata Harvesting (PMH) version 1.0.



The Open Archives Initiative Protocol for Metadata Harvesting

Protocol Version 1.0 of 2001-01-21
 Document Version 2001-04-24
<http://www.openarchives.org/OAI/openarchivesprotocol.htm>

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Figure 23. THE OAI PMH version 1.0, April 2001. [Open Archives Initiative 2001]

- **2001.** A *Scientific American* article predicts that the World Wide Web of unstructured documents will evolve into a “semantic web” of machine-readable data [Berners-Lee, Hendler, and Lassila 2001].
- **2002.** The starting salaries for recent library school graduates are 7.1 per cent higher for men than for women.
- **2002.** The HASTAC (Humanities, Arts, Science and Technology Advanced Collaboratory) network is launched.
- **2003.** A figurine modeled on Seattle Public Library librarian Nancy Pearl is brought out as a novelty toy, and arouses controversy because its “shushing action” reinforces librarian stereotypes.



Figure 24. Librarian action figure. (Image via Archie McPhee Toys, Gifts & Novelties)

- **2003.** The annual report of the Association for Research Libraries shows that men fill 56 percent of the high-tech positions while only making up 21.4 percent of library school graduates, and have a starting wage that averages 28 percent higher than that of women [Bergman 2005].
- **2004.** The first Library Book Cart Drill Team Championship takes place at the annual conference of the ALA. A National Public Radio story on the 2009 competition begins, “The stereotype of the librarian — horn-rimmed glasses, hair in a bun, finger to her lips stubbornly shushing — was nowhere to be found at this year’s Librarian Book Cart Drill Championships held recently in Chicago” [Spitzer 2009].



Figure 25. The Valkyries of Oak Park, Illinois, performing at the 2009 Library Book Cart Drill Team Championship. Image via [Spitzer 2009]

- **2005.** A study of electronic resources librarians shows that women occupy these positions at a percentage that is proportionate to their representation in the library work force, but that men are more likely to be supervisors. The sample size is too small to interpret salary data, however, and there is ambiguity about what constitutes an “electronic resources librarian” [Bergman 2005].
- **2005.** The online cataloging service LibraryThing is founded by Tim Spaulding, an educational software developer and erstwhile PhD candidate in Greek and Latin. In 2007, Goodreads is founded by Otis Chandler, a “bookshelf sharing” and book recommendations website. “Librarian” status is available to applicants with at least 50 books in their profile; these are trusted super-users who “can edit book and author data, add book covers, and combine different editions of books... Librarians help correct book issues, like if the data isn’t correct, or is missing things...” [Goodreads]
- **2006.** The National Endowment for the Humanities establishes its Digital Humanities Initiative, renamed the Office of Digital Humanities in 2008.
- **2006.** The first version of Zotero — a free, open-source bibliographic management tool — is launched by the Roy Rosenzweig Center for History and New Media at George Mason University.
- **2007.** A consolidated edition of the International Standard Bibliographic Description (ISBD) rules are published by the International Federation of Library Associations and Institutions (IFLA), bringing together rules for different types of publications and providing a standard form of bibliographic description for the international exchange of records.
- **2007.** CenterNet is formed, an “international network of digital humanities centers” [centerNet].
- **2008.** The first THATcamp (The Humanities and Technology) “unconference” is held at George Mason University’s Center for History and New Media; the next year, the first traveling THATcamp takes place at the University of Texas alongside the annual meeting of the Society of American Archivists.
- **2009.** A private school de-accessions its library’s print collection and builds laptop-accessible study carrels and a café in the space formerly occupied by stacks and the reference desk, setting off a storm of concern.



Figure 26. “When I look at books, I see an outdated technology, like scrolls before books,” said headmaster James Tracy. Photo by Mark Wilson for *The Boston Globe*. [Abel 2009]

- **2011.** The “more hack, less yack” controversy in the digital humanities erupts at the Modern Language Association convention, and energizes an ongoing discourse about race, gender, and technological expertise.^[13]
- **2011 and 2012.** Two genealogies of the digital humanities written by librarians do not say much about the relationship between the digital humanities and the library [Dalbella 2011], [Unsworth 2012].
- **2013.** A special issue of the *Journal of Library Administration* devoted to “Digital Humanities in Libraries: New Models for Scholarly Engagement” is published; contributors have to work around the journal’s copyright policy to make open access versions of their articles available [Rochenbach 2013].
- **2014.** The Wikipedia entry titled “Library science” begins with the sentence, “Library science (often termed library studies or library and information science) is an interdisciplinary or multidisciplinary field that applies the practices, perspectives, and tools of management, information technology, education, and other areas to libraries; the collection, organization, preservation, and dissemination of information resources; and the political economy of information.” The entry titled “Information science” begins “Information science (or information studies) is an interdisciplinary field primarily concerned with the analysis, collection, classification, manipulation, storage, retrieval, movement, and dissemination of information... Information science should not be confused with information theory or library science” [Library science 2014], [Information science 2014].^[14]
- **2014.** According to the current mission statement of the ALA, the goal of the library is “to enhance learning and ensure access to information for all,” while the Constitution states that the organization’s main object “shall be to promote library service and librarianship.” [ALA Mission]

In the late twentieth century and early twenty-first century, librarians worked to change their image and the idea of librarianship, both to counter the “shush lady” stereotype, seen as an impediment to users’ comfort with library services and librarians’ professional status, and to grapple with rapid technological change that restructured the information environment. In particular, the librarian’s key role as an information specialist — specifically, a mediator of access to

information — grew more important as new technologies complicated information experience, but was also strained by the greater independence these new technologies offered to information seekers.

One response to technological change was the rise of a field called information science, and the conflicted rapprochement of library science with information science. Whereas information scientists might have associated librarianship with the practical management of repositories, and information science with the history of science and technology, information business, computerization, and the organization of knowledge, librarians might have associated librarianship with public service, information retrieval, and bibliographic control, and information science with “library science for boys” [Hildenbrand 1999, 45] and “the dangerous pursuit of professionalism” [Harris 1993, 874]. Competing research paradigms emerged and then gradually merged: as a pragmatic social science, library science was devoted to studying its own systems and roles and the needs and behaviors of users, whereas information science incorporated theories of information, public policy, and human-computer interaction. Although the two domains are now generally understood to be coincident or at least as complementary, information science is still sometimes represented as distinct from librarianship. Gender is certainly in play in these designations, as many of the traditional functions of librarianship continue to be perceived as feminine, while the status of information science benefits from masculine associations.

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In this period, the feminist presence in librarianship became outspoken. Researchers analyzed patterns of workplace stratification — in terms of sex, race, salary, level of technological responsibility, place in the hierarchy and occupation — and the public perception of librarians. Feminist critique was integrated into the professional apparatus through groups and publications. By the end of this period, a larger proportion of library leaders were women, but many of the general patterns observed in the 1970s and '80s remained.

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Certain core elements of library practice and philosophy were unaffected by these internal conflicts: the belief in the democratic value of access to information, the understanding of research as central to the academic enterprise, and the valuation of service as a distinguishing feature of librarianship.

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In Sum

- In the nineteenth century and early twentieth century, libraries were modernized by approaches to information management that took three technologic forms: a symbolic form, ie, classification structures; a physical form, which turned classification structures into information storage and retrieval systems, like architectural designs, shelving, and card catalogs; and an administrative form, which gave rise to procedures to manage the storage and retrieval systems, and services to mediate between readers and the materials they sought. These technologies of information management, but especially the administrative form, became the foundation of library training programs and professional identity.
- These approaches to information management helped libraries address problems of scale: the mass production of printed matter, increasing numbers of library users, and library values that emphasized the provision of free content to all. Library technologies were oriented, accordingly, both towards efficiency, in terms of storage and retrieval, and access, in terms of use. Extensions of these approaches, such as indexing techniques, reader's services, and eventually, conservation and preservation operations, were designed to improve access and efficiency.
- These technologies of information management, in response to financial and social pressures for space-saving efficiency and access, thus laid the groundwork for machine-readable cataloging, which laid the groundwork for structured query languages and computer mark-up languages, which laid the groundwork for network connectivity and new forms of digital poesis.
- Women gained entry to librarianship in its early professional history because of their “civilizing influence,” but even when this was no longer an explicit consideration, women could be appointed to positions that emphasized the implementation of efficiency and access technologies and principles without disrupting traditional gender roles — in short, positions that required public service and the ability to use and manage information technologies but not to *invent* them or brand them with symbolic currency.
- As women increasingly dominated the library workforce, the library assumed an ambivalent public image. As an institution, the library was seen by the public through the filter of ideals that retained masculine

associations with freedom of thought, self-determination, and the protection of cultural heritage; but as a workplace, it was seen through the filter of the “woman’s work” performed within it — as a bureaucracy requiring a service orientation and clerical competence, not professional expertise.

- Feminist responses to the gendered segregation of work roles within the library and low pay focused on opportunities within the library. The ethic of service as the signature of librarianship was retained.
- Technological developments outside the library, and the masculine valence of “information science” (as opposed to “librarianship”), raised the cultural status of information technology. As new information technologies migrated into the library, however, the value they brought with them was absorbed by pre-existing gender patterns. In other words, new work roles required by new technologies attracted more men to the library workplace, but fewer women took on these roles relative to their population in the overall library workforce, especially in leadership positions, and the cultural status of these new technologies did not greatly affect public perceptions of librarianship.

Our historical timelines suggest that information technology, as a constitutive feature of the library for over 150 years, has always helped to organize the gender valences of library work and perceptions of the library, but the changes in authority of, and rising value of technology in the twentieth century have increased the stakes of these patterns. As long as they have worked in libraries, women have been “yackers” who interface with the community of users through administrative procedures and the provision of services: helping patrons, mediating between readers and the materials they seek. In roles that are often more technical, men have been “hackers” — but also “yackers” when it comes to the big picture: modernizing the library through new information management technologies, articulating its democratic and scholarly missions, leading its major institutions.

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Timeline III: Future Fictions, circa 2030

The highly distilled observations above, drawn from the historical relationship between gender and technology in the library, provide a basis for future speculation.^[15] What comes next?

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Below are three possible views of the academic library fifteen or so years hence. Each describes a kind of library and library workforce that we might encounter in 2030 — a “time outline” rather than a timeline *per se*. Each could evolve from the path laid down so far, in keeping with certain assumptions about the future of information and higher education: the digital ecosystem will continue to grow in scope, complexity, and importance; and the economic constraints on higher education of the past several decades and especially the past several years will persist, with at best a mix of ups and downs. Second order factors derive from these basic conditions: the importance of the library building as a place for people as opposed to storage for a collection; the increased accountability of the library in terms of advancing institutional missions; the demand for different skills in the library workforce; the recognition that libraries have competition as information providers; and the need to reduce, rearrange, or replace the traditional range of services in order to save money or develop new sources of revenue.^[16] All together, these conditions suggest that the academic library will have to shed some of its historic identity and transition or transform into something new.^[17]

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These outlines of future possibilities are not predictions, nor are they scenarios, in the sense of the term used by the Association of Research Libraries’ scenarios user’s guide: “stories about the future... devices for ordering perceptions about multiple future environments...built on a set of relevant uncertainties.” [ARL 2010, 41]. Scenarios are used for strategic planning. The outlines below are more like speculative fictions: possible models of a certain idea of the academic library’s future identity, played out in practical terms — including configurations of gender and technology that might follow from that idea and its repercussions for the digital humanities. In other words, they are scoped more narrowly and with more internal consistency than would be likely in reality.

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While the futures that are imagined in the library scenarios literature are anchored in particular descriptions of the present, the present itself is treated as a historical blank slate — as if it did not evolve from specific histories, which have created certain inherited patterns and commitments. Discipline-specific questions are also mostly neglected in the library scenarios literature; “research” is often treated as if it were a uniform activity, for example, without disciplinary variations in library and technological needs, institutional support, relationship to teaching, and social status.^[18] The

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scenarios literature also does not address gender or other vectors of power within the library workforce, in perceptions of the library, or in academia as a whole. These absences undermine the utility of the scenarios for the practical ends for which they are designed, since they distort the picture of how libraries might be needed, used, and staffed in the future. The models below, although they are incomplete in other ways, can at least help us consider the consequences of library transformation in terms of gender patterns and disciplinary impacts.

Version 1: The Connector

- The library as a hub of *access to digital content* becomes the central mission of academic libraries, eclipsing other traditional roles.
- The library provides access to the digital content that its affiliates need to conduct research. Because of the cost of subscriptions, especially in the sciences, collections are focused on the most used formats, such as e-journals. The library rents, and in some cases owns, databases and digital collections.
- It also serves as a repository for and manager of certain sets of data produced by institutional affiliates, especially those datasets that must be made accessible to other researchers for compliance with grant requirements.
- Because of the cost of maintaining print collections, and the relatively low use of these collections, the library divests from its traditional role as a repository of material collections. Print collections are radically reduced and duplications within regions eliminated; small off-site print collections are maintained by consortia of geographically or socially related institutions, and serviced by small interinstitutional or governmental teams, or private companies.
- Archival and rare materials remain in the possession of institutions, but are also stored at off-site facilities. Expert researchers may consult them in reading rooms in libraries or in the off-site locations.
- Library workers perform primarily in these roles.
 - For quantitative social science and science researchers, librarians curate collections of data, conduct literature reviews, and serve as data specialists on research teams. These librarians are mostly located within academic departments.
 - For qualitative social science and humanities researchers, librarians primarily work as purchasing and licensing agents, managing a complex system of subscriptions and agreements for digital collections. They may work in the library or as telecommuters.
 - For students, librarians are intermediaries who help students find appropriate content for coursework and projects, primarily through online consultations, or through tools that are embedded in learning management systems or the online facets of courses. These librarians — instructional designers and resource specialists — may work in student help centers in the library or in academic departments, and may be employed as seasonal workers, like adjuncts.
 - On-site staff consist mostly of technical support staff, administrators and administrative support staff, and security personnel.
- Discovery tools and interfaces — necessary for the navigation of many different kinds of resources — are designed by outsourced user experience specialists.
- As pedagogical, primary source, and methodological expertise wanes in importance as a library service, libraries employ few subject specialists.
- Library buildings become study and social spaces for undergraduates and some graduate students, with flexible internal arrangements, cafes, theaters, and even student clubs and services, with limited office space for on-site staff.
- The digital humanities have been integrated into the humanities as primary research outputs and pedagogical methods, supported by departments or interdisciplinary programs funded by their institutions. DH does not fall within the purview of the library — although the library may maintain the servers used to run and archive DH projects.

In this model, the library's traditional role as a provider of human and technological services remains intact, but these services have been whittled down to the functions that have the broadest applicability and where institutional

investments are most readily supplemented by grants and other funding sources, with a focus on data management and digital collections.

This model works well for quantitative, data-intensive disciplines with access to government and private funding for research, especially those focused on applied research: medicine, engineering, environmental sciences. Librarians who work with researchers in those areas will enjoy a status and salary comparable to that of today's lecturers — that is, they will be recognized as faculty peers but not as the originators of research. 29

For researchers in the qualitative and interpretive disciplines, the academic library will mainly serve as a conduit to secondary literature and, for some institutions, primary sources; librarians will collect material for these researchers, but will not contribute expertise to these collections or to research products. Since digital materials will be purchased en masse from vendors, these positions are likely to be filled by workers with administrative, legal, technical, and/or financial experience. They will be comparable in status and salary to today's library workforce in technical services and administration — a few will be managers and specialists, many will be paraprofessionals. 30

A few instructional designers and resource specialists will help students connect to materials needed for classes, but most discovery services will be outsourced and students will mostly rely on pre-packaged user guides supplied by the vendors. These library workers may have some pedagogical or subject expertise, but their jobs will focus on making materials easy to find and usable in specific contexts. In addition, libraries will employ a small number of workers who keep the facility running, and manage and trouble-shoot the technical infrastructure. 31

The digital humanities will be carried out within individual humanities departments or interdisciplinary DH programs; researchers relying on this infrastructure will create a fractured landscape of small and discrete projects, and a few larger cooperative projects that benefit from opportunistic arrangements between institutions. Since the humanities won't enjoy the funding or prominence of science, whose data production and content needs will be the focus of library services, humanist researchers won't have access to the infrastructure or technological expertise that would allow them to extend and aggregate projects through centralized databanks and coordinated efforts. 32

The gender patterns in this model will follow and potentially amplify existing patterns in the library and in the sciences: librarians attached to scientific research — with expertise that is directly relevant to their research teams, and a relatively high status and salary — are more likely to be men, although women with relevant subject and technological expertise who opt out of research careers may also fill these roles. Instructional designers and resource specialists are more likely to be women with an interest in teaching; administrators and paraprofessionals are more likely to be women with administrative and financial backgrounds. Technical support staff are likely to be both men and women with technical training, and security personnel are likely to be both men and women with little education. 33

Version 2: The Coordinator

- The library as a suite of services related to the production and consumption of different forms of *scholarly communication* becomes the central mission of academic libraries, which incorporates some traditional roles and requires new ones.
- The library provides access to the content that its affiliates need to conduct research, regardless of format. However, because of the cost of subscriptions, especially in the sciences, the emphasis is on the most-used formats, such as e-journals, for selected disciplines that have been designated as institutional areas of strength.
- The library serves as a content repository and data manager for the data and publications its affiliates produce, for compliance with grant requirements and re-use.
- Because of the cost of maintaining print collections, print collections are weeded of material that is not in alignment with institutional areas of strength. Print collections are housed off-site but are accessible through delivery and scanning services managed by the library or local consortia. Once digitized, print materials are de-accessioned unless there is a compelling reason to keep them.
- Archival and rare materials remain in the possession of institutions, and are available to expert researchers in reading rooms. Paper materials can be digitized so that they can be incorporated into various forms of

scholarly communication.

- The library joins with its university's press, if there is one, or works independently, if there is not, to provide publishing services for affiliates, including editorial, legal, technological, and marketing services, on a cost-recovery basis.
- Library workers perform primarily in these roles.
 - For all researchers, librarians curate collections of data and digital and analog content. For quantitative studies, they may also conduct literature reviews and serve as data specialists on research teams. For qualitative social science and humanities researchers, librarians are valued for editorial and publication management services, e.g., copyright negotiations for the reproduction of licensed material. Librarians also advocate for open access, open data, and open archives protocols. These librarians may work within academic departments or in the library.
 - Librarians work as purchasing and licensing agents, managing a complex system of subscriptions and agreements for digital collections. Such material is often acquired in alignment with existing institutional strengths so that it may support faculty publications.
 - For students, librarians help students find appropriate content for coursework and projects, and also create "information literacy" tools so that students are better users of scholarly content, but these tools remain supplemental to coursework. Librarians also help to run writing and media centers located in the library, so that students are better producers of scholarly content.
 - Technology specialists support access systems but also design and support publication platforms. Libraries also employ administrators, administrative support staff, and security personnel.
- Discovery tools and interfaces — necessary for the navigation of many different kinds of resources — are designed by outsourced user experience specialists.
- Library buildings become study and social spaces for students, with flexible internal arrangements, but they also provide offices for librarians, meeting rooms, writing/media centers, and restricted data access rooms.
- The digital humanities have been integrated into the humanities as primary research outputs and pedagogical methods. Libraries support projects that align with institutional strengths through archiving services, managing the back-end, and providing template platforms and interfaces that allow these projects to be published economically, in alliance with other library publications.

In this model, the library's traditional role as a provider of human and technological access services continues, but the library also takes on a new role by providing data management and publishing services, to support the entire scholarly communications cycle. To maximize synergy and investment, both branches of service are aligned with institutional areas of strength.

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This model works well for advanced researchers in those disciplines that have been designated institutional areas of strength. Librarians who work with researchers in those areas as data or publishing specialists will enjoy a professional status and salary, but there may be status and salary differences between librarians based on their disciplinary associations because of the library's cost-recovery mandate. Disciplines with access to government and private funding will be able to support specific kinds of expertise in the library, since they can build those costs into their grants; while the library will still provide free data and publishing services to qualifying disciplines that don't have access to extra-institutional funding, these services may be less extensive.

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Services for students are secondary to those of advanced researchers, but are addressed through tools, consultations, and library centers that help students become more informed consumers of scholarly content and more adept researchers.

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Digital humanities projects will be conceptualized within individual humanities departments or DH programs and maintained by library services, but these projects will need to conform to library supported platforms and designs. These projects will benefit from congruencies and intersections with other library-supported projects in terms of data use,

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design, and impact; “siloes” within an institution’s portfolio will be reduced, but it may be more difficult for institutions to work together because of proprietary designs or architectural discrepancies. Interdisciplinary work may be hampered by the institution’s focus on particular areas of strength.

The gender patterns in this model will follow existing patterns in the library, complicated by disciplinary gender patterns, especially as they relate to the status of research, teaching, and publishing activities. Librarians associated with high-level technology design or data and publishing services for the science disciplines that are aligned with institutional areas of strength — like big data management — will more likely be men. Librarians who work with students by creating information literacy tools and running writing and media centers, and librarians who work in publishing services, especially in the humanities, will more likely be women.^[19] Librarians who are primarily responsible for purchasing resources will need some subject expertise, in order to curate subject-appropriate collections that align with institutional areas of strength, but will also need financial and legal expertise. They, along with administrators and paraprofessionals, are more likely to be women.

Version 3: The Collaborator

- The library as a provider of *infrastructure for research and learning* becomes the central mission of academic libraries — where infrastructure is seen as a combination of expertise, resources, and technological architecture.
- The library provides access to the content that its affiliates need to conduct research, regardless of format. Because of the cost of subscriptions, especially in the sciences, the emphasis is on the most used formats, such as e-journals, and on print collections with the potential to support significant use.
- The library serves as a content repository and data manager for the data and some of the publications its affiliates produce, for compliance with grant requirements and re-use.
- Because of the cost of maintaining print collections, print collections are weeded of material that is duplicated by other institutions, except where there is evidence of potential for significant use; regional consortia collaborate on shared print collections. Print collections are housed off-site but are accessible through delivery and scanning services managed by these local consortia.
- Archival and rare materials remain in the possession of institutions. They are consulted in reading rooms, but are also used in classes, exhibitions, publications, and DH projects.
- Library workers perform primarily in these roles.
 - For all researchers, librarians curate collections of data and digital and analog content. For quantitative studies, they may also conduct literature reviews and serve as data specialists on research teams. For qualitative social science and humanities researchers, librarians work on teams that create technological infrastructure and provide subject expertise for digital projects that are both research products and pedagogical tools. They are also informed participants in open access, open data, and open archives programs.
 - Librarians work as purchasing and licensing agents, managing a complex system of subscriptions and agreements for digital collections, and linking institutionally produced projects to institutionally produced discovery tools.
 - For students, librarians help students find appropriate content for coursework and projects, and create “information literacy” tools so that students are better users of scholarly content, but also incorporate the study of information into projects that happen in the library, so that students learn these skills in tandem with/through activities.
 - Technology specialists support access systems but also design and support publication platforms, discovery tools, and other forms of technological infrastructure.
 - Libraries also employ administrators, administrative support staff, and security personnel.
- Discovery tools, learning modules, and software applications are designed by library developers to fit an institution’s unique collection of digital, print, and archival materials, the expertise of affiliates, and teaching and learning needs. Sometimes these tools are open source, and sometimes they are commercialized.
- Library buildings become study and social spaces for students, with flexible internal arrangements, but they

also provide offices for librarians, restricted data access rooms, and meeting and workspace for centers where data management services are handled, digital projects are created, and enterprise ventures are carried out.

- The digital humanities have been integrated into the humanities as primary research outputs and pedagogical methods. Libraries are key partners in these projects, providing archiving services, backend management, research and development talent, and pedagogical expertise to facilitate student involvement.

In this model, the library's traditional role as a provider of access to content continues, but the library takes on new roles in order to integrate "access" into a broader research and learning infrastructure, with a focus on research and learning needs that fall outside the scope of the laboratory, the *studiolo*, and the classroom. Specifically, the library becomes a place where information technology is not only used and managed, but also analyzed, invented — and even symbolically branded as a key institutional asset.

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This model works well for interdisciplinary researchers, researchers who experiment with new genres of scholarly communication, and students who want to contribute to information technology projects or conduct research. It blurs the lines between faculty and those librarians who commit technological and subject expertise to projects developed in library centers and who work directly with students. Librarians with this kind of expertise and authority are able to work more effectively on particular collection mandates — curating print collections around significant use potential, actively participating in open access ventures — that can maximize institutional investments and potentially lower collection costs. In turn, and because these librarians are contributing more directly towards institutional missions or even helping to develop information technology products that can be commercialized, institutions can afford to invest in library collections, information technology R & D, and librarians with expertise and authority.

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Students' needs are met through tools and consultations, but also through library-led ventures in which students participate: DH projects, exhibitions, information technology development teams.

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Digital humanities projects will be created by teams of researchers and librarians with complementary kinds of expertise. The projects will benefit from a broad range of support: archiving, back-end management, R & D, student participation. Interdisciplinary projects will be easier to realize through the common resources provided by the library. Sustainable, inter-institutional collaborations will be facilitated when librarians providing technological expertise are focused on shared architecture, rather than the creation of virtuoso stand-alone projects. But DH projects will require significant institutional investments in DH centers. Where the commercialization of information technology tools is also taking place, intellectual property protectionism may create barriers to collaboration. Sustainability and discoverability may be threatened by a funding environment in which signature stand-alone projects are attractive to donors. Finally, smaller and less wealthy institutions may not be able to afford the investment in library centers that would drive DH.

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The gender patterns in this model will follow existing patterns in the library, but these patterns would be partially disrupted by the need for technological and subject expertise in both the quantitative and qualitative disciplines. Librarians who provide high-level technology design or data services for the science disciplines will more likely be men, but librarians in similar roles for the social sciences and humanities may be men and women. Librarians who work with students through consultations or by creating information literacy tools will more likely be women, but librarians who work with students on library-led ventures — DH projects, information technology development projects, exhibitions — may be men and women. Librarians who are primarily responsible for acquiring and curating resources will need some subject expertise, but will also need financial and legal expertise. They, along with administrators and paraprofessionals, are more likely to be women.

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In Sum

These models suggest that academic embodiments of the digital humanities as an innovative, interdisciplinary field of activity will flourish if they have as partners libraries with robust humanities collections — archival materials in original and surrogate forms, print and media holdings, born-digital primary sources — and in-house expertise to develop and steward digital projects. These are also the best conditions for modifying traditional patterns of library labor in terms of

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gender. In other words, a virtuous circle might be achieved wherein the digital humanities feeds a humanities-friendly library ecosystem, which in turn requires skilled and knowledgeable librarians who are central to digital humanities activities — a workforce that counter-acts the historically low pay and status of librarians and the possibility of a “de-skilled” library workforce in all areas except for data-intensive science.

Such a virtuous circle would not be without pitfalls or threats. There would still be categorical divisions in library labor, defined by technological and subject expertise, and possibly also along research versus teaching fault-lines. The funding required by technology-rich, innovative library centers could deepen the inequality that already exists between wealthy and less wealthy institutions. Finally, it is not clear that librarian collaborators, with a status closer to that of faculty, would be granted or would assume the kind of authority within the library that would make them effective collections advocates. In other words, librarians might still feel financial and social pressures to regard faculty input as the sine qua non of collection management data. They might still say, as they do now, “If faculty don’t use this collection, we may not need to acquire/keep/fix/digitize/migrate it, regardless of whether librarians use it or see its potential” — even if those librarians also work directly with students, conduct research, contribute to DH projects, and develop technology tools.

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A Modest Proposal

Feminist examinations of gender in the library, starting in the 1960s, have focused on the low status of librarianship, its fraught dynamic of professionalization, and role segregation within the library.^[20] These studies have revealed certain patterns recognizable to feminist economists, sociologists, historians, and cultural analysts of other professional arenas — gendered divisions of labor and spheres of influence; histories of exclusion, inequity, and community-building. The picture that emerges when we view gender alongside the history of technology in the library suggests that information technology, broadly defined, has helped to organize all of these gender patterns since the beginning of the modern library era. Mostly it has served as a way to demarcate masculine, higher-status positions within and associations with the library from feminine, lower-status positions and associations. Specifically, those who invent and symbolically invest certain technologies with cultural meaning are men, while those who use and manage technologies are women. What is mystifying is how technology continues to serve this function even as feminist efforts within libraries — where most workers are women — have attempted to unmask and redirect these historical gender patterns.

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The status, roles, pay, and perceptions of libraries and librarianship may be organized in part by technology, but they are also united by their association with the modern library’s service ethic, the professional signature of librarianship, and the library’s claim to the domain of information services. It was the service ethic that allowed women to enter the profession in the first place in the guise of the “genteel library hostess”; a lady librarian “always ready to serve” could assist and defer to masculine pursuits.^[21] It emphasized a particular kind of human labor: service is “self-effacing.”^[22] As the gender of librarianship came under feminist scrutiny, however, the ethic of service migrated — instead of being abolished, it was adopted as an essential component of librarianship as a professional occupation. An “orientation towards service” is a professional trait for those who are effectively selling knowledge services.^[23] But it seems to be enacted differently in male- and female-dominated professions. In its more recent historical guises, librarianship has brought service into the realm of services; an attitude of service has become, in effect, a distinguishing feature of library services. Service has gendered services. The relationship between service and services in the library thus raises the question: is an attitude of service the price you must pay for dispensing knowledge in a female-dominated profession? Another way to put this is, if your services are not for sale, and if your ethic of service dictates that you under-sell yourself, where does that leave you as a professional?

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The elision of service and services in librarianship — into what we could call service(s) — coincided historically with efforts to emphasize the human labor of librarianship, as distinct from the library as collection. “Library services” as a term of art became more prominent as the service ethic was linked to a predominantly female workforce: a Google n-gram analysis suggests that it began to appear in the literature around 1920 and rose to a peak in the late 1970s.^[24]

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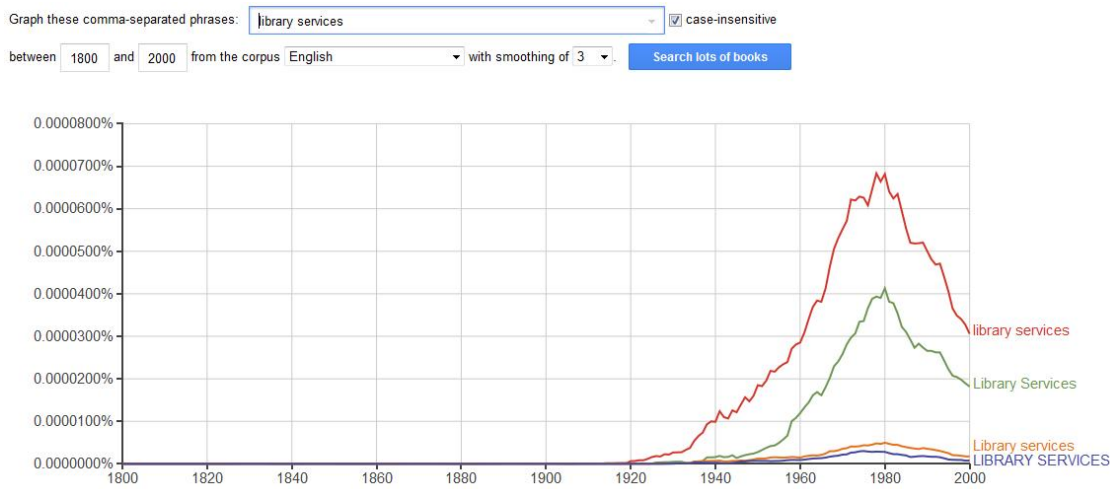


Figure 27. Google n-gram graph of the phrase “library services.”

To this day, librarians almost universally speak of library and information services, as opposed to activities or its cognates like projects, programs, or enterprises. Even the pedagogical work that librarians do is coded as instruction, with its more practical and limited sense of ministering a lesson — of serving it up, we might say — as opposed to teaching, a philosophically inflected gerund whose agents make a path to knowledge. “Library services” as an output are obviously not identical to the ethic of service, but they have been connected by feminized notions of facilitation and assistance, through which the library is positioned as subservient to what the library enables, knowledge production.

Technologies in the context of the library have also figured historically as services to be used, as means to an end, rather than as forms of knowledge in and of themselves, and have been largely invisible as technologies to non-librarians until recently — this is true both of information technologies like print and the database, and library-use technologies like circulation systems. One reason “library services” continues to perform so efficiently as shorthand for a particular idea of what libraries are for is that, in contrast to the human valence the word carried fifty years ago, it now erases the distinction between human labor and technological capacity: the people who work in libraries exist on a continuum with the technologies they supply. Both workers and machines are there to deliver the goods, not to create them.

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Computerized library catalogs, then journal databases, and now digital tools like discovery overlays have made library technologies more visible as technologies — more evident and more important. As libraries increasingly employ technology specialists who collaborate with researchers or who themselves work as researchers, in units that manage data or create tools, the library has become a site of information technology production as well as a site of use. But this new role is both obscure and obscurantist when it comes to gender: it is still hidden behind the feminized façade of library services; and, paradoxically, it has contributed to the invisibility of gender patterns. While technology needs have brought more men with specialized and economically desirable skills into the library workforce, these men have tended to earn more than most of their female colleagues — and so far have not altered the overall status of libraries or librarianship, whether they are perceived by the public as librarians or not.

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What this more recent history illustrates is that the simple infusion of new technologies and even new role modalities into the library are not on their own enough to shift inherited gender patterns. The addition of technological specialists to the library has not had this effect, any more than have the addition of faculty status for librarians, the idea of information science, or the pedagogy of “information literacy.” Likewise, we cannot expect the simple infusion of the digital humanities into the library to have a transformative effect, unless we explicitly address the inherited and gendered

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ideology of service(s).

Service(s) are, in a word, a dilemma: what has given us value in the past is precisely what devalues us now and henceforth. To withdraw from the traditional rationale of service(s) would be painful, not only because of the distress of operational change, but because it would affect the library's core identity — the ideals that enable and ennoble the librarian's self-effacing role. But we may have to, if we want libraries to survive. It is time to detach service from services. It is time to modernize what we mean by service, and it is time to ditch the paradigm that we think defines us — the idea that the library is just a vehicle for services.

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The digital humanities appear to offer one mechanism for effecting this change, a way forward that will benefit both libraries and the digital humanities. This might just happen if the evolving set of technologies, roles, methods, and outcomes that the digital humanities represent are mashed up with library technologies, roles, methods, and expectations in ways that are designed to terminate the gendered paradigm of services. At the same time, this mash-up might be oriented towards a rigorously reconsidered ethic of service. Emancipated from old patterns, service might even develop into an overarching value that is put into action equitably across the higher education system: service through research, teaching, institutional and disciplinary stewardship, and information technologies that function both as tools and forms of learning.

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A library that is an active, specialized agent is less available as the broad screen onto which we can project our most cherished and elusive civic principles and information dreams. That is a loss, in some ways. But a library that sheds its claims to "timeless," *Oblivion*-esque ideals can address its own internal conflicts with those ideals — and can change in response to new conditions, needs, and principles. What libraries have been is historically specific; what they become is up for grabs, but they will not have the luxury of reinventing themselves in the future if they are already obsolete. Libraries will find it difficult to achieve actual transformation unless the gender and technology frameworks within which they have traditionally operated are laid bare and overturned. And the digital humanities will encounter greater obstacles to its potential growth unless it has as a partner such a transformed library — a deficit that will harm the humanities more generally. If the library does manage to transform in ways that significantly alter its inherited gender and technology formulae, then we will experience a new kind of "shock of the familiar" — the shock that, looking backwards, we could ever have imagined that what we had once done and been would be sufficient for the future.

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Notes

[1] My focus here is on "the library" as a generalized entity, insofar as it is possible to speak of it as an institution with a cohesive history and homogeneous objectives, practices, and conflicts. This approach is not uncommon in historical treatments. See, for example, [Augst and Wiegand 2001]; [Battles 2003]; [Harris 1995]; [Hessel 1950]; [Jackson 1974]; [Murray 2009].

[2] Franklin Delano Roosevelt, qtd. in ALA "Democracy." In similar terms, the first annual report of the Boston Public Library stated that, "...under political, social and religious institutions like ours, it is of paramount importance that the means of general information should be so diffused that the largest number of persons should be induced to read and understand questions going down to the very foundations of social order, which are constantly presenting themselves, and which we, as a people, are constantly required to decide..."; public libraries — as opposed to private, social, or commercial libraries — are necessary "in order to diffuse through our society that knowledge without which we have no right to hope, that the condition of those who are to come after us will be as happy and prosperous as our own" [Boston Public Library 1852]. This conception of libraries as vital democratic institutions remains very current. Nancy Kranich, the 2000-01 President of the ALA, made "Libraries: The Cornerstones of Democracy" a Presidential initiative, and published *Libraries and Democracy: The Cornerstones of Liberty* [Kranich 2001]. Additional representative works limning this role are [Ditzion 1947], [Josey 1987], and [Samek 2001].

[3] The library's identity in the digital age has become a public question frequently addressed in the mass media — in articles and blog posts about "book-less libraries" and the Digital Public Library of America, for example — as well as a widely-debated professional question for librarians. The first conversation is frequently cast as a question of future development; see, for example, [Norris 2004], [Neary 2011], [Bell 2012], [Greenfield 2013], and [Sawyer 2013]. As an index of the activity of the latter discourse: the terms "library 2.0" or "web 2.0" have been referenced in over 50 reviews and articles in just one journal, the international quarterly *Journal of Librarianship and Information Science*, since they first appeared in September 2007. See, for example, [Anderson 2007], [Aharony 2011], [Kwanya, Stilwell, and Underwood 2012], [Huvila et al 2013], and [Kwanya, Stilwell, and Underwood 2013].

[4] See, for example, the list of digital humanities centers maintained by the European Association for Digital Humanities (EADH) and the directory maintained by centerNet (centerNet), showing that many centers are located in libraries — although this location or relationship is not always explicit. As evidence of librarians' perceptions of DH in the library, see [Rothenbach 2013] and [Adams and Gunn].

[5] This phrase is derived from “interpretively flexible,” in [Yakura 2002].

[6] The timelines here presented are dominated by North American and European histories, and are especially focused on librarianship in the U.S. context. They are concerned with gender more than with race, class, sexuality, or other vectors of inequality in the library, which would be necessary for a comprehensive consideration of the library as a workplace and ideal. Finally, I elide most of the distinctions that are observed within librarianship between public and academic institutions — not to mention school and special libraries — for two practical reasons. First, because the general idea of the library is familiar and widespread, it is in this form that library ideals are most often articulated. Secondly, the general idea of the library as it developed over time helps us see that gender troubles, especially in relation to technology, are systemic and persistent, even as specific stress points have shifted.

[7] I provide citations where specific quotations appear in timeline events, but in general, in keeping with the conventions of timeline presentation, I do not.

[8] What is or may prove to be wrong: the absence of intersectional vectors like race, class, and sexuality; important events I have overlooked; my incomplete grasp of present concerns; events that contradict the European and North American biases inherent in my selection of events; different ways to combine events into descriptions of the *longue durée* of the library; and of course, turns that we have not yet taken, which will only become visible in the future. I take heart from Kathleen Fitzpatrick's recent meditation on critical temporality [Fitzpatrick 2013].

[9] Macaulay wrote the lays when he was serving on the Governor-General's Council in India in the 1830s; he was afterwards Secretary of War under Whig Prime Minister William Lamb. There is an imperialist and anti-imperialist tension in *Oblivion* that is beyond my scope here. But it is interesting that the critique of a world-dominating, technocratic power that eventually emerges in the film is symbolically anchored by this book that justifies imperial ambition through recourse to the historical model of Rome.

[10] Viewers may not know the Rose Reading Room by name, but are sure to recognize the general setting from the Reading Room's iconic presence in popular culture — for example, in digital news photo-features like “Temples of books: The world's most beautiful libraries” on the BBC website [Glancey 2013].

[11] The return of Julia, Jack's wife from the pre-war era, potentially constitutes another disruption of the separate gender spheres mapped out by Jack and Victoria: Julia awakens Jack's personal memories and the film's revolutionary plot. But Julia is ultimately portrayed as Jack's sidekick. Her main independent contribution to the future, as the mother of Jack's child, places her firmly within the film's conventional gender schema.

[12] It may be hard to see, in the thumbnail sketch of the film I have provided, how the library becomes a vehicle for self-sacrifice. Spoiler alert: the Scavs turn out to be human survivors of the war who inhabit an underground bunker filled with the remnants of (mostly American) material culture, which they have rescued and preserved: the Liberty Bell, rugs, paintings, more books; Andrew Wyeth's *Christina's World* makes a cameo appearance. This post-apocalyptic proto-civilization, led by Beech, portrayed by Morgan Freeman, becomes the pseudo-protagonist of the film by virtue of its cultural heritage stewardship. Artistic and historical artifacts represent the values it is dedicated to defending when it engages in lethal conflict with the “Tet,” the non-human intelligence controlling Earth. Jack and Beech destroy the Tet by activating a nuclear bomb inside it, thus annihilating themselves but also setting into motion the regeneration of civilization through Jack.

[13] See [Nowvickie 2014] on the origins of this phrase; see [Cecire 2011], [Koh 2012], and [Moravec 2012] on the controversy, and the #TransformDH movement, especially PhDeviate, Jan. 1, 2012 and Feb. 1, 2012 [TransformDH].

[14] Note that while I last accessed these entries in January 2014, the entries go back to Oct. 25, 2001 [Library science 2014] (“history”), and Nov. 20, 2002 [Information science 2014] (“history”).

[15] Events in Timeline II that have particular importance for the gender constitution of the library work-force and related power dynamics, particularly in relationship to the symbolic and economic benefits of technological expertise, are 1899, 1912, 1928, 1962, 1969 (both events), 1970, 1979 (both events), 1982 (study), 1983 (both events), 1984, 1986, 1992, 2002, 2003 (report) and 2005 (study).

[16] These factors are derived primarily from [Hernon and Matthews 2013, 17–38], who consolidate findings from a variety of environmental scans of the past ten years. I have also relied on *The ARL 2030 Scenarios: A User's Guide for Research Libraries* [ARL 2010]; [Marchionini and Moran 2012], especially Lorcan Dempsey's contribution, revised as “Libraries and the Informational Future: Some Notes” [Dempsey 2012];

[Marcus, Covert-Vail, and Mandel 2007]; and [CLIR 2008]. These sources have also provided much of the information on which I am basing the outlines.

[17] “Transitional” and “transformational” changes are more radical forms of organizational change that are undertaken on purpose, perhaps out of necessity, to achieve a new state. They differ from gradual “developmental” changes that are undertaken to correct or improve an organization’s current state. [Hernon and Matthews 2013, 1–2]

[18] As a result, the ARL 2030 Scenarios narratives, for example, are almost exclusively centered on science research. The ARL scenarios are also deliberately focused on research to the exclusion of other elements in the higher education mission, such as teaching or community service; it may not be possible to get a good picture of library activities through the lens of research divorced from these other roles. [Hernon and Matthews 2013] examine library roles more comprehensively, but also overlook disciplinary variations.

[19] This pattern will be exacerbated not just by the gendering of librarianship, but also by gendering in the publishing industry. See [Deahl 2010].

[20] See [Beaudrie and Grunfeld 1991]; [Bergman 2005]; [Carmichael 1992]; [Dettefsen, Olson and Frieze 1991]; [Eddy 2001]; [Evans 2000]; [Garrison 1979]; [Golub 2009]; [Guy 1986]; [Harris 1993] and [Harris 1992]; [Harris and Michell 1986]; [Heim 1982]; [Heim and Estabrook 1983]; [Hildenbrand 1999] and [Hildenbrand 1989]; [Jespersion 1981]; [Josey 1993]; [Kerslake and Moody 2000]; [Maack 2000]; [Pritz 2011]; [Radford and Radford 1997]; [Rockman 1984]; [Sakr 2011]; [Weibel and Heim 1979].

[21] [Garrison 1979]; “Always ready to serve” is Garrison’s quotation of Virginia Graeff, “The Gentle Librarian: A Transcript from Experience,” *Library Journal* 30 (1905): 922.

[22] [Nowviskie 2011].

[23] Roma Harris notes that an “orientation towards service” is a core feature of professionalism, which helps to distinguish professions from other occupations [Harris 1992, 5]. She later notes that service as it is usually practiced in male-dominated professions such as law “constitutes a relationship in which the professional takes on the role of the expert with respect to the client and dispenses information for a fee” — an arrangement that would radically undermine the “equitable sharing of resources” that is at the foundation of librarianship [Harris 1993, 874–75].

[24] My guess is that the decline of this term after 1980 has to do with the books in the Google collection, the migration of library professional literature to journals, and the division of the idea of “library services” into more discrete units, like “access services” and “systems.”

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