Biographies

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Richard L. (Rick) Crandall

Richard Crandall encountered his first computer in 1961 as a University of Michigan undergraduate student. He soon fell in love with the machine, an IBM 7094, and sought out computer-related courses across the curriculum. He also found a part-time job in the university's computer center, where he met pioneering operating systems researcher Bernie Galler. In 1964, Crandall's computer center work brought him into contact with a sales representative of California-based Scientific Data Systems. SDS was promoting its computers for remote use via terminals, then a novel and unproven alternative to batch operation. Founded in 1961, SDS was then growing rapidly, and throughout the 1960s was bringing in more revenue from minicomputer sales than pioneer and eventual market leader DEC. Its core markets were in scientific and control applications, but it was eager to expand beyond big customers such as NASA.[1]

After a demonstration of this technology, Crandall began to work closely with the computer team at the University of California at Berkeley, the flagship SDS site. Berkeley was pioneering the use of time-sharing to provide interactive, remote access to a central shared computer facility. Although it could only support about six simultaneous users, it worked well enough to fill many of those who used it with the sense that this was the future direction of the computing field. The key to its success was complex operating system software, written by a team led by professor M.W. Pirtle and included gifted young programmers Butler Lampson and Peter Deutsch (whose teenage exploits as part of a legendary team of Massachusetts Institute of Technology computer enthusiasts was chronicled by Steven Levy in *Hackers*).[2]

Crandall's early career and intellectual interests thus had a lot more in common with people like Lampson and Deutsch than with the earlier generation of service bureau operators such as Bernie Goldstein and Frank Lautenberg, who lacked graduate degrees in engineering or top-flight systems programming skills. Yet, unlike those he worked with, Crandall did not find minor celebrity as a researcher at Xerox PARC, tenured professor, or open-source programmer. Instead, he rushed into business. Crandall was quick to see the potential of time-sharing technology to greatly broaden the economic base of computer users, especially since his own small business moonlighting as a programmer for local businesses depended on "misusing" Michigan's computer for commercial ends.

Creation of Comshare

Together with Bob Guise, a civil engineer graduate of the University of Michigan, Crandall founded Comshare in 1966 to commercialize the technology developed at Berkeley. Crandall took responsibility for its technical direction, leaving overall charge of the business in the hands of Guise. Getting Comshare off the ground meant solving a lot of novel and pressing problems, rapidly and with a small budget and staff. Some of these problems were technical, some commercial.

Only a handful of time-sharing computers were operational in the entire world, and though universities sometimes sold spare computer time to outsiders, nobody had yet proven that time-sharing was a viable business model. Despite considerable publicity given to the time-sharing concept, none of the major computer vendors were even manufacturing computers capable of effective time-sharing operation. Standard, efficient operating systems able to support scores of simultaneous users were still many years from completion, as shown by the delays and failures experienced by MIT, General Electric, and Bell Labs when they attempted to make Multics into the leading commercial operating system for time-sharing systems.

Neither was it clear that telecommunications regulations would permit the creation of large-scale, public data

Editor's Note

The two biographies presented in this issue are part of an ongoing examination of the development of the computer software and services industry, using as a lens the trade association ADAPSO (Association of Data Processing Service Organizations) and the careers of some of its most prominent members. It follows from an article published earlier this year on the origins of ADAPSO in the early 1960s as a trade group for service bureau companies, accompanied with biographies of Bernie Goldstein and Frank Lautenberg (see *Annals*, vol. 26, no. 1, pp. 78-93). This series will conclude in a future issue with a second article exploring the development of ADAPSO during the 1970s, as it expanded its membership within the fledgling software product and time-sharing service industries.

networks by entrepreneurial firms. Getting a time-sharing system open for business meant a combination of cutting-edge computer science, performance-improving hacks and kludges, long hours, good luck, and incorrigible optimism.

Comshare was based in Ann Arbor, Michigan, but Crandall moved to Palo Alto, California, to take part in the development of an improved version of the Berkeley operating system. The work was carried out in collaboration with another small firm, Tymshare, and with the support of SDS. The developers used spare time on Berkeley's computer, which meant making full use of the early morning hours from 2 a.m. to 6 a.m. when it was closed to its regular users. By the fall of 1966 the cooperative stage of the development was complete and the capability of the system had been increased to about a dozen simultaneous users. Tymshare and Comshare shared the resulting code, and each firm received six months free use of a 940 computer from SDS while it tried to build a business around it. Comshare named its version of the operating system Commander.

Both Comshare and Tymshare went on to become important players in the time-sharing industry. Crandall recalls that initially "Tymshare really wanted to sell computer time. Comshare wanted to sell applications that were being run by multiple people on the computer at the same time."[3] For this reason, Comshare's efforts were focused on the development of application software, including custom programs to do things such as stock price predictions and corporate financial modeling. These were then run on Comshare's own computers, but used directly by clients who paid for connection time, computer time, and storage.

Most of the firm's 15 early employees were programmers, assisted by a smaller sales team charged with bringing in new jobs for them to program. While this does not sound so different from the business of a traditional service bureau, Crandall believes that Comshare's use of custom online, interactive editing and debugging tools made it possible to develop applications far more rapidly than competitors using traditional development methods. Like other time-sharing firms, Comshare also sold computer time to customers keen to develop and run their own programs, but here, too, its unique selling point was the provision of then-novel interactive tools for rapid program development.

Comshare's initial, and modest, funding was provided by its founders and a handful of small investors. Fortunately for Crandall and his colleagues, their move into time-sharing was well timed. Within months of Comshare's founding, investors fell deeply, if briefly, in love with time-sharing and software firms. In 1967, the firm received an investment of more than a million dollars from the Weyerhauser family. In November 1968, Comshare went public, for, according to Crandall, "what looked like a huge price to us … higher than we even tried for."[3] With more than three million dollars in the bank, the firm began a rapid national expansion, opening offices around the country to sell its services. This proved an almost fatal mistake, as little more than a year later it had exhausted this pile of cash and gone into debt without generating anything like enough business to finance itself. As CEO, Guise was forced out by Comshare's financial backers.

In August 1970, Crandall took over as CEO just as the "go go years" of the late 1960s gave way to the computer industry's first ever recession. He was just 27 years old. The immediate situation appeared bleak, as losses far outstripped revenues. However, Crandall quickly learned that "you have a lot of leverage when you are broke, because nobody thinks they are going to get anything back."[3] He devoted his personal energies to improving Comshare's sales operations and the quality of its service, hiring a new executive named Richard Eidswick to improve its dire financial management. By March 1971, the company had turned the corner into profitability through a combination of better operating discipline, some cost reductions, and instituting a more process-oriented sales effort under new sales management.

For the rest of the 1970s, Comshare grew rapidly and profitably. Although it made some acquisitions, mostly of failed competitors, it relied primarily on organic growth. Crandall's love of technology and growing his business meant that he "never thought about cashing out," even though in retrospect he realizes that "there were several times when selling the company would have made the most sense" in terms of his personal wealth.[3] This is an interesting contrast to fellow ADAPSO leader Bernie Goldstein's eventual discovery that it was the buying and selling of firms that he found most rewarding.[4] This, too, might reflect Crandall's beginnings as a computer center enthusiast keen to create working systems.

Comshare soon grew to use more than 20 of the SDS 940 computers, eventually building an international network and consolidating its data centers into one large operation in Ann Arbor (serving the US) and another large center in London (serving Europe). Eventually 45 percent of Comshare's sales came from outside the US.

Further tweaks and improvements to its operating system allowed each machine to host 24 simultaneous users. During the 1970s, time-sharing firms were still grappling with cutting-edge technology, and so were forced to be largely self-sufficient in terms of system software and even hardware maintenance. Once systems were working, they tended to stay in use for a long time. Some of the 940s were still in use well into the 1980s. Xerox brought up SDS in 1969 as its entry into the computer business, and Xerox's new Sigma series of machines became the backbone of Comshare's operations. These workhorses ran a new and better operating system, Commander II, developed from scratch by Comshare. The Sigma computers remained in use long after Xerox's withdrawal from the computer market, although Comshare did eventually shift most of its operations to IBM equipment as the major manufacturers began to produce commercial-grade hardware and (eventually) operating systems for time-sharing.

Photo courtesy of Charles Babbage Inst., Univ. of Minnesota, Minneapolis

Rick Crandall speaking at an ADAPSO meeting.

Involvement in ADAPSO

Crandall served as a board member of ADAPSO from 1970 onward. He was an active and founding member of the Computer Timesharing Services Association, led by Thomas J. O'Rourke, head of Comshare's former collaborator, Tymshare. In 1969, this group merged with ADAPSO to become its first section. As well as a chance to address the political and regulatory issues threatening the survival of his young industry, Crandall found opportunities for "networking, really getting to know a broader base of people."[3]

Crandall proved himself to be among the smartest of the software industry pioneers, and of all ADAPSO's leading figures he had the deepest intellectual engagement in the strategic direction of the industry. The analytical and argumentative abilities that might, had his career gone differently, have been channeled into seminars and theorems, were instead applied to figuring out the dynamics and future direction of computer businesses. From 1977 onward his role as strategist was formalized with the establishment of the Long-Range Planning board-level committee, which he chaired through several reorganizations until 1990. From 1984 onward, the committee was given special board-level status as the Long-Range Planning Board Committee.

Crandall's committee produced a series of long-term planning reports, each of which documented opportunities and challenges for the association based on predictions for the future structure of the computer industry. The reports dealt with many of the key issues of concern to ADAPSO, including competition from IBM and unfair competition from groups such as accounting firms, banks, and telecommunications companies. They also ranked and set goals, such as the fourth-ranked goal in 1985: "Trade secret and copyright protection will be adequately afforded to software; loss due to software piracy will be reduced to under 10 percent of industry revenue."[5]

The Long-Range Plan and the deliberations leading up to its review each year were, according to Crandall, the strongest influences keeping the constituency of ADAPSO focused on software and services for more than a decade, despite constant financial pressures to broaden the membership to include higher dues-paying prospects such as the regional Bell firms and the hardware companies. Crandall argued strongly all through the 1980s that to broaden the membership would hopelessly diffuse the focus of the organization and prevent it from taking strong positions on any matters of substance.[6]

ADAPSO's limited resources, and increasingly disparate membership, coupled with the magnitude of the challenges facing it, would make these attempts at planning a thankless task. A 1988 evaluation of ADAPSO by the American Society of Association Executives noted that its goals could not be mapped directly to practical, measurable processes so that "in its current form, the long range plan would be impossible to implement, and even when supplemented with the plan revisions, and a marketing plan, there are inadequate strategies and specific responsibilities to support implementation."[7]

Crandall's other key contribution was to the association's Image Committee, which he chaired from 1979 to 1981. The area of public relations and image shaping was perceived as vitally important by the association's leaders during the late 1970s and 1980s. From 1982, "image" was one of four areas into which committees were grouped, and received its own functional vice president, with a seat on the association's board, to coordinate relevant committees and programs. Image meant not just the image of ADAPSO itself but also of the industries of which its members were part. This was not a new concern. Back in 1963 a committee "working on our Public Image (Misconceptions)" had been set up, only to have its plan to publish a corrective booklet withdrawn three years later when "those charged with its creation reported the project to be impracticable."[8]

By the late 1970s, however, ADAPSO was ready to address the topic more seriously. In 1978 Crandall was elected ADAPSO president and with John Imlay of Management Sciences America, who would serve after him, decided to "do a two-year, back-to-back assault on the major business publications in an attempt to convince them that our industry was worth independent and continuous coverage."[9] Prior to that, computer software and services firms had been discussed in the specialist data processing press, but not in publications aimed at senior and nonspecialist managers. The program involved regular visits by Crandall and Imlay to publications such as *Business Week*, *Fortune*, and the *New York Times*. Their objectives included getting financial analysts to view software and services as a business separate from computer hardware, and publicizing the scope and success of the industry. Crandall also worked with specialist computer industry analysts, such as IDC and Input, to establish common definitions and descriptions for the industry.

The most important early result was a September 1980 *Business Week* cover story on the software industry, which Crandall believes "really opened up the IPO opportunity for software companies" and led to a flood of follow-on articles in different places.[3] Software firms distributed many thousands of copies of the article to potential customers.

The next year, ADAPSO published the first of what became a series of special advertising sections in major publications to promote the industry. The image program also targeted financial analysts and Wall Street firms to convince them to pay attention to software firms and to end a long drought in initial public offerings for software and service firms. Imlay led this effort, which involved conferences for financial analysts and the production of the *ADAPSO Update* newsletter, subtitled "a newsletter for the financial and business community."[10] Alfred R. Berkeley, a junior analyst at Alex, Brown—who would eventually rise to become head of the NASDAQ exchange—soon became an important ally in these efforts. By the early 1980s the software industry had become a Wall Street favorite.

Crandall was particularly active as a spokesman for issues concerning the time-sharing industry. In 1979, for example, he testified before the US House Subcommittee on Financial Institutions Supervision, Regulation, and Insurance after Citibank announced plans to start offering discounted time-sharing services to its customers. In 1981, he testified before the US House Subcommittee on Government Information and Individual Rights to demand that the US impose reciprocal trade barriers on countries refusing to open their computer services markets to American firms. Discussing the difficulties that time-sharing firms were experiencing abroad, he mentioned limits on ownership of local subsidiaries, refusal to supply telecommunication lines, deliberately onerous regulations, and restrictions on network operations.[11] His objective was to make Congress take these subtler, nontariff barriers as seriously as the traditional duties and quotas placed on manufactured goods.

Comshare and software

By the start of the 1980s, the traditional time-sharing business was under grave threat. With the standardization of operating systems and the growing power of minicomputers, many of Comshare's customers had found it tempting to install their own systems rather than rent time from an external computer center. Crandall remembers that "They loved our software but wanted to run it in-house, not as a service."[3] With the introduction of DEC's enormously successful VAX and the new proliferation of desktop computers for interactive calculations and analysis, the trend seemed set to continue. Tymshare, its old rival, had been acquired by McDonnell Douglas, primarily for the packet-switched network it had built.

For Crandall, the answer was to shift Comshare away from the dwindling market for time-sharing and into the rapidly expanding market for packaged software. Obvious as this move might seem in retrospect, the two businesses were quite different, and Comshare was the only time-sharing firm to remain independent while successfully reinventing itself in this

way. Crandall's role as ADAPSO's main strategic thinker helped his firm enormously here, immersing him in the issues faced by the industry as a whole. More than this, he admits that only through the personal ties forged through the association, particularly with Imlay, could he have hoped to learn the fundamentals and the business model of the software products business quickly enough to make the transition.[3] Speaking in 1987, Crandall said that he

> couldn't see how to make a profit because I didn't know about add-ons, maintenance fees, multiple copy opportunities and unbundled professional services charges … I learned these fundamentals at ADAPSO. At meetings, in the bar, at dinners—anywhere I could corner a CEO of an established software company I did. … Without ADAPSO, Comshare would have started the process too late, or not at all.[9]

The decision to switch to software was endorsed by a Comshare management meeting, which Crandall recalls being held held during a canoe trip in Ohio in early 1979. In practical terms, the initial challenge was to create versions of its software that could work on standard IBM operating systems and hardware. Its first product, System W, was launched in 1982 and offered to time-sharing customers and for purchase. It was part of a new category of software called *decision support systems*, or DSS. These were supposed to combine advanced modeling and analytical capabilities with large volumes of data, realizing an idea widely promoted but rarely achieved since the first flurry of enthusiasm for management information systems back in the early 1960s. For some time, Comshare had been offering a system called Financial Control Systems as an online service, providing interactive financial modeling and reporting. System W packaged these capabilities for the IBM platform and added a specialized database, sold as Datman to generalize the kinds of multidimensional consolidation and tabulation of data needed to support marketing and decision-making tasks. For Comshare, the amorphous and disputed term decision support system came to mean "financial modeling integrated with data management … with analytical tools on top."[9]

Crandall seized on a new IBM initiative, announced in 1982, for the firm to partner with independent software companies to promote and jointly sell selected products. Many ADAPSO members were skeptical of IBM's motivations or its commitment to the idea, but Comshare had nothing to lose in the packaged software field.[12] In January 1984, it signed the first of these agreements with IBM. This won considerable publicity, and Comshare instantly established a reputation as a software firm.

Comshare was also a pioneer in integrating personal computers, which offered cheap and interactive computing power, with powerful mainframe systems for maintaining large stores of data. This approach, then known as distributed processing, was much discussed in the mid-1980s but almost never realized in practice. The PC version of System W was upwards compatible with and communicated with the mainframe version, and provided the same analysis capabilities. Despite the fashionable idea that top executives would use computers personally, rather than leaving them to staff analysts, Crandall recognized that "the way the DOS PC interface was designed, executives weren't going to touch it with a ten-foot pole."[3]

A visit to Xerox PARC had impressed Crandall with the power of the graphical user interface, and in 1984 Comshare launched Commander EIS (Executive Information System) in an attempt to overcome this problem. Commander EIS coupled a graphical menu system for reporting and analysis, running on a PC with a touch screen display, with a mainframe-based server to store and crunch the data. Comshare sold this product "directly to senior executives at major corporations" who, impressed by a demonstration, "just mowed over IT and said, 'I don't care what you say, I want it.'"[9] Commander EIS sold to many of America's largest corporations, and eventually supported DOS, OS/2, and Macintosh clients. Using these clients as a foothold in executive offices, Comshare added additional capabilities such as access to live data from Dow Jones.

In 1994, Crandall stepped down from his role as CEO of Comshare. He remembers this as the culmination of a growing feeling of tiredness with the stresses and constant upheavals and transitions of running a technology company. He still loved the industry, but wanted to experience it from a different perspective.

In an odd tribute to the power of historical reflection, Crandall says that this feeling crystallized two years earlier when Walter Bauer, then co-chair of the Charles Babbage Foundation, called him with a reminder that he was the longest serving CEO in the software industry. Rather than considering that as the compliment intended, he found that it motivated a rethinking of his career and role in the industry. He recalls politely declining offers of "psychological and psychiatric assistance" from the board to help him deal with this "mid-life crisis."

Background of Rick Crandall

Born 20 July 1943, New York City. **Education**: University of Michigan: BS (electrical engineering), 1965; BS (mathematics), 1965; MSc (industrial engineering), 1966. **Professional experience**: Comshare: founder, president, CEO, 1966–1994; Aspen Partners: founding partner, 2000–present; Enterprise Software Roundtable: founder, chairman, 2000–present; Arbor Venture Partners I & II: founding partner and strategic advisor; Giga Information Group: chairman, 2002–2003. **Board memberships**: Beacon Information Technology (Japan), 1996–present; Diebold, 1997–present; Pelstar, 2001–present; Tacit Knowledge Systems, 1998–present; BISNet, Inc., Current; ADAPSO Foundation, 1984–1990. **Honors and awards**: Outstanding Entrepreneur Award of the University of Michigan Business School and Harvard Business School Alumni, 1992. Named "One of the Five Leading Pioneers of the Software and Service Industry" by *ICP Business Software Review*, 1986.

He remained as nonexecutive chairman until 1997, and retained his seat on the board until Comshare was sold to GEAC in 2003, putting an end to its independent existence. Comshare had retained its focus on interactive financial analysis and decision support tools, an area boosted by the popularity of data warehousing projects. The deep recession in IT spending from 2000 onward had hurt Comshare, which had reported a substantial loss the previous year. It fetched $52 million in cash, a small multiple of its $42 million in annual revenues.

After Comshare

By the time Crandall left Comshare he had long since cut his ties to ADAPSO. His own ideas about the strategic direction and future of the association had increasingly diverged from its actual course. During the mid-1980s he had strongly favored a proposed merger of ADAPSO with the Information Industry Association, a group of firms such as Dow Jones and the Institute for Scientific Information involved in distributing data electronically. Crandall believed that the computer services and electronic content industries had many more similarities than with hardware and telecommunications, and the Information Industry Association could be accommodated within ADAPSO alongside software and services companies "representing various forms of 'content'."[3] Instead, the ADAPSO board decided to expand in other directions, reflected in the eventual renaming of the association as the Information Technology Association of America (ITAA).

Other participants recall the Information Industry Association merger as having been undermined by disagreement on the board composition of the merged society, a perennial issue for ADAPSO with its federal structure.[13] Crandall remembers being worried that "you're not going to be able to come up with any objective that you'll get everybody to agree on and that means that we'll turn into a nothing organization." By the end of the 1980s he found himself decisively outvoted, and after writing "some vitriolic memos to the board" he resigned in 1990 as chair of the Strategic Planning committee. Shortly afterwards he left the association.

In 1994, Crandall started his own informal group, the Enterprise Software Roundtable. This biannual gathering of 36 leaders of the largest enterprise software firms began when Crandall was asked for advice on revitalizing ITAA, and assembled the group to consult with leaders of the large companies in his trade about what they might require of a trade association. According to Crandall, the executives then decided that they needed a more intimate forum of their own, the management of which he found "a great way to stay connected with the industry" after giving up his own position as CEO of Comshare.[3] While ITAA now focuses on policy research and advocacy, Crandall's roundtable provides an environment for networking and open discussions on customer issues and growth enablers among the leaders of software firms similar to the environment that ADAPSO's sections had back in the 1970s.

Crandall remains active in other venues, and currently serves as the software industry advisor to the US Chamber of Commerce—the software advisor to Bryant Park Capital, a boutique investment bank focused on mid-market companies. In July 1998, he cofounded Arbor Partners, LLC, a classic venture capital firm focused on enterprise software product startups and early-stage companies. In 1995, Crandall assisted Gideon Gartner in forming and developing Giga Information Group, which grew to be one of the larger IT advisory firms. Crandall became chairman of Giga in 2002 until early 2003, when it was sold to Forrester Research.

According to Crandall, his model is "to invest personally and to receive equity for consultative work in strategy, CEO mentoring, marketing, partnering and financial strategies."[6] Crandall's interest in the history of technology led him to write a series of books on the origins of the cash register industry (an important precursor of the computer industry) called *The Incorruptible Cashier*.[14]

References and notes

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4. T. Haigh, "Biography: Bernard (Bernie) Goldstein," *IEEE Annals of the History of Computing*, vol. 26, no. 1, Jan.–Mar. 2004, pp. 85-90.
5. See "ADAPSO Long-Range Plan, 1985–89," dated 26 Apr. 1985 with annotation "Final Approved Document" in ADAPSO Records (CBI 172), CBI. Hereafter this collection will be referred to as CBI 172.
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8. Assoc. of Data Processing Service Organizations, board meeting minutes, 28 Oct. 1963, CBI 172, discusses its establishment. Assoc. of Data Processing Service Organizations, incoming board meeting minutes, 26 May 1966, CBI 172, discusses its abandonment.
9. R.L. Crandall, "ADAPSO: Past, Present, Future" (presented at ADAPSO: 25 Years of Leadership), 1986, ADAPSO Records (CBI 172), CBI. Imlay and John Maguire of Software A.G. were longtime chairs of committees in the Image area, continuing to serve into the late 1980s.
10. This description is taken from the masthead of *ADAPSO Update*, copies of which are preserved in the CBI 172 ADAPSO collection.
11. This testimony was given on 2 Apr. 1981. Crandall made similar points in R.L. Crandall, "Trade Barriers to Foreign Expansion by U.S. Computer Service Firms," presented at the Computer Law Association's Program on International Free Trade—The Computer Industry, 9 Oct. 1979, ADAPSO Records (CBI 172), CBI.
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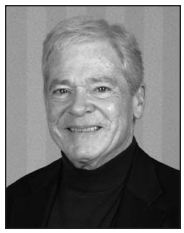
Larry A. Welke



Although Larry Welke never ran a service bureau, shipped a software package, or established a time-sharing firm, he is remembered by his ADAPSO colleagues as the key figure behind its successful expansion into the software field. His own business, International Computer Programs, was the first producer of trade publications devoted to software, making him an important promoter of the early independent software industry.

Career in data processing

Welke's early background was typical of many software industry pioneers. His first exposure to data processing came around 1955, when he began to work on a punched card system for job control as a young General Electric management trainee. As a punched card user he developed a close relationship with the IBM account representative. In the 1950s it was not uncommon for IBM salesmen to act as unofficial job banks for the punched card staff they came into contact with, but in this case Welke was hired away to IBM. At IBM he worked on systems analysis work for customer applications. He was trained to program the then new IBM 650 computer, which during the late 1950s became a common adjunct to conventional punched card machines. He remained at IBM for six years, shifting into a sales job in search of better pay. Welke's departure was prompted by his divorce, something which he believes would have crippled his career in the famously paternalistic IBM of the era.[1]

Fortunately, the computer industry of the early 1960s was booming. As an intelligent young man with (by the standards of the field) considerable experience, Welke did not find it hard to get another job. It took him a few years, however, to settle into something he was good at and enjoyed. A short spell at JC Penney trying to manage a large programming team to automate its new catalog business demonstrated to all concerned that his ability to both sell and perform a programming job did not translate into any knowledge of how to manage it. This was followed by an 18-month consulting assignment in Argentina, setting up a computerized record-keeping system for its state electrical company. Returning to data processing management, he created and grew a data processing operation for the Merchant's National Bank of Indianapolis. This time things went bet-