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The Librarian and the Univac: Automation and Labor at the 1962 Seattle World's Fair

Greg Downey

A decade before Daniel Bell (1973) made his widely circulated claims that the U.S. worker was entering a "post-industrial society," two trends in what we now understand as our current "information age"—the post-war explosion of knowledge production and the accompanying application of digital computers to manage that information flow—were just starting to affect workplaces of all sorts. Yet one of the main American institutions of knowledge consumption, organization, and use—the library in all its diverse forms—was surprisingly slow to embrace digital information technology. Today, internet search firms like Google and internet sales outlets like Amazon are the institutions investing the most resources in scanning, archiving, and organizing the print culture of both the past and present, making the metaphor of the online "digital library" seem tantalizingly real (Kelly 2006). But as this chapter describes, from the very first encounters between library workers and digital computers nearly half a century ago, the value that human labor brings to such digitalization projects—a value realized throughout the cycle of information collection, organization, consumption, and production—was as clear then as it should be now.

Somewhere among the astronauts and the cosmonauts, lurking beneath the Space Needle and the Monorail of Seattle's Century 21 Exhibition of 1962 (Connelly 2002), rested an exhibit which many of that summer's 10 million fair-goers probably saw as a quaint anachronism: a library. But unlike the nostalgic, neo-classical Carnegie library buildings that visitors might have expected, this library looked forward to a day of unproblematic technological progress. This library was equipped not only with material knowledge in the form of books, and with human intelligence in the form of librarians, but with "an electronic brain capable of dispensing thousands

of passages from literature at the touch of a few reference buttons" (*New York Times*, December 15, 1961). This was the "automated library of the future," where "books and machines will be combined intelligently," known as LIBRARY-21 (Tauber 1962, 228; Trezza 1962, 561).

LIBRARY-21 opened at noon on April 21, 1962, with a ribbon cutting by American Library Association (ALA) president Florrinnell F. Morton and University of Washington professor Irving Lieberman, chair of the Library 21 Advisory Committee. According to its sponsors, two out of every three Fair visitors attended LIBRARY-21 that first day (Trezza 1962, 561). Prominent library leaders of the time described the exhibit with wonder. Jesse Shera, head of the School of Library Science at Western Reserve University and one of the profession's most vocal automation advocates, told of "a computer, manned by professional librarians and technical assistants" which "provided inquirers with short annotated bibliographies on selected subjects tailored to the education, age, and language capacity of the individual patron" (1963, 11). Even 30 years later, writers in the discipline of information science marveled at the foresight of these librarians, not only to showcase a state-of-the-art Sperry-Rand Univac computer to millions of World's Fair visitors from around the nation and the globe, but to use the occasion to train "literally scores of top level librarians" on "the elements of computer usage" (Hayes 1995, 25; Salmon 1993, 15-16).

But behind the scenes, LIBRARY-21 was not as successful as it appeared. Technologies donated by vendors were unable to stand up to the rigors of daily use and frequently broke down. Long lines for the Univac made claims of rapid calculation moot. The 84 lucky librarians from all over the nation who volunteered to serve 40-day shifts over the course of the six-month exhibit faced working conditions arguably quite a bit worse than those of their hometown libraries. And despite their week of intensive training on "the elements of computer usage," these librarians neither designed the Univac services nor "manned" the computer itself. In fact, even though the ALA officially sponsored LIBRARY-21, the exhibit itself was commissioned by the Air Force as a vision of the library of tomorrow, constructed to showcase the products of a defense-subsidized electronics industry, and designed by Cold War defense consultants working for the CIA and private industry.

This chapter recounts the story of LIBRARY-21 in order to explore the meanings of library automation and library labor in the early 1960s, a crucial period in the historical development of the publicly funded, nationally networked, digital information institutions which are still evolving today. When LIBRARY-21 opened in 1962, only about a decade had passed since the post-war Public Library Inquiry had declared that "other agencies of mass communication reach far larger groups and reach them more frequently and regularly" than the public library (Berelson 1949, xi). Pilot

projects at the National Library of Medicine (MEDLARS), the Library of Congress (MARC), and the Massachusetts Institute of Technology (INTREX), were in the works to automate scientific information retrieval, computerize traditional library catalogs, and create a ubiquitous computer-mediated information environment (Burke 2002; McCallum 2002; Stevens 1970). And at the still-new Council on Library Resources (CLR)—a private organization funded by the Ford Foundation to incubate both basic research and practical pilot projects in the application of new technology to library and information problems—director Verner Clapp had just commissioned J.C.R. Licklider of the Advanced Research Projects Agency (ARPA) to come up with a blueprint for the "library of the future" (Licklider 1965). But the vast profession of librarianship had heard little of these ventures when LIBRARY-21 appeared. In their view, librarianship was experiencing a serious skilled labor shortage, which the computer might either alleviate or exacerbate (Strout and Strout 1961). The Univac on Puget Sound gave 84 librarians throughout a diverse geographical and functional division of labor—in academic libraries, public libraries, school libraries, and corporate libraries—their first concrete example of information automation. How the designers of LIBRARY-21 understood the labor of these librarians, and how these librarians in turn came to understand their place within LIBRARY-21, illustrates that the "library of the future" which evolved over the next 40 years—and which today still confronts technological competition from firms like Google and Amazon—was less of an inevitable and "scientific" application of technology in the name of efficiency, and more a complicated negotiation between systems designers, information machines, and knowledge professionals.

A VISION OF THE FUTURE

The man who came up with the idea for LIBRARY-21 earned his master's degree in Library Science from Catholic University in 1955. But Joseph Becker had entered military intelligence a decade and a half before, during the Second World War, and subsequently served in the CIA for a quarter-century, working "to manage and provide access to the flood of analytical data crucial to intelligence work" (Hayes 1995, 24). Contemporary writers disagree whether Becker "suggested that ALA participate in the upcoming Seattle World's Fair in 1962 with an exhibit using computers" (Salmon 1993, 15-16) or whether "the American Library Association commissioned Joe to conceptualize a 'library of the future'" (Hayes 1995, 25). Either way, ALA Library Technology Project coordinator Al Trezza agreed to the idea of an exhibit combining libraries and computers into one vision, and the CLR agreed to kick-start the effort with a \$31,000 feasibility study in 1960, conducted by

Becker (Marcum 2002, 4; Martin and Lieberman 1962, 230). The rest of the funding, eventually totaling \$300,000, came from a contract awarded to the ALA by the Rome Air Development Center of the U.S. Air Force, calling for "the logical development of a highly visionary concept of the electronic information center as it would appear in 2000 A.D" (ALA 1963, iv; Martin and Lieberman 1962, 231). The ALA quickly assembled a group of professionals to develop LIBRARY-21 in detail: a seven-person team of consultants—comprised of four people from government and private defense contracting (including Becker, still with the CIA), and three university and government librarians—as well as a 17-person advisory committee including four library school faculty, two heads of federal agencies, two heads of private firms (including Becker's close friend and colleague Robert Hayes), and nine library directors. But the bulk of the work was performed by Becker and Hayes, who had been collaborating on automated information retrieval projects since at least 1958 (ALA 1963, iv).

These groups drew their vision for LIBRARY-21 directly from governmental, corporate, and military concerns over the post-war "information explosion" in interdisciplinary science and technical research reports (Bowles 2000). The automated future they imagined was geographically extensive, where "remote inquiry and automatic catalog search" would "make it possible to answer questions from remote stations—homes, offices, schools, or regional information centers." These remote stations were to be "operable by anyone," designed to be "as foolproof as the telephone" so no specially trained labor would be needed. On those rare occasions when an actual book was requested by a user, "automatic conveyors" would be used, such that, "from the time a book or document is received, the entire handling sequence will be controlled but not handled by library personnel." A central computer, "organized and maintained by the technical services personnel," would mediate all of these new functions, acting as "a computing machine for those with research problems in information theory and the like"; "a look-up file for patrons with a specific topical interest who may want a bibliography of current books to read"; "a literature-searching machine for those who must scan the content of all materials for pertinent information"; and, most ambitiously, "an analytic device which will allow an advanced patron to converse with the computer on complex problems, gradually approaching a solution through a series of iterative answers" (ALA 1963, 12–14).

Such a vision not only echoed Vannevar Bush's (1945) well-known "Memex" ideas from 20 years before, it also fit quite well with what historian of technology Paul Edwards has termed the "closed world" discourse of the Cold War military-academic-industrial complex, which Bush himself helped to inaugurate. In that world, "computers were used first to automate calculation, then to control weapons and guide aircraft, and later to analyze

problems of command through simulation," with the ultimate goal being "the automation of command" (Edwards 1996, 71; Zachary 1999).

In this way, the human-machine interaction plan for what Clapp would later call the "push-button library" (1962, 7) assumed that communication and transportation technology operated by end users—remotely accessing catalog cards, remotely viewing texts via television, remotely duplicating and shipping either microfilm or photocopies of documents, and even remotely "conveying" books to circulation desks from mechanized back-room storage—would absolve the library staff of the labor required in handling physical resources for circulation. But nowhere in these various scenarios was there any recognition that library labor would be required to manage virtual metadata—to organize, catalog (subject descriptors), classify (call numbers), index (keywords), and abstract sources, not to mention formulating queries in the same controlled languages as these—for this vastly expanded global network of accessible-and-duplicable-on-demand multimedia material. The only new labor that was acknowledged was the maintenance of the multi-purpose library computer itself, to be handled by "technical services personnel."

DESIGNING THE EXHIBIT

The ALA's vision for LIBRARY-21 privileged technology over both human labor and material collections, and so did the architectural layout of the exhibit itself. The 9,000-square-foot exhibit space, designed by architect Vance Johnson of Los Angeles, was broken into "two circular exhibit areas, each 60 feet in diameter and each surrounded by plexiglas or wood walls six feet high" and "connected by a linear walkway" (ALA 1963, 1). The more traditional of the two circles dealt with children's information needs: education and literacy. A narrow stairway in this circle led down to the Children's World, housing 2,000 children's books from all over the globe, plus films, filmstrips, a mini-movie theater, a "children's maze exhibit," and "colorful modern furniture" (Batchelder 1962, 1964–65). Above Children's World was the Learning Resources Center, focused on high-school students and showcasing multimedia equipment: a "closed-circuit television, telephone, autotutor, and dual-channel tape [deck]" as well as a "memo-tutor, microfilm reader-printer, phonograph, radio, Speed Reader, Flash-X, electronic panels, microcard readers, and microfilm reader," all donated by various vendors. The Learning Resources Center was meant to illustrate "the increasing emphasis on individual responsibility for learning and the vast resources that will be available to the student from the center in his school building" in the near future (ALA 1963, 3). Here "individual responsibility" was meant to shift educational labor from teachers and school librarians directly to students.

The other circle in the exhibit, the Ready Reference Center, dealt with adult information needs. Sponsored in part by *Encyclopaedia Britannica* it included "730 selected reference books," a Xerox 914 copier, and an "adult non-fiction browsing collection" of 800 books. But the main attraction in this circle was the Sperry-Rand Univac Solid State 90 computer. Three kinds of information were stored in magnetic tape memory, available for printout depending on varying punched-card input: "personalized bibliographies created from a store of 8,400 book titles; quotations from 74 authors whose work appears in the *Great Books of the Western World* series; and gazetteer information on 92 nations of the free world" (ALA 1963, 2). The Univac hardware included "two keypunches for inputting queries, the memory, the processing unit, six tape units [each the size of a refrigerator], and the 600 line-a-minute printer for printing the answers" (Melton 1962, 2492).

Designed for dramatic effect and filled with the latest commercial technology, the LIBRARY-21 exhibit space was also meant to house actual, working librarians, serving both interpretive and educational purposes. Librarians were expected to explain the various exhibits to the public, providing a public face for the ALA at the Fair. But in addition, LIBRARY-21 was meant to "provide librarians with an educational experience in a machine-library environment," to "explore professional reaction to the introduction of such entirely new concepts," and to "evolve valid criteria for the development of advanced library-education curricula." So the exhibit was to have a substantive effect on library labor and librarian education. It was hoped that the librarians volunteering their time at the Fair "would return to their communities with an awareness of present technology and some willingness to explore its possible uses in their own libraries." To fund this part of the project, the ALA won a grant of nearly \$110,000 from the U.S. Department of Health, Education and Welfare to select, train, and "employ" librarians over the six months of the exhibit, conducted by Hayes through the facilities of the School of Librarianship at the University of Washington (ALA 1963, 3-4). The full staffing of the exhibit eventually included 84 librarians, "six *Encyclopaedia Britannica* consultants," and an unknown number of "non-professional staff" operating the Univac exhibit (Martin, Hayes, and Lieberman 1963, ii, 4).

FINDING AND TRAINING THE LIBRARIANS

Vendors provided the reference consultants and the Univac operators, but the ALA team had to find the 84 librarians themselves. They placed advertisements in professional publications such as the *ALA Bulletin*, and 2,000 inquiries were received. But then the procedure was changed to bring more order to the selection process. In January 1962, the team sent out an appli-

cation form to all public and academic libraries with book budgets of \$50,000 or more, as well as to all state Departments of Education and "selected members of the Special Libraries Association." Some 1,500 applications were received by March 1962, each including one letter of reference. Choosing 84 librarians from these applications, over a period of two weeks and without the benefit of personal interviews, involved several considerations: all were supposed to have degrees from accredited library schools (and all but one did); they tried to balance geographical diversity with a limited travel budget (selecting from 15 states); they tried to match librarian experience with the parts of the exhibit (school librarians were needed for Children's World); and quite frankly, "Physical appearance was an important factor, based upon the theory that a majority of visitors would view the staff but might not actually get into conversation with them." The librarians were asked not only to submit a picture, but to list their height, weight, "health" and "physical defects" (ALA 1963, 4; Martin et al. 1963, 6, 37).

Such an emphasis on looks was necessary, the ALA team later wrote, because "the public image of the professional librarian" was "not a favorable one" but a "stereotype." They never explained just what this stereotype was supposed to be, but by their praise for the way their own staff broke that stereotype, we can deduce some of its features. The chosen LIBRARY-21 staff were described as "at least pleasant in appearance, who dressed reasonably well, who were outgoing, cheerful, friendly people." In addition, visitors were "amazed to find males among professional librarians," so clearly librarians were selected for gender as well. Based on a review of their full names, out of the 84 librarians, 37 were male—a much higher proportion than the percentage of men in the profession of librarianship at all levels in 1962 (Martin et al. 1963, 12, 26-36).

Once chosen, each librarian attended five full days of instruction, designed and led by Hayes. The curriculum was meant to "remove the mystery from the field of data processing" in three ways: providing the exhibit staff with "sufficient familiarity with the equipment so that they could answer questions concerning it with confidence"; enabling the staff to "present this equipment to the public in the framework of the library picture"; and imbuing the staff "with a knowledge and enthusiasm about the potentialities of data processing equipment as a tool in the library so that when they return to their homes scattered throughout the country, they will examine their own libraries' needs critically and without fear concerning the effects of technology." In other words, the 84 librarians were to receive (1) skills training on vendor equipment, (2) public relations training on the importance of that equipment to the library of the future, and (3) attitudes training to inculcate "enthusiasm" and remove "fear," paradoxically asserting that this would lead to "critical" engagement with technological possibilities (Martin et al. 1963, 7, 56-57).

Part of this training in "critical" engagement did involve a warning that, as Hayes put it, "for the great mass of businesses and of libraries, the costs of establishing systems of this intellectual complexity, and particularly the costs of putting the necessary information into mechanized form, are greater than the potential benefits to be directly derived from them." But then Hayes made a startling connection. He first asserted that in nearly all libraries "throughout the country, great and small," the "mechanization of simple clerical processes" in libraries would certainly result in "savings in cost and time and improved efficiency of operation" which "should more than pay for the cost of the equipment." He then asserted that as a "fringe benefit" of automating these clerical processes, the data required for information retrieval systems would now exist "in mechanized form," and thus "information retrieval becomes almost a free benefit resulting from the mechanization of clerical processes" (Martin et al. 1963, 60). But this account entirely removed the moment of skilled metadata production from the labor process, and indeed provided no suggestion that with automation (and intensification of use) the work of metadata production might become *more* exacting, *more* time-consuming, and *more* extensive than ever before.

WORKING THE LIBRARY-21 EXHIBIT

Perhaps the lack of emphasis on skilled metadata production in the LIBRARY-21 training was inevitable, since the librarians mustered to work in the exhibit had no role to play in constructing metadata for the computer retrieval demonstrations. In fact, the working conditions and labor relations of LIBRARY-21 cast the librarians less as trained and skilled professionals and more as contingent clerical labor. The work was temporary, to be sure: each librarian served in the exhibit for 33 to 40 days, or about one-sixth of the Fair's run from April to October 1962. But the work was also largely unpaid. All participants received "round-trip air coach transportation" and a \$10 per diem allowance for meals, plus sparse accommodations at the University of Washington residence halls or special housing at the World's Fair. Any payment on top of this had to come from the librarian's home institution. About 60 percent of the librarians received some salary payment from their employer, but the other 40 percent were forced to use "vacation time, compensating time, or leave without pay" to participate (Martin et al. 1963, 5, 7).

The work itself could be grueling. The staff spent their days "meeting hundreds and hundreds of people each day, expected to be carefully groomed, cheerful, and bubbling with enthusiasm after hours of standing on concrete floors, having to eat hurried meals (they were allowed only one half hour each for lunch or supper), and having to cope with unfamiliar res-

idence facilities, bus transportation, and an environment often strange and unfamiliar." Under such conditions, the librarians apparently performed remarkably well, "far exceeding any reasonable expectation," according to the ALA. Even so, the exhibit designers admitted, LIBRARY-21 really could have used 144 librarians—nearly double their labor force—to serve the demand they experienced (Martin et al. 1963, 5, 12). Even the "library of the future" suffered a librarian labor shortage.

The specific nature of tasks varied, depending on which "circle" a librarian worked in. In the Children's World, librarian Elizabeth Margulis, "an experienced children's librarian" from Santa Fe, New Mexico, was promoted on the spot to coordinate the labor of the other librarians. Upstairs in the Learning Resources Center—meant to exemplify the high-school library of the future—a similar promotion occurred, as "the generous assistance and knowledge of Miss Patricia Foster of the Bellevue (Washington) Schools" was called upon to streamline the placement of equipment, assign a librarian to explain the area for visitors, and "discourag[e] individual visitors from monopolizing pieces of equipment" by removing chairs. Nevertheless, the librarians in this area found that "maintenance of the equipment at the exhibit was a grave problem" because "the majority of the equipment could not withstand the usage of hundreds of people or operate continuously during the 84 to 91 hours each week for six months." Much of the hardware arrived so late that "it was impossible to provide 'on site' instruction for the staff," and "seldom was there available any technical literature," even though all of the equipment they showcased was commercially available production machinery, not prototype hardware. The lack of documentation was an ongoing problem because none of this equipment came with an ongoing maintenance contract (another cost-cutting measure). Instead, "it became necessary for the staff to develop skills in simple maintenance." The exhibit designers reported proudly, "Most of the staff did acquire this knowledge on the job; a few did not adjust to the situation" (Martin et al. 1963, 9–10, 18–19). They didn't ask, however, whether such "adjustments" of labor forces to technical environments might be endemic to any attempt to remake the entire operation of the library under a new technological ideal without any design input from that labor force itself.

Such questions of technological innovation and labor participation were best illustrated by the Univac portion of LIBRARY-21. Part of the point of training the exhibit librarians on the future of library automation was to enable them to introduce visitors to this area, and "explain the use of computers in library information storage and technical processes" (ALA 1963, 2). But as one technologically savvy library science professor, Jessica Melton (1962), noted when she visited the Fair, the Univac hardware itself was "off bounds for the librarians" and instead "manned by operators." Melton, who was Assistant Director of the Center for Documentation and Communication

Research at Western Reserve University, criticized the Univac exhibit as a "grotesque novelty" in the *Library Journal*. For example, one of the Univac programs was designed to print out a portion of an electronically stored text entered from a printed reference work. Melton observed that "thoughtful people must have wondered why they were standing in line for 30 minutes to get a printout of a quotation (or sometimes part of a quotation) from *Great Books of the Western World*, when in two seconds they could have turned to the index on the shelf across the barrier 10 feet away in the browsing section of the library, pulled the proper volume off the shelf, and then read the whole passage in context, sitting down comfortably." Another program involved "a checklist combining subject topics [e.g., 'Space Science'] and personal information [e.g., age, sex, education] to produce an appropriately tailored bibliography." Unfortunately, filling out the checklist, watching it slowly key-punched to a processing card, and waiting for the computer to process the result often resulted in the response, "The Univac computer has no suggestion for you due to the restricted library." Melton complained that the exhibit gave no hint of the ways computers might be used in libraries "long before Century 21," such as "housekeeping routines, accounting and payroll, preparation of catalog cards in all their various arrays, centralized or decentralized centers for specialized, difficult to control information, drawing tape files from and generating tape files for other such information centers," or "that most dramatic of all uses: the computer as a searching tool to exploit deep indexes to documents which are presently unindexed, or inadequately indexed" (Melton 1962, 2491-93). Such uses would have required librarian labor to develop metadata for a significantly sized collection, and no such creative, intellectual labor on the part of the exhibit staff was demanded.

The LIBRARY-21 designers were well aware of such criticisms, and their final report put the blame squarely on the shoulders of labor. Acknowledging "some dissatisfaction with the slowness of delivery of the printout, and some unhappiness from the visitors about the titles provided on the personalized bibliographies," the design team responded that "the librarian stationed at the Univac High Speed Printer was in a position to explain these apparent difficulties"—working as a public relations flak rather than as a professional trained and committed to solve informational problems. The exhibit designers blamed (other) librarians for the Univac shortcomings. "The quality of the bibliographies produced by the computer was hardly the fault of the mechanism," they patiently pointed out. "Librarians selected the titles programmed; any inadequacies of the lists were properly the fault of the programming, not the machine. . . . Lack of time and funds prevented the programming of a larger number of book titles." So labor was to blame—in its decisions, its skill, and its cost in time and money—for the poor reaction on the part of LIBRARY 21 visitors to the Univac computer. The designers admitted that "there was discussion of using professional li-

brarians in the Univac area, operating the several units of the computer, and explaining to the public the involvement of computers in library services," but once again, funding was prohibitive: "The cost of providing professionals in this area proved too high, and the idea was dropped" (Martin et al. 1963, 4, 14). It is unclear whether the cost of using professional librarians with the computer was "too high" because those librarians would have required more intensive and extensive training, or because the computer actually demanded more person-hours of labor than other areas. Either way, as Melton argued, "Library 21 missed its opportunity to create its much publicized 'image of the new librarian,' who will by the year 2000 understand the proper uses of computers as well as today he understands the uses of the thumb indexes on Webster's dictionary" (1962, 2492).

Rather than showcasing librarians actually working with new information technologies and techniques, the designers of LIBRARY-21 constructed their staff as "public relations experts, showing the modern librarian to the best advantage" for a public fearful about the future impacts of the computer and skeptical about the future survival of the librarian. The 84 librarians working the exhibit were supposed to explain just how—and why—the various disconnected pieces even qualified to hang together in a vision of the "library of the future," because as the authors admitted, "Standing by itself, the exhibit was not self-explanatory. . . . It became clear to the visitors only in conversation with the staff." And it had only become clear to the staff after very specific training, which was supplemented by "a number of press releases on the project, indicating the thinking behind the organization of the exhibit and the purposes of the several sections." Ironically, while every single piece of technology was clearly labeled and branded with the name of its corporate vendor, "there was inadequate identification of the American Library Association" in the exhibit (Martin et al. 1963, 10, 12, 15). The resulting purpose of the "librarian of the future," as constructed through the technologies and ideals of LIBRARY-21, was to act in a dual and contradictory role: (1) as a formally trained public relations expert on behalf of corporations producing new library equipment (encouraging the adoption of these tools both to the public and to the rest of their profession); and (2) as an informally trained, uncompensated, and publicly unacknowledged machine-tender for those same corporations (who refused to pay the costs of maintenance and technical documentation).

ASSESSING THE IMPACT OF LIBRARY-21

Overall, however, none of these contradictions seemed to dim the profession's enthusiasm for the LIBRARY-21 exhibit. Over the summer of 1962, 1.8 million of the Fair's 9.5 million visitors experienced LIBRARY-21. One

writer in the *Library Journal* argued that "Without any question, Library 21 was the most important activity in the area of public relations for libraries and librarians in this century" (Field 1963, 831). Another lamented that the exhibit wasn't as "challenging" or "inspirational" as the Spacearium, but agreed that LIBRARY-21 was "not a failure; it was worthwhile," and that "it was an achievement for librarianship to be represented at all at a World Fair" (Stokes 1963, 974). And a high-school career guide to librarianship published two years later used a description of LIBRARY-21 to encourage young people to pursue a career in librarianship (Meyer 1964, 22). Not surprisingly, Becker himself felt that the exhibit "displayed the profession as vibrant, progressive, and dedicated to the educational and recreational interests of the man-on-the-street" (Tucker and Becker 1964, 29). And the CLR's Verner Clapp acknowledged that "the road to the 'push-button' library will be long, slow and expensive, and that the book is in no foreseeable danger of displacement." He also bragged that LIBRARY-21 "represented a total investment of more than \$2 million" (undoubtedly counting all the donated, and often malfunctioning, vendor equipment) (Clapp 1962, 10).

Even Melton, so critical of the clumsy way that computerization in librarianship was represented, acknowledged that "the librarians who managed to get space and sponsorship for a library in a science fair deserve the gratitude of the profession" (Melton 1962, 2493). Ironically, though, it was the non-computerized Children's World, which was seen as the main success of LIBRARY-21. The exhibit's designers realized that "more than any other area of the exhibit, the Children's World resembled library services best known to visitors" (Martin et al. 1963, 13). Perhaps quite unintentionally, "the power of good books and reading in this increasingly mechanized society was amply demonstrated" (Field 1963, 831).

But a positive external public relations message was only one of the ALA's original goals for LIBRARY-21. What about the internal goal of training an influential cohort of librarians from all over the country to understand and promote library automation? The designers reported with pride that most of the librarians who had worked the exhibit "had lost their fear of automation in libraries," and "did not feel that they would be replaced by machines or computers." Rather, "they had acquired an appreciation of the use of machines in certain specific areas to relieve human beings of drudgery and to leave more time for the creative, professional aspects of library work" (Martin et al. 1963, 10). But the statement that the staff "realized" all of these truths says more about the preexisting visions of the LIBRARY-21 organizers than any attempt to actually gauge the reactions and ideas of the librarians. The LIBRARY-21 structure specifically exempted its librarians from performing the "creative" and "professional" task of metadata production. And there was no realization on the part of the project designers that whatever "fears" of technology these librarians had, they and 1,400 of

their peers specifically applied to be part of this experience and engage with these tools. Wouldn't those with true "fears" have stayed home?

Perhaps a better question would be how the LIBRARY-21 staff saw their own place in this new automated labor process. In their training course, Hayes had conceptualized four possible roles for actors in the library of the future: user, operator, designer, and "supplier of the equipment" (Martin et al. 1963, 118). These same roles figured prominently in a textbook that Becker and Hayes were working on at the same time, published a year later as *Information Storage and Retrieval: Tools, Elements, Theories* (1963). The authors described how, in any information system, operators bore responsibility for any system failure: "The librarian, the manager of an accounting system, the information specialist—each has been faced with the day-to-day problems of providing information to the user, scheduling functions, maintaining the file, assigning personnel, controlling operations. . . . If failures or inadequacies become evident, he is there and obviously responsible." Such failures could come at three hierarchical levels of skill. For so-called machinomorphic operators, like keypunch operators or manual file clerks, "the human being is strictly a cog in a machine," a situation which may be unavoidable because "the human being turns out to be a very effective machine for certain functions." For operators acting as "communication links," it was personal interaction, defined in opposition to machine behavior, which counted: "The customer does not want to talk to a machine, he wants to talk to a lovely lady with a lovely voice—and she very frequently calms ruffled nerves." Finally, some operators might take a "judgment" role, ensuring machines are operating properly by "using his judgment as to correctness of machine performance in terms of ill-defined criteria" or handling "special situations" of information retrieval (Becker & Hayes 1963, 226–27, 280). But in no way were operators to be considered collaborative "designers" or "programmers" of systems under this scheme.

From the responses reported by the ALA, the participants in LIBRARY-21 seem to have envisioned themselves straddling those second and third kinds of operator roles: as the purchasers, managers, and promoters of automation equipment, mediating between the users (patrons), "machinomorphic" operators (clerical staff), and suppliers (private firms), but having no relation to the designers (defense contracting engineers). The LIBRARY-21 staff internalized their public relations role from the Fair and claimed it as an increasingly important general requirement for their profession, recommending "instruction in 'inter-personal relations' for the librarian of today" and valuing "skills and knowledge for working with the public as a representative of a tax-supported agency or working with the staff as a supervisor." Presumably the public costs and labor consequences of automation would intensify this need for "inter-personal relations" skills as librarians tried to justify technological automation systems to both local

taxpayers and fellow workers. Librarians, retrained as public relations managers, would "develop extrovert qualities in order to tell the library story" (Martin et al. 1963, 117).

CONCLUSION

Telling the "library story" remains important today. The seven dozen librarians who served in the 1962 LIBRARY-21 exhibit brought their expertise, their enthusiasm and their (often unpaid) labor from across the nation in order to experience a taste of the "library of the future" firsthand. But that library, officially sponsored by the American Library Association yet molded largely by the needs and ideals of the consultants and vendors of the Cold War military-academic-industrial complex, provided a contradictory introduction to the world of laborsaving automation. These librarians were valorized both for organizing the traditional portions of the exhibit along the lines of their expertise, and for doing all that they could to prevent breakdowns and disruptions with the troublesome and nontraditional equipment peppering those exhibit spaces. But at the same time they were subjected to a retraining program meant to indoctrinate them into acceptance of the computer in their organizations, their schools, and their profession. Paradoxically, this same computer was off-limits to the librarians, as these so-called information professionals were recast as public relations experts soothing the "ruffled nerves" of a skeptical public. The Council on Library Resources' Clapp summed up the situation by contrasting the reactions of so-called traditionalists to LIBRARY-21 against those of the (presumably progressive) "mechanists": "The traditionalists, as was expected, resented the intrusion of machines into a library exhibit as the negation of librarianship. The mechanists, on the other hand, felt the results of an investment of even this size to be trivial" (1962, 10).

Contradictions such as these, between the closed-world "mechanists" designing Cold War library automation systems and the myriad "traditionalist" librarians fated to deal with them, motivated the Library of Congress, the National Science Foundation, and the Council on Library Resources to hold a special retreat in the summer after the LIBRARY-21 exhibit, in the hopes that "a working conference might provide the stimulus for librarians and technicians to destroy some of the stereotypes each group has of the other, to discover mutual problems, and to develop a common understanding of the goals of library mechanization and the ways in which each group could help in achieving these goals" (Markuson 1964, 1). It was the beginning of a conversation that is still going on today.

Nearly half a century later, librarians find themselves once again vying for attention as they put forth their vision of the "library of the future" amid a

chorus of outside "technical" competitors. This time, however, it is not the defense contracting firms and their principal investigators, but the online commerce corporate giants like Google and Amazon, who are setting the agenda for how we think about "access to information" in the new millennium. The story of Seattle should remind us that each of these firms depends on a vast network of both paid and unpaid labor to accomplish its goal of bringing information to the masses (at a price). If library laborers and internet laborers can uncover their respective histories, articulate mutual interests, discover similar conditions, and argue for complementary visions of Infotopia, a digital "library of the future" embodying democratic ideals rather than defense constraints and marketplace imperatives may yet be within our grasp.

BIBLIOGRAPHY

- American Library Association (ALA). 1963. *The library and information networks of the future*. Chicago: ALA.
- Batchelder, M. 1962. Library 21 children's world at the Seattle World's Fair. *Library Journal* (May 15): 1964-65.
- Becker, J. and R. M. Hayes. 1963. *Information storage and retrieval: Tools, elements, theories*. New York: John Wiley & Sons.
- Bell, D. 1973. *The coming of post-industrial society: A venture in social forecasting*. New York: Basic Books.
- Berelson, B. 1949. *The library's public: A report of the public library inquiry of the Social Science Research Council*. New York: Columbia University Press.
- Bowles, M. D. 2000. Liquifying information: Controlling the flood in the Cold War and beyond. In *Cultures of control*, ed. Miriam R. Levin, 225-46. Amsterdam: Harwood Academic.
- Burke, C. 2002. The Ford Foundation's Search for an American Library Laboratory. *IEEE Annals of the History of Computing* (July 2002): 56-74.
- Bush, V. 1945. As we may think. *Atlantic Monthly* (July): 101-8.
- Clapp, V. 1962. *Council on Library Resources: Annual Report*. Washington, DC: Council on Library Resources.
- Connelly, J. 2002. Century 21 introduced Seattle to its future. *Seattle Post-Intelligencer*, April 16.
- Edwards, P. 1996. *The closed world: Computers and the politics of discourse in Cold War America*. Cambridge, MA: MIT Press.
- Field, C. 1963. Library 21—what was its meaning? *Library Journal* (February 15): 831.
- Hayes, R. M. 1995. Joseph Becker: A lifetime of service to the profession of library and information science. *Bulletin of the American Society for Information Science* 22: 24-26.
- Kelly, K. 2006. Scan this book! *New York Times*, May 14.
- Licklider, J. 1965. *Libraries of the future*. Cambridge, MA: MIT Press.

- Marcum, D. 2002. Automating the Library: The Council on Library Resources. *IEEE Annals of the History of Computing* (July): 2-13.
- Markuson, B., ed. 1964. *Libraries and automation*. Proceedings of the Conference on Libraries and Automation, Airlie Foundation, May 1963, Warrenton, VA. Washington, DC: Library of Congress.
- Martin, G. P., and I. Lieberman. 1962. Library 21: ALA's exhibit at the Seattle World's Fair. *ALA Bulletin* (March): 230-32.
- Martin, G. P., R. M. Hayes, and I. Lieberman. 1963. *Recruitment and training of staff and support of staff dissemination activities at the American Library Association LIBRARY 21 exhibit, Seattle World's Fair*. Seattle: School of Librarianship, University of Washington.
- McCallum, S. H. 2002. MARC: Keystone for Library Automation. *IEEE Annals of the History of Computing* (April): 34-49.
- Melton, J. 1962. Vague new world: An on the spot report on Library 21. *Library Journal* (July): 2490-93.
- Meyer, E. P. 1964. *Meet the future: People and ideas in the libraries of today and tomorrow*. Boston: Little, Brown & Co.
- Salmon, S. R. 1993. LITA's first twenty-five years: A brief history. *Information Technology and Libraries* 12: 15-20.
- Shera, J. 1963. The library of the future. *UNESCO Courier* (January): 11-13.
- Stevens, N. D. 1970. MEDLARS: A summary review and evaluation of three reports. *Library Resources and Technical Services* (4) 1: 109-21.
- Stokes, R. 1963. Reverie on Puget Sound. *Library Journal* (March 1): 974.
- Strout, D. E. and R. B. Strout. 1961. Higher salaries, more vacancies. *Library Journal* (June 15): 2266-72.
- Tauber, M. F. 1962. The library. *Journal of Higher Education* 33: 227-28.
- Trezza, A. 1962. Library 21 opens. *ALA Bulletin* (June): 561.
- Tucker, H., and J. Becker. 1964. Library/USA. *ALA Bulletin* (January): 29-31.
- Zachary, G. 1999. *Endless frontier: Vannevar Bush, engineer of the American century*. Cambridge, MA: MIT Press.

4

A Libratariat? Labor, Technology, and Librarianship in the Information Age

James F. Tracy and Maris L. Hayashi

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The operative word in this chapter's title combines "librarian" and "proletariat" to draw attention to subtle yet unmistakable changes in academic librarianship, changes that suggest the steady attenuation of the skills comprising a profession, moving it toward a category of workers who are less skilled, less valued, and less capable of carrying out the library's vital public service mission. Drawing on the observations of librarians themselves, we argue that the increasing reliance on information and communication technology (ICT) is transforming both the role of the librarian and the nature of library work, making significant inroads into how knowledge is collected and exchanged while simultaneously altering how library workers understand their relationship to their patron-constituencies.

Academic librarians comprise a significant stratum of the knowledge workforce dedicated to an especially important public service mission. According to J. G. Meijer (1982, 26): "Librarianship is a form of cultural enterprise whose main characteristic is the stimulation of the optimum use of mankind's cultural heritage insofar as it consists of coded thoughts recorded in documents that are and must be held in readiness for use with the ultimate objective of making possible cultural progress." As mediators and guardians of knowledge preservation and exchange, librarians are especially sensitive to both subtle and pronounced changes in how knowledge is accessed and shared through changes in their personal work routines.

To look into how technology has changed library work, we examined academic librarians' perceptions of information technology, the extent to which such technology affects their everyday practices, and what technological change means in the context of their profession. In August 2006, we surveyed, via surface mail, 219 reference librarians employed by member

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