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Music Cataloging and Technological Change in the 1980s

Richard Griscom∗

3 January 2022

Abstract

After decades of relative stasis, library technology underwent transformational changes in the 1980s. Over the course of a few years, the introduction of shared online cataloging, the local online public catalog, and electronic mail changed the way librarians did their work and ushered in a period of technological innovation that continues today. The author offers a first-hand account of the impact of these technologies in the 1980s, when he was a graduate student and early-career music librarian.

Ending a career requires adjustment. Plucked from the workplace (be it physical or virtual) and the structure of the workday, the retiree has to adapt to a new way of life, establishing new routines for the day and filling them with sustaining activities—ideally, a mix of the recreative and the productive. When days can be passed as one pleases, there are many options, and as the clock ticks, the choices seem to matter.

It can be a time of reflection and assessment. Sorting through boxes of correspondence and hastily packed office detritus, accumulated over the decades, leads to rumination. At the end of forty years of work, it’s impossible not to look back on those decades and think about the passage from beginning to end—the people met along the way, the changes made, the successes and failures.

When I retired early in 2021, my thoughts were occupied at first with the job I had just left. The last time I had seen my colleagues was March 2020, and I had hoped we would be back together before I left for good. I ended up saying goodbye to friends on a screen, and I packed up my office in the quiet of an unpopulated library.

As I settled into my new routine, I started opening boxes from the office and paged through papers and letters that had been filed away, unseen for decades and forgotten. My thoughts moved from the present back to the beginning of my career, a time when everything I encountered was new, and, being an impressionable person, nearly everyone I met left their mark.

∗Before retiring in 2021, Richard Griscom was the head of the music libraries at the University of Louisville (1988–97), the University of Illinois (1997–2004), and the University of Pennsylvania (2004–16). The author thanks Paula Hickner, Deborah Campana, Mark Scharff, James Bradford Young, and Lisa E. Phillips for reading and commenting on various drafts and editor Jon Sauceda for his encouragement and advice.
As I thought back on my early years as a music librarian, I realized I had entered the profession at a point when the work of librarians was changing rapidly. Over the course of a few short years in the 1980s, computer technology and networked communication transformed the way we processed, exchanged, and delivered content. It changed the way we worked. The card catalog, which was central to library work at the beginning of the decade, had been either discarded or closed in most libraries by the decade’s end. Typewriters were replaced first by terminals and then by personal computers. It all seems to have been inevitable now, but then the path ahead was uncertain. So long as an innovation seemed a helpful move forward, we accepted it, adapted to it, and waited to see what would come next.

Since the clock is ticking, I want to share what I remember of that time, a personal history of a period that initiated decades of ongoing technological change.

I was sitting in the library at Indiana University working on a class assignment when I first saw Arsen Ralph Papakhian. He was standing at the card catalog on the other side of the room, and his wiry beard and unkempt black hair, roughly parted on the side, had caught my eye. I assumed he was a young assistant professor, but I was puzzled I hadn’t seen him before. He pulled a sliding shelf out of the center of the card catalog, ran his finger down a column of catalog drawers, pulled a drawer out, and set it on the shelf. He started flipping through the cards, stopped a few inches in to look at one, and then, using both index fingers, he quickly flipped back through the cards, from front to back, looking only at the ones that for some reason were sticking up above the others. He stopped and grimaced at a card, pulled it out, flipped ahead a few cards, and reinserted it. Once he’d reached the end of the drawer, he did something I’d never seen: he lifted the round knob on the front of the drawer and pulled out the long metal rod attached to it. The cards that had been sticking up above the others fell into place, and he reinserted the rod.

Who was this man, and by what authority was he pulling out drawers, moving cards, and removing rods?

I had moved to Bloomington in fall 1978 to begin a master’s program in musicology with a minor in percussion. These were the days before JSTOR and e-books, so I spent a lot of time with books and journals in the music library, which was located in the basement of Sycamore Hall, a building constructed in 1940 as a women’s dormitory. Like nearly all buildings on IU’s campus, it was made of gray Indiana limestone, which, during the cold months, set off by dirty white snow, reinforced the dreariness of winter. The academic music faculty had offices in former dorm rooms on the upper floors, and the music library was in a cramped, warren-like space in the basement. Pipes in the ceiling burst occasionally and sprayed water onto the collection. I remember after one of these showers seeing David Fenske, the director of the library, walk in to survey the damage then leave after a few minutes in a posture of defeat but with fury in his eyes. A little over fifteen years later, the library moved from Sycamore Hall into a renovated space in the large Education Building on the other side of the Music Annex’s round silo, and a few years after that, David left Bloomington for Philadelphia to become dean of Drexel University’s library school.
When you walked into Sycamore Hall, the entrance to the library was on the left. Beyond the glass entry doors and past the circulation desk, a dozen stairs descended to a basement level. The high ceiling of this first room made it seem more spacious than it was. On the left was a tight maze of shelves holding the reference collection, and near them was a long table for readers. On the right were the card-catalog units where I had seen Ralph.

I was one of four or five students entering the musicology program that year. A required class for all of us was David Fenske’s course on music bibliography and research methods. Music reference sources were available only in print, so the core of David’s course was a survey of the books shelved in the reference collection on the left side of this room. Class members spent hours at the long table, working their way through the week’s assigned reference books, which were distributed on a mimeographed handout and usually numbered over a dozen. We pulled each volume from the shelf, examined it, and took notes. There were assignments that sent us on treasure hunts in search of answers to questions like, What was Joseph Haydn’s relationship to a dog named Turk?

I found the answer to that question in the era’s standard English-language encyclopedia of music, the fifth edition of the *Grove Dictionary of Music and Musicians*, published in 1954 and only partly updated during the intervening decades. Researchers looking for encyclopedia entries based on more recent research, with more extensive and up-to-date bibliographies, turned to the densely packed columns of *Musik in Geschichte und Gegenwart*, but only those of us with passable German found it useful. This made the arrival of *The New Grove* in 1980, a year into my graduate studies, a landmark event. The IU music library purchased three copies, including one for the cataloging department. Some faculty paid over two thousand dollars to own a personal copy. At the time, I was A. Peter Brown’s teaching assistant, and after his copy arrived, he spent his evenings at home carefully perusing, page by page, the twenty volumes of the encyclopedia.

I was sitting at the long table taking notes on that week’s assigned books when I watched Ralph and puzzled over who he was and what he was doing. Although he wasn’t particularly short, he seemed vertically compressed. Perhaps it was the aura of gravity about him, or maybe it was his broad face, with a nose that formed an equilateral triangle when looking at him straight on. Over time, I noticed he wore khaki pants year-round paired with long-sleeved Oxford shirts when it was cool and patterned Columbia short-sleeved shirts when it was warm. I never saw him wear a pair of blue jeans, but on the other hand, I never saw him wear a tie.

I also learned later that he was Armenian and proud of his heritage. His father, mother, and older brother and sister had immigrated to the United States from Beirut, Lebanon, in 1946, two years before he was born. They traveled by boat from Marseilles, France, to Galveston, Texas, and settled in Detroit, Michigan, where Ralph was born in December 1948. Ralph’s father was fifty-one and his mother was thirty. The family spoke Armenian at home, and Ralph was fluent. He attended Cass Technical High School, where he played clarinet and tenor saxophone.\footnote{Grove’s Dictionary of Music and Musicians, 5th ed., ed. Eric Blom, 9 vols. (London: Macmillan; New York: St. Martin’s, 1954), s.v. “Turk.” A footnote explains that the article, written by Sir George Grove and “probably the only one on an animal appearing in a musical dictionary,” was “omitted after the second edition, but was restored to the fourth at the urgent request of several correspondents.”}
It wasn’t until 1980, two years after I first saw him, that I got to know Ralph. The graduate musicology program at Indiana included both master’s and doctoral programs, and the faculty assumed that students completing the master’s program would continue their studies in pursuit of the doctoral degree. I went through a lot of soul-searching during my second year in the master’s program. After spending six years in college, I was growing weary of classwork and doubted I’d have the stamina or patience to make it through the doctoral program. Yet I had been enjoying my years in college. Indiana University’s School of Music had five student orchestras, and at certain points in the school year it was possible to hear an orchestra concert each week. The IU Opera Theater staged four operas each year with elaborate sets and lighting in the Musical Arts Center. During the course of the semester, there were dozens of solo recitals and chamber-ensemble concerts, and as the end of the term approached, there were so many they had to be scheduled from early afternoon until nearly midnight. Except for the opera, all these performances were free. The bounty and variety of live performances at the school made Bloomington seem a paradise.

I had spent as little time as I could get away with on the hard work of practicing and studying. Living in a carefree bubble, I had attended concerts, played percussion in orchestras and ensembles, and spent time in bars. As I approached the end of the master’s program, I wasn’t sure I could adjust my attitude and redirect my energy to meet the demands of doctoral study. Emerging from my dream state, I realized it might be time to consider how to support myself after college. I had seen several students in the musicology program earn a PhD with great effort and then fail to get a job. Others were able to land temporary appointments as instructors that provided only a year or two of job security before they were competing again in the job market.

In an environment like this (and it would worsen as the years passed), my chances of landing a steady job in musicology weren’t good, especially since I hadn’t distinguished myself in the master’s program and was more highly regarded by the percussion faculty than by the musicologists. I had played in three of the five student orchestras—including the top one, the IU Philharmonic—and was one of the stronger students of Richard Johnson, who had been teaching at Indiana since the 1950s. I had considered pursuing a career as a performer, but jobs for orchestral percussionists were even fewer and more difficult to land. I had no trouble practicing an hour a day—enough to maintain my chops—but to become competitive professionally would have required five or six hours of daily practice. I seemed incapable of doing anything—studying or practicing—with that level of commitment.

I learned about IU’s one-year program in music librarianship when a few of my musicology classmates completed it and landed jobs soon after. Music librarianship seemed an appealing option that aligned well with my interests. By the end of David Fenske’s music bibliography and research methods class, I had developed an unexpected enthusiasm for libraries and bibliography. The picky rules around citation style, as laid out in Kate Turabian’s *Manual for Writers*, had been despised by most students in the class, but constructing bibliographic citations had brought me satisfaction. Describing and Alice Coltrane; singer Diana Ross; comedian Lily Tomlin; automaker John DeLorean; and rock musician Jack White. “Cass Technical High School Alumni,” Wikipedia, https://en.wikipedia.org/wiki/Category:Cass_Technical_High_School_alumni (accessed 30 August 2021).
ing books in a uniform style allowed me to impose order on at least a small part of the 
muddle around me. Yes, my desk might be a mess, and two weeks’ worth of laundry 
might be overflowing the hamper, but as I look down at this citation I just typed on 
my Smith Corona typewriter, all the right words are capitalized, and the punctuation 
is correct. It is a small thing of beauty amid chaos.

Because David was a librarian, I associated the work I had enjoyed in his class 
with librarianship, and what I had found engaging about the work was closely tied 
to what would later appeal to me about cataloging: the mental exercise of using a set 
of rules and the information in reference resources to describe materials consistently 
and accurately. I asked for a meeting with David to talk about entering the music 
librarianship program.

When we sat down, he wasted no time. “Why do you want to become a music 
librarian?” He seemed skeptical, perhaps thinking this was a fleeting whim. The ques-
tion shouldn’t have surprised me, and although I can’t remember how I replied, I know 
I didn’t answer convincingly. Well, I’ve always liked libraries. I enjoyed the work in 
the music bibliography class. These weren’t reasons to become a music librarian, nor 
was the reason forefront in my mind, which I had left unspoken: I need a job when I 
graduate. Despite my response, David admitted me to the program. He might have 
seen something in me that I doubt was there at that point, or he might have needed 

Regardless of the reason, I was luckier than I’d realized at the time, because this was the path that led me to Ralph 
Papakhian.

At the center of Indiana’s specialization program in music librarianship was a 
spring seminar taught by David and the four other music librarians. The semester 
was divided into sections covering broad topics, and subsets of the librarians taught 
each section for a few weeks at a time: David on library administration, Michael Fling 
and Kathryn Talalay on reference services and collection development, and Ralph and 
Sue Stancu on technical services.

Although Ralph was recognized as a leader in the music-cataloging community 
and could have lectured at length about his successful work at Indiana, he rarely talked 
about himself. His teaching was Socratic. Class sessions often centered on a cataloging 
conundrum he had found in his work, and he invited us to think through the problem 
with him. One day he brought in a score selected at random from a new shipment. “So. 
How would you catalog this?” We looked at the cover and the title page and threw out 

some ideas. He thought for a while, smiled, and said, “I think I’d put it in the backlog.”

In our sessions with Ralph and Sue, Ralph took the lead. Although Sue had joined 
the staff only a couple of years earlier and was still learning from Ralph, she knew 

enough to have strong opinions and would occasionally challenge him in class, which 
was a time for us students to sit back and enjoy the show.

There was always a point in spring semester when everyone grew weary of the 
lingering winter cold. At the first sign of spring, when water from the melting snow 
puddled on sidewalks and the trees sprouted buds, we threw off our heavy coats and 

started moving from building to building underclothed. The HVAC systems on cam-
pus responded slowly to the rising outside temperature and continued to pump hot air
into buildings as if it were still winter. For our afternoon seminar sessions, we often sat in a classroom that was chokingly hot. Ralph opened the windows to lower the temperature and increase the chances we’d all stay awake. One afternoon, a paper airplane flew in through one of the windows. Ralph walked over and picked it up. It was made from a piece of notebook paper and decorated in pencil. He started laughing—his punctuated, guttural laugh—and brought the airplane back to our circle of chairs. Written on the wings were slogans of mock anger: “Down with AACR2!” on one and “No AACR2 in I.U. libraries!” on the other.

A member of Ralph’s staff was behind this prank, and it played on two things: the irksome work of implementing AACR2 and Ralph’s political activism. It was early 1981, and the library had just implemented the new edition of Anglo-American Cataloguing Rules on January 1. The new rules mandated changes to hundreds of name headings—mostly for the better (from Cháikovskiĭ to Tchaikovsky) but some for the worse (from Nutcracker to Shchelkunchik). The timing was bad. Had the move to AACR2 been made a decade later, at a time when most libraries had adopted online catalogs and closed their card catalogs, the heading changes could have been made simply, through batch changes to electronic data.

In 1981, most librarians were only dreaming of online catalogs, and the AACR2 heading changes had to be applied to cards. For a library the size of IU’s, the hundreds of heading changes yielded thousands of revisions. Electric erasers with tips that spun like dentists’ drills were in heavy use in cataloging departments across the country. The enormity of the task led most libraries to impose limits on the number of cards they would revise. If a heading change required altering more than a certain number of cards (say, fifty), the cards with the new heading were interfiled with the existing cards, and a plastic-sleeved explanatory card, sticking up higher than the rest, was inserted at the beginning of the sequence to inform users what to expect. Most of this tedious work fell to staff and students who often didn’t understand the reason behind the changes. “Down with AACR2!”

When you entered Sycamore Hall, if you walked past the entrance to the library and continued straight down the corridor, there was a large technical services workroom on the left and the backlog and rare-book rooms on the right. The workroom was open, with no interior walls or privacy panels, so staff could be seen by everyone as they sat at their desks. Ralph was near the center of the room at a small desk covered with papers, his copy of AACR2 usually laid open on top of them. An IBM Selectric typewriter rested on an extension perpendicular to the desk. Sue worked on sound-recording cataloging at a desk in the left back corner, and the rest of the nonprofessional staff were nearby. The students and interns sat at a long table at the opposite end of the room.

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4Some libraries avoided erasing and interfiling cards by closing their main catalog and starting a supplementary catalog, with AACR2 headings appearing only in the new catalog. At the time, this seemed a lazy way around the problem, but in retrospect, it wasn’t a bad idea, given the rise of online catalogs only a few years later.
Ralph and Sue smoked at their desks. Ralph had recently switched from cigarettes to a pipe, lending him an avuncular air.

I learned to catalog in this workroom. Following the seminar on music librarianship, the specialization program concluded with a practicum, and this was when my admiration for Ralph grew, as I experienced firsthand the sharp intellect that lay behind the decisions he made as a cataloger. He assigned me a stack of scores, and I worked on their description and access points at the long table. Near the end of the day, he called me to his desk, and we reviewed my work, discussing each element, its punctuation, and its coding. It was a slow, careful process. Some days the demands of his own work disrupted our schedule, and after apologizing for putting off the daily review, he spent the afternoon tapping rapidly on his Selectric. From the long table, I continued to catalog and occasionally looked up to see the typewriter’s spinning ball bob and jerk across the platen as a thread of smoke rose from his pipe, which he had set near the edge of the desk.

During one of our review sessions, I presented a problem I couldn’t resolve through my reading of AACR2 or the Library of Congress’s many rule interpretations, published in the *Cataloging Service Bulletin*, which was kept in large binders in the workroom. We discussed a few possible solutions then paused to think. Ralph said, “In the heat of the cataloging moment, what would you do?” I laughed, because the idea of heat—heightened emotion, anxiety-provoking pressure—seemed foreign to Ralph’s process, in which there was no sense of urgency, or even a sense of time. Cataloging was an intellectual pursuit that should be allotted as much time as it needed. Carpenters say, “Measure twice, cut once,” and this was Ralph’s approach to cataloging. Time and resources are saved if work is done correctly the first time, and if the work is worth doing, it’s worth doing right.5

With Ralph’s guidance, I contributed my first cataloging record to OCLC, for the miniature score of Paul Creston’s *Lydian Ode* (1956), marked by conductor Tibor Kozma, who had been a member of IU’s faculty.6 Kozma’s collection had been donated to the library after his death in 1976, and Ralph had found the score among the unprocessed materials in the cataloging backlog room across the hall. The Library of Congress had cataloged a copy of the score in 1957, and I found a reproduction of the card in one of the *National Union Catalog* volumes in the workroom. We were obligated to use LC cataloging whenever it existed, so I stapled a photocopy of the card to a sheet of scrap paper, and, working with Ralph, I enhanced the cataloging to describe IU’s copy. The last step was to mark up the cataloging with fields, indicators, and subfields for entry into the OCLC database.

Many libraries had been creating machine-readable cataloging (MARC) records for scores and sound recordings since the publication of the MARC music format in 19767. For the time being, the data was used to print cards for card catalogs. When

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6OCLC accession number 7435828, 20 May 1981.

I cataloged the Paul Creston score, OCLC printed a set of cards and shipped them to IU for filing in the catalog under various access points. (For that score, there were five cards in the set, for the composer, title, subject, added entry “Kozma Collection,” and call number, which was destined for the shelflist.) Hundreds of cards arrived from OCLC each week in long boxes, and student workers did the filing. Anyone filing cards in the catalog left them sitting “above the rod” for review. When I saw Ralph that first time, he pulled a specific drawer for some reason (perhaps to confirm a heading), and while he had it out, he checked the order of cards above the rod, fixed an error, and then pulled the rod to drop them all into place.

There was an expectation that some day libraries would use MARC data to build online catalogs, and these online catalogs would allow users to search for materials in barely imaginable ways—for example, by searching on individual words located anywhere in a catalog record. A lot of time went into the creation of these MARC records. They included information beyond what had been supplied on cards—in some cases, information that had no present utility. We added inscrutably coded fields like the 048 (Number of Musical Instruments or Voices Code) and 047 (Form of Composition Code) with the hope that a future system would use them to limit search results by specific combinations of instruments or specific musical forms. In the end, the potential of most of these coded data fields was never realized; they were a misstep that was probably inevitable when creating a data framework for a system that didn’t yet exist.

Catalogers speculated about how the work of their departments would change with the introduction of the OPAC (online public-access catalog). Once a library’s holdings were available through computer terminals there would be no need to produce, file, and correct cards. As OPAC technology became available in the early 1980s, many libraries eagerly adopted it. Most set a “day one” for their online catalog, with all cataloging after that date available only in the OPAC and everything before still in the card catalog. For a search to be complete, users would have to search both the OPAC and the card catalog.

Other libraries weren’t ready to move ahead with an OPAC but still wanted to close their card catalogs to avoid the expense of producing and filing cards. Some of these libraries used their MARC records to generate a supplemental catalog on microfiche—essentially a card catalog in a microfiche format. The film sheets were stored in paper sleeves in cardboard boxes or arrayed on a rack, placed next to a microfiche reader on a table near the card catalog. Users found the proper sheet by reading the label text printed at the top of the microfiche, then pulled it from the sleeve, inserted it into a reader, and located the catalog record on the sheet. The process was far more difficult than using a card catalog, and I imagine many users of these supplemental microfiche catalogs thought that if this was what the latest technology had to offer, then perhaps technology was moving in the wrong direction.

After day one, the content of the card catalog was frozen, and, when libraries could afford it, staff began keying the cataloging on cards into the database. Many libraries hired third-party “retrospective-conversion” (shorted to “recon”) vendors for this data work. Once they had been input, cards could be pulled from the catalog, and over time, the card catalog shrank. When the conversion work was complete, the

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Congress, 1976).
catalog could be discarded—or at least moved off to storage.8

In fall 1981, a few months after graduating, I got my first job, as a music cataloger at Northwestern University. When I arrived, the library was already ahead of most libraries in the transition from the card catalog to the OPAC. NOTIS (Northwestern Online Total Integrated System), a MARC-based, integrated library system was in production, and its OPAC had gone live during the previous year. The developers of NOTIS were James Aagaard and Velma Veneziano, who had been hired in the late 1960s to build a system based on punch-card technology to inventory the library’s collection and record transactions as materials circulated.9 Veneziano was a systems analyst whose job was to understand the workflows and processes of the library and translate them into flow charts and functional specifications used by Aagaard for programming. She talked with librarians not only to document current processes but also to consider how those processes could be improved through automation.

In the late 1970s, it was uncommon for a woman to be working in library automation, and Veneziano had come to the field through an unusual path. Her background was in history, and she became involved in computers through her work first with the educational-technology firm Science Research Associates and then with the Chicago Board of Education. She was diminutive in stature, with short, straw-colored hair and aquiline features. As she interviewed librarians, she asked incisive questions and quickly homed in on ambiguities and inconsistencies, which occasionally led librarians to surprising epiphanies about processes they had been following for years.

Jim Aagaard also came to library automation through a nontraditional path. He studied electrical engineering at Northwestern, and after earning a PhD was appointed to the faculty of the Department of Electrical Engineering in 1957. In 1968, the library hired him to work with Veneziano on developing the punch-card-based circulation system.

Both Veneziano and Aagaard agreed from the outset that it was essential for the various automated functions of a library to be integrated—that data created to acquire an item should then be used to catalog it and eventually to circulate it. This seems obvious now, but at the time, other automation projects were developing independent, stand-alone modules that used, for example, separate “stub” records for circulation rather than the bibliographic record.

Veneziano and Aagaard worked quickly. The circulation module was launched in 1970, and within a year, the acquisitions, serials control, and cataloging modules were

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8The libraries that discarded their card catalogs, which, in many cases, included information that hadn’t been transferred to the MARC records (such as handwritten notes or holdings information on the back of cards), were often the target of scorn by institutional faculty and other researchers, but this increasingly common practice of discarding catalogs wasn’t widely known outside academia until Nicholson Baker pushed it into the national spotlight with his widely read article “Discards” (New Yorker, 4 April 1994, 64–86), which librarians both rebutted (Nancy E. Douglas, “Debating ‘Discards’: A Response to Nicholson Baker,” Rare Books and Manuscripts Librarianship 9, no. 1 [March 1994]: 41–47) and praised (Richard J. Cox, Jane Greenberg, and Cynthia Porter, “Access Denied: The Discarding of Library History,” American Libraries 29, no. 4 [April 1998]: 57–63).

in production. Using Veneziano’s functional specifications, Aagaard wrote the code, mostly in Assembler, with some of the batch processes in COBOL. He was a tall man, with a slight widening at the middle, and on top of his towering frame was a bald head that held a pair of heavy-framed brown glasses. He rarely smiled, and a joke or laugh coming from him was an event that staff found significant enough to discuss. When he wasn’t in the brightly lit data center, where he often could be seen leaning over a line printer scanning green-banded printouts as they scrolled out, he was in the hallways of the library running coaxial cable through ceilings and walls to connect computer terminals to the network. Don Roberts, head of the music library, once asked Aagaard why he didn’t hire someone to do this relatively mindless work so he could devote more time to programming NOTIS, and he replied that he found running cable relaxing. It was his way to take a break.10

At Indiana, there had been one OCLC terminal for use by the entire department, and this terminal was the point of entry for all cataloging records. Catalogers did their work on paper, and staff, working in shifts, keyed the data into OCLC using the terminal. At Northwestern, staff worked exclusively within the local NOTIS system, using IBM 3278 terminals connected to the mainframe in the data center through the coaxial cable run by Aagaard. (Although the IBM PC had been introduced in 1981, it would be several years before it was commonly used in libraries as a replacement for a terminal.) The IBM 3278 was large and imposing, with a bulky keyboard whose keys had good resistance and made a satisfying clack when depressed. It displayed monospaced green text in an 80 x 24 grid on a black background. Because each terminal cost thousands of dollars, the music library was able to make only two available to the public, and they were positioned near the card catalog in an alcove behind the reference desk. Four were available to staff: one at the circulation desk, one in the Listening Center, and one in each of the two technical services offices.

Because each terminal was shared by three or four staff members, the process of cataloging at Northwestern was much as it had been at Indiana. Paper was central to the process. Descriptions and access points were typed on rough yellow foolscap and then input by students at the terminal. My cataloging would come back to me in the form of printouts on 11” x 17” accordion-folded paper with light green stripes—the same paper used for Jim Aagaard’s code printouts. After I had marked my edits on the paper, I dropped the printout into a bin for a student to input the changes, and a day later I reviewed a second printout for my final edits and sign off. By the mid-1980s, I had a terminal at my desk, which finally made it possible to catalog, from start to finish, at a keyboard rather than following the convoluted process of typing, keying, printing, revising, keying, printing, and signing off.

For centuries leading up to the 1980s, cataloging information had been written, typed, or printed on paper, using a variety of conventions. In the early 1970s, the library community developed international standards for how this information should

10He had other diversions as well, such as fixing printers. His twenty-step “Directions for Changing Sprocket on Telex 281B Printer” was published in NOTISes, no. 7 (9 September 1985): 11, the newsletter of the NOTIS Users Group.
be formatted. Because space is at a premium on 3” × 5” cards, the goal of formatting bibliographic data at that time was to use space efficiently while presenting the data in a way that each element could be clearly identified. Main headings (typically the author or composer) were on the top line, and the title and statement of responsibility started the first paragraph. Each subsequent element was introduced by a period, space, dash, and space (". —") or a new paragraph. The resulting description was concise but intelligible.

The OPAC could display limitless text, screen after screen, which allowed bibliographic data to break out of the constraints of the 3” × 5” card. At Northwestern, many of us discussed how the information could best be displayed on computer screens. Initially, the conventions of the catalog card were carried over to the online display. The argument for this approach was that users were accustomed to cards, and an efficient, clean presentation of data is ideal, regardless of the medium. In the NOTIS OPAC, the elements of the bibliographic description were even separated by a period, space, and dash, as prescribed by ISBD. No data element was identified: either users knew what they were looking at from past experience with cards, or they had to figure it out.

Another line of reasoning emerged, and it ultimately prevailed. The catalog card has always confused neophyte users. Anyone looking at a catalog card for the first time is bewildered, and it takes time to learn how to parse its content. Some users guess; others don’t even try. We could justify placing this burden on the user when space was precious and costly. Now that we were working with screen space that came at no cost, we had a responsibility to users to present information in a way they could easily understand. Each element should be clearly labeled and placed on a separate line.

I remember the disgust I felt when I first saw one of these labeled displays. “So much wasted space. And you have to move to a second screen.” But the labeled display quickly became the standard, and for a good reason: it simplified using the catalog. Up to that point, a certain level of expertise had been expected from the library user. To be a comfortable, proficient user of the library was to be a member of a secret society. Why not make the process easier if we’re able to? The labeled catalog display was an early example of the move toward democratizing library services, and this kind of user-centered design would push library services in a good direction during succeeding decades.

A few months after I began working at Northwestern in August 1981, I attended my first MLA Midwest Chapter meeting, in Oberlin, Ohio, and started meeting many of the music librarians I had learned about through their articles in Notes and committee reports in the MLA Newsletter. Among them was Richard Smiralgia, who during the 1980s became recognized as an authority on music cataloging through the publication


12In card catalogs, bibliographic descriptions would occasionally extend across multiple cards (particularly for sound recordings), but additional cards increased costs—in both materials and storage space—so the goal was to use a card’s real estate as efficiently as possible.
of articles and books, including the confusingly titled pair Cataloging Music (1983) and Music Cataloging (1989).  

(One is a manual on cataloging music using AACR2, and the other is a broader survey of the history and theory of cataloging music, but like many other people, I can’t remember which is which without looking them up.) Richard had gone to library school at Indiana University and worked under Ralph before taking a job as a scores cataloger at the University of Illinois. He was only four years younger than Ralph. By the time I met him, he had been promoted and was head of music cataloging at Illinois.

During the 1980s, and until Richard moved to New York City in 1986 to teach at Columbia University, Ralph and Richard were considered the two experts on music cataloging, and people often confused them—both were dark-haired, bearded catalogers with names that start with R working at universities that start with I. Music catalogers rarely confused them: Richard was a researcher and theoretician who wrote about cataloging and contributed to the development of cataloging policy, and Ralph was primarily a practitioner who taught library-school students and hosted popular summer cataloging workshops. At the time of the Oberlin chapter meeting, Richard and Ralph had just written an award-winning article for Notes on the music content in the OCLC union catalog, and they were both on the board of the Music OCLC Users Group (MOUG).

During the decades leading up to the 1980s, the Library of Congress, serving in its role as de facto national library, was a leader in the music-cataloging community. It held a position of respect and authority, and with one of the biggest music-cataloging staffs in the country, it generated cataloging in great quantity that libraries relied on. Like most large institutions, LC adjusted slowly to change, and its lack of agility had consequences when the pace accelerated in the late 1970s. When the MARC music format was published in 1976—eight years after the book format—LC wasn’t equipped to use it. LC continued to issue its cataloging for music and sound recordings on cards, and for those catalogers who were already working online, the need to key data from cards into databases meant more work.

By the early 1980s, music librarians were growing frustrated with the Library of Congress’s delays in implementing the MARC music format. At the business meeting of the 1982 MLA annual meeting, the membership approved a motion to ask the MLA board of directors “to encourage the Library of Congress to meet their announced summer 1982 implementation deadline; and to implement with the greatest speed the distribution of MARC music tapes.” LC missed the deadline, and it wasn’t until early 1984 that LC began distributing MARC records for its music cataloging—eight years after the format had been published.

In the meantime, soon after the publication of the MARC music format, the community of music catalogers using OCLC had moved forward on its own and begun setting


15Minutes of the 1982 annual business meeting of the Music Library Association, 4 February 1982, p. 3. In the years before the internet, MARC records were distributed by the Library of Congress on magnetic tapes, which were sent to libraries and bibliographic utilities for loading into databases using tape drives.
the direction for music cataloging using MARC. In 1976, a group of MLA members met several times with OCLC to advise them on “music workforms, indexing, quality control, the printing of catalog cards, input standards, and related matters,” which led to OCLC’s publication of guidelines for cataloging scores and sound recordings. OCLC implemented the MARC music format later that year, in November 1976.\(^\text{16}\)

Within a few years, shared music cataloging in OCLC had achieved critical mass. In 1982, Richard Smiraglia was chair of MOUG, and Ralph was completing his third year as editor of the \textit{MOUG Newsletter}, which had become an important resource for all music catalogers. As Richard wrote in 1982, “Under [Ralph’s] guidance the Newsletter has grown into a valuable resource for music librarians that continues to be in high demand, even outside the sphere of OCLC affiliation.”\(^\text{17}\) Catalogers turned to OCLC and MOUG for guidance in this new online environment. LC retained control over the development of cataloging standards and policy, but leadership in helping members of the catalog community adapt to new ways of doing their work fell to grassroots organizations like MOUG and the Online Audiovisual Catalogers (OLAC). Eventually LC turned to these and other outside organizations for partnerships. In a recent email to me, Brad Young observed that “the community implementation of the music format was an occasion for self-reliance which became a process of self-actualization.”\(^\text{18}\)

The rapid growth of shared online cataloging created demands in other areas. Libraries needed infrastructure for acquiring, cataloging, and circulating materials using MARC data. Northwestern’s homegrown NOTIS system did the best job of integrating all three functions, and in 1981, not long after the NOTIS OPAC was in production at Northwestern, the University of Florida bought a license to the system, and Harvard University signed a contract a year later. As interest in NOTIS grew, Northwestern decided to spin the system off as a commercial venture, owned by the university, and Jane Burke was hired in 1983 to head marketing for the product. The roster of customers grew rapidly. Many large academic libraries signed on, and within a few years, music librarians at these institutions had formed a NOTIS Music Users Group (NMUG). This group was different from MOUG: these weren’t librarians using a shared platform to contribute to a common body of data; they were customers of a commercial vendor, and their institutions had diverging needs and interests. At the group’s meetings and on its email list, the members shared implementation tips and workarounds, but NMUG’s more significant role was as a lobbying body. NOTIS had been designed around the requirements of books and serials, since they made up the largest part of library collections. Accommodating the peculiarities of music and sound recordings had been left for later. Uniform titles, used rarely for books but frequently for music, indexed in different ways in NOTIS depending on where they appeared in the MARC record, resulting in split indexes for a single title. The circulation module had been designed to meet Northwestern’s local needs, and


\(^\text{18}\)Email from James Bradford Young to the author, 3 September 2021.
institutions with different needs were left to devise workarounds. NMUG provided a platform for music librarians to make the case to NOTIS to address some of these issues. Jane Burke attended the annual meetings of NMUG, and everyone sat patiently through her presentations on upcoming features and enhancements while waiting for the main event: the annual airing of grievances about NOTIS’s progress in addressing the lingering issues around the handling of music.

When Northwestern planned NOTIS in the 1970s, it was conceived as a library service, and like any service, it came with costs. Northwestern was committed to NOTIS and covered the expense of its development for the good of the university community. Once it became a commercial enterprise, income was expected to exceed expenses, and development decisions hinged on the balance between costs and benefits. It wasn’t always feasible to go back and build flexibility into the system to address the needs of individual customers.

By 1988, the number of NOTIS libraries had grown to over one hundred, and as the profits increased along with the customer base, NOTIS became ripe for purchase. In 1991, Northwestern sold NOTIS to Ameritech, and Jane Burke was dismissed. Driven to maximize profit, Ameritech pushed sales and neglected development, and customers started fleeing NOTIS for a new integrated library system developed by a company called Endeavor, founded in 1994 by Jane Burke, who by this time had a thorough knowledge of academic libraries and what they expected from a library management system. NOTIS libraries continued defecting to Endeavor, and by the end of 1998, even Northwestern had made the move. After Ameritech sold NOTIS to investment companies in 1999, its decline continued, slowly, until the last library to use it, the National Library of Venezuela, pulled the plug in 2012. What had started in the 1970s with the inspired and inspiring work an unlikely team—a historian and an electrical engineer—had ended up tossed on the junk heap by investment bankers.

Between MLA meetings, Ralph Papakhian and I stayed in touch through letters and phone calls. While recently unpacking files I’d brought home after retirement, I came across a set of folders holding correspondence, starting with 1981, the year of my hiring at Northwestern, and ending with 1989. Among the numerous interoffice memos from librarians and administrators at Northwestern, I found a few letters from Richard Smiraglia and Ralph answering questions I’d sent them about music cataloging.

I was puzzled at first that the correspondence files ended with 1989, but I remembered that by the late 1980s, nearly all my correspondence had migrated to email. Ralph and I were early adopters, though the process of sending email was initially more cumbersome for me than typing a letter and putting it in the mail. Because the computer terminal in my office at Northwestern was connected to a local network for access only to NOTIS for cataloging, to send email, I had to leave my office in the music library and walk several hundred yards to the main library, where in a short, dark hallway between the card catalog area and the current periodicals room there were half a dozen VT100 terminals connected to a VAX computer in the Vogelback Computing Center a few buildings away. These terminals were used mostly by computer-science majors for programming, but a few students wrote papers and articles on them using
a rudimentary word-processing system on the mainframe computer. Email accounts were available on the VAX only by request, and I was among the first people in the library to get one. At lunchtime and on breaks, I walked through the library to the shadowy hallway to log into the VAX and check for new mail. During those early days, I got email only from Ralph, and I suspect he didn’t get much email from anyone but me.

Northwestern and Indiana were both members of the BITNET network, a cooperative group of educational and research institutions that agreed to set up mainframe computers as “nodes” on a network for exchanging email and files. When I sent an email to Ralph over BITNET, notifications appeared on the terminal, tracing the email’s progress from NUACC (Northwestern) to IUBACS (Indiana University). As my email passed through the nodes of the network, the node names displayed in blueish-white pixilated characters that scrolled down the black screen. At times, nodes would be down, and my email could be stuck in a queue for hours until the node had been restored. The technology was touch and go, but it was exciting to realize the text I wrote often could be read hundreds of miles away only seconds after I had written it.

By the mid-1980s, most major academic institutions had made email accounts available to staff, but the web didn’t yet exist, so it was difficult to find colleagues’ email addresses, and librarians often resorted to picking up the telephone to share them. In 1987, I began maintaining a directory of email addresses as a text file, and Ralph made it available for download from an FTP server at Indiana. The list started with no more than twenty-five addresses, and by the time the list was no longer needed, it included well over one hundred.

The directory of email addresses became obsolete once Ralph had set up an email distribution list for music librarians. In 1989, Ralph’s wife, Mary, an IBM VM systems operator at IU, installed the LISTSERV software on a mainframe she maintained, and a few months later MLA-L was the first list to go live on the platform. Ralph invited me to join him in setting up and administering this list for music librarians that, despite the name “MLA-L,” had no official ties to the Music Library Association.19 Music librarians—and anyone else who was interested in music libraries—could now communicate with each other by sending email to a single address, and music librarians could find colleagues’ email addresses by downloading the MLA-L subscriber list.

As of June 2022, MLA-L has been in use for thirty-three years, and although the platform migrated from LISTSERV to Sympa in 2012, the underlying technology has remained unchanged. It is a simple technology: when a subscriber sends an email, the program sends a copy to everyone on the subscription list. Of all the technological innovations of the 1980s, it’s possibly the one that has changed the least during the intervening decades. Although there are now many other information-sharing and collaborative platforms that offer one-to-many communication and filesharing, LISTSERV has endured, because it’s based on the simple, ubiquitous, and reliable technology of email.

The 1980s were transformational for librarianship. After decades of stasis in the way we did our work, there was disruption, and it happened at a pace that was exciting and challenging. There was more change in those ten years than there had been in the preceding fifty.

One way to look at this transformation is through the lens of technology: the 1980s were the beginning of a long transition from analog to digital, and it started with a move from paper to pixels, from the card catalog to the OPAC, and from typed correspondence to email. In succeeding decades, the transition continued as databases, encyclopedias, and indexes—Music Index, RILM, The New Grove, and others—became available online. And the 1980s saw the beginning of a shift from analog to digital recordings—in the form of the audio compact disc, with video lagging several years behind—which led to the distribution of static digital audio files over the internet and eventually to the streaming services that now bring tens of thousands of recordings to us with a few taps on a screen or a carefully enunciated command spoken to a smart speaker.

With the evolution of technology in the 1980s came changes in the roles we played in the profession. The scope of librarians’ awareness and influence shifted from local to global. Ralph Papakhian started the decade standing in front of a card catalog that was seen and used by only the several dozen people walking into Indiana’s music library each day. By the end of the decade, his department’s cataloging was seen, used, and enhanced by hundreds of people across the world. Imagine someone who enjoys singing in the shower being pushed up to the microphone in a vast, noisy arena. It would be comfortable for some but not for others. Thrust onto the global stage of OCLC, catalogers and their institutions quickly established reputations. Catalogers began checking the institutional symbol on a record before choosing to use it. The work of some was gratefully adopted, while the work of others was shunned.

A similar broadening in the scope of awareness and influence happened with our professional communication in the 1980s. Opinions that formerly might have been casually and trustingly conveyed in a letter to a colleague could now be naively posted to a mailing list and read by thousands—many of whom were strangers who nevertheless felt it their duty to give feedback. It took some time to learn how to navigate discourse on public lists, and decades later, it remains perilous at times. Some people adapted easily and enjoyed being in the fray; others retreated and were happy to lurk. Past activity was no predictor of behavior. Some of the most active posters to MLA-L were people who had been invisible in other contexts, and some of the profession’s most extroverted personalities chose to remain in the shadows. The dynamics of influence shifted as this silent group found its voice.

The technological developments of the 1980s allowed us to begin changing the way users accessed library collections and services. With the introduction of the OPAC, shared catalogs, electronic mail, and file sharing, content was no longer tied to physical objects, and we started down a path leading to remote access. As time passed, we were able to share digital content in larger amounts at faster speeds. The wired networks of the 1980s and 1990s, available only at work and home, evolved into wireless networks in the early 2000s, and finally into mobile networks. At the same time, the computing devices we used shrunk in size. Once we were using portable devices on wireless and mobile networks, remote access became ubiquitous, and the locus of teaching,
research, and work shifted from a specific place to any place. Resources and services that had been available only in the library before the 1980s were now in our pockets and purses in airports and bars.

Ten years ago, while sitting with my family in a noisy restaurant waiting for food to arrive, my younger son asked what song was blaring out of an overhead speaker. I pulled out my phone, and a few seconds later, I had the answer. My older son, then in his twenties, shook his head and said with a smirk, “There are no more mysteries.” He was mocking me and my omniscient phone, yes, but he was also making a point: sometimes there’s value in mysteries, and we lose something when mysteries can be solved so easily. After all, if I hadn’t been able to pull that answer out of my phone in five seconds, we would have been left contemplating the small, insignificant mystery of the song. Over the bustle of the restaurant, we might have shouted out guesses and through our collective knowledge worked it out on our own. Instead, with the question answered, we were left silent and once again waiting for food to arrive while the song continued to thump in the background.

Thanks to technology, we have vast stores of information readily at hand, and there are fewer mysteries—which can be comforting. Yet because we’re able to answer most questions easily, we can feel anxious when we encounter a question that can’t be answered. We should remember it’s all right not to know some things—or at least not to know them immediately. And there are times when something that can be known might be better left unknown. In our quest for answers, we sometimes quickly embrace easy ones that bring us satisfaction and avoid complicated ones that are less facile but more true. With access to so much information from so many sources, we can now quickly find answers that align with our emotional and psychological needs, whatever they may be, rather than with the truth. “When you invent the ship, you also invent the shipwreck,” said French philosopher Paul Virilio in 1999.20

Easy information access can make us less diligent in our quest for the truth. Perhaps it’s time to recalibrate: there can be a benefit to encountering obstacles and having to take time to arrive at an answer. Obstacles force us to pause, and they present opportunities to make other discoveries. Today I can learn about the canon Joseph Haydn wrote in honor of Venanzio Rauzzini’s dog named Turk while sitting at the breakfast table. In 1978, when I was searching for Turk in the labyrinthine reference stacks at Indiana, the process was far slower, but I ended up learning about more than Haydn’s canon. As I pulled books from the shelf, I was becoming acquainted with tools and learning how to use them. And while sitting at that long table surrounded by reference books, I saw, across the room, someone standing at the card catalog doing something strange and intriguing—something that would end up changing the course of my life.

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20Paul Virilio, Politics of the Very Worst: An Interview by Philippe Petit (New York: Semiotext(e), 1999), 89.