

BIOGRAPHIES

David Corydon Walden's Five Careers

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Dave Walden, a key figure in the engineering history of the ARPAnet, loved learning new things. One of his learning practices was to write down everything he learned, to help solidify his knowledge, and pass it on to others. He learned to type in high school to make it easier to get his thoughts on paper. He learned speed reading during his college years so he could rapidly expose himself to more material without reducing comprehension. He strove for excellence in every new area that attracted his interest. The result was five successful careers crammed into one lifetime: 1) computer programmer, 2) technology executive, 3) quality expert, 4) electronic publisher, and 5) computing historian. Along with these careers, he developed expertise in bridge, chess, juggling, sailboat racing, and Celtic music. The biography that follows reflects the author's many decades of interaction with Walden, as a professional colleague and personal friend.

FIRST TWO DECADES

David Corydon Walden was born in Longview, Washington, in 1942. His parents were public school teachers; his mother taught elementary school and his father taught high school chemistry and physics. Before Dave was a year old they moved to Gridley, California, about 60 miles north of Sacramento. Four years later they moved to Pittsburg, California, and several years after that to nearby Antioch, both in the San Joaquin River delta. Dave recalled: "My father was high school chemistry and physics teacher so I was interested in chemistry and physics pretty early. In fact, my father had his kids grade the papers. They tended to be multiple choice or specific answers rather than vague answers. . . . I started when I was quite young. So I learned a lot about high school chemistry and physics before I got to high school. And I was good at math. It was pretty easy for me" [29, pp. 2–3].

In high school, Dave was a member of the marching band (E-flat alto horn). "I remember the band director gave us this very important instruction that I've tried to live by the rest of my life. If the drum major says 'Band left' and you happen to go right, march with your knees high and keep marching until you get back into position in the band; they'll never know that it wasn't part of the formation" [29, p. 12].

After graduation from Antioch High School, Dave was interested in becoming an architect and enrolled at the University of California at Berkeley. However, he spent so much time playing cards (hearts and poker) that his grades suffered and he was ejected from the architecture program. He then attended the Pleasant Hill campus of Diablo Valley Junior College, a two-year community college, to try to get his grades up so he could get back into a four-year college. He was a civil engineering student—"that was as close as I could stay to architecture" [29, p. 3]—for a year and a half and did well. He enrolled at San Francisco State College (now San Francisco State University) as a junior. "I was pretty bored with civil engineering . . . so I switched to structural engineering, still trying to stay close to architecture. That didn't seem very interesting so in the second half of my junior year I switched to math. . . the only subject I had been taking ever since I had started in architecture and therefore the only way I could still graduate in four years" [29, p. 3].

In the second half of his junior year, Dave took a numerical analysis course, which included an exercise on an IBM 1620 computer. "Suddenly I got very interested in computers and I started spending lots of time, day and night, in the computer center. I had a sleeping bag at the computer center so that when I didn't go home to my apartment, I'd have a warm place to be" [29, p. 3]. Dave joined the staff of the computer center in his senior year, spending most of his time there. During his time at San Francisco State, Dave also spent a lot of time studying the card game bridge and frequented bridge clubs in San Francisco where he also worked at odd jobs and helped run duplicate games. Bridge and the computer center did not leave much time for study. Although his grades in his math courses were poor, he got good enough grades in



FIGURE 1. David Corydon Walden at San Francisco State University, 2014. Courtesy of Sara Walden.

his other subjects to graduate with a B.A. in mathematics in 1964.

COMPUTER PROGRAMMER

Dave decided to seek work as a computer programmer, and in the back pages of *Scientific American*, he found two job ads, one from MIT Lincoln Laboratory near Boston and one from the National Security Agency between Baltimore and Washington. The NSA offered to fly Dave out for an interview, and after that interview, he went to Boston and interviewed at Lincoln Lab. He chose Lincoln Lab. One reason was that they told him he would be working for Frank Heart, while NSA did not say who would be his boss. Frank was one of the people who interviewed Dave at Lincoln, and Dave liked his enthusiasm. A second reason was that: “NSA asks you all kinds of questions that you really don’t like to hear like ‘Have you ever smoked marijuana?’ Student uprisings were happening at San Francisco State even before they got famous at Berkeley. . . . There were times when I was at San Francisco State when it was unclear which smell was more prevalent, marijuana or teargas. So it was a little bit of a tense thing with NSA” [29, p. 4].

It soon became apparent that programmers were considered second-class employees at Lincoln; they were staff assistants and were assigned three to an office, while junior scientists and engineers were assigned two to an office. However, Frank assigned

Dave to serve as the assistant to Will Crowther, who was responsible for putting together the Lincoln Experimental Terminal, a small trailer with a radar antenna for experiments with satellites for communication. Despite his staff-assistant status, Frank had him share a two-person office with Will. Will became Dave’s programming mentor and taught him what was required to write programs that ran in real time. “Will is not a hierarchical kind of guy. . . . He’d give me a little piece of code to write. I’d write it. Or if I struggled, he’d show me how to get through it. . . . So by the time I’d been there a year, year-and-a-half, I had amazing experience with doing system integration of very complicated systems with [Will], who I still believe is probably one of the smartest guys in the world at building real-time computer systems. I’d be sitting there struggling; and he’d say, ‘Hey, what’s up Dave? You keep throwing pieces of paper away. What’s going on?’ . . . He’d talk to me about it a little and send me back to work, and I’d work on it. It was a unique experience and a fantastic benefit” [29, p. 5].

Dave was always enthusiastic about writing, especially as an aid to his own understanding. “I have always written down my own thoughts when they begin to get complicated because it helps me see flaws or gaps in my reasoning. . . . Also, I have taken detailed notes when hearing a presentation or lecture, and I often write up these notes into nearly a verbatim transcript afterward to help me sort out what I thought had been said. . . . In fact, I kill [two] birds with one stone: I understand better myself, [and] I perhaps help someone else understand” [8, p. 1].

Another of Dave's motivations for writing is "something Will Crowther told me: 'The guy who controls the pen probably controls 80% of what the project will be.' It was easy for me to write so if we have a design meeting I'd volunteer to write the notes and therefore influence things. . . Oh, and another thing I learned by the way as a software developer, the whole idea you spec-the-system/you-implement-the-system/you document the system/you-write-the-users' manual is a bad idea. You should probably write the users' manual before you start implementation because if you can't write down easily what it's going to do you probably can't implement it very well" [29, p. 25]. These ideas about writing are reflected throughout Dave's lifetime of achievements.

After arriving in Massachusetts Dave became active in the MIT Gilbert and Sullivan Society and the MIT Community Players. In the spring of 1965, he and a friend created a new group, the MIT Classical Musical Society, with the aim of producing the play *Guys and Dolls*. Sara Cowles auditioned and was selected for the part of Sister Martha. At least three marriages resulted from the production; one of them was Dave's and Sara's, who were married in 1966. They had one child, Luke Walden, in 1970 [28].

In 1966, Frank Heart was recruited by Bolt Beranek and Newman Inc. (BBN) in Cambridge, Massachusetts, and Dave was quick to feel the loss of his boss. As a programmer, he was assigned to write FORTRAN programs for the engineering staff. Dave felt undervalued and bored. One day he stopped at BBN and asked if Frank Heart was in. He was, and he showed Dave around while Dave told him about his situation at Lincoln. Within a few days, Frank offered Dave a job as a staff member at BBN and Dave grabbed it. No specific job assignment was offered, but Frank assured Dave that there were lots of interesting things to do and that one would turn up for Dave.

In his first year at BBN Dave worked on a variety of projects. One was working with Paul Castleman on a proposal to the National Institute of Health for a system called PROPHET, which was intended to help research chemists and medicinal pharmacologists use graphics terminals to understand the shapes of microorganisms and drugs that might interact with them. Another was a design review, with Bob Kahn, of a database management system for the Air Force. A third was an evaluation, with Alexander McKenzie, of a few dozen minicomputers to find one suitable for building a self-contained information retrieval system, in a restricted domain, for multiple users. That study selected the Honeywell DDP-516 minicomputer.

Then, in mid-1968, a Request for Quotation for a small network of data communication devices based on

packet switching (Interface Message Processors—IMPs) arrived from the Advanced Research Projects Agency (ARPA) of the Department of Defense. Bob Kahn, who had a communications background, had already been exchanging papers on digital communications with the ARPA Information Processing Techniques Office, so the RFQ came to him. BBN decided that Frank Heart, with his real-time systems background, was the right person to lead the proposal effort, and Bob was assigned to assist him. Frank selected Severo Ornstein to do the hardware design based on the DDP-516, and Dave Walden to do the software design. Although nothing like an IMP had ever been built, the contract was not supposed to be a research project; it was supposed to produce an operating communication system with the delivery of the first IMP eight months after contract signing. If the team was to have any possibility of meeting contract requirements, they would have to do a complete design before submitting their price quotation. Dave and Frank agreed that they could be far more confident of success if they could recruit Will Crowther from Lincoln to join the BBN team and review Dave's software design before the proposal was submitted, and Frank was successful in getting Will on board. Will quickly became the lead software designer, as Dave and Frank had expected, and a proposal was submitted. At the end of 1968, BBN was notified that it had won the contract, and work began on January 1, 1969.

With the contract in hand, a few more people were added to the team. The software implementation was carried out by Will, Dave, and Bernie Cosell. Although Will was clearly the senior designer he had no interest in managing details, and to the extent, there was a software manager Dave assumed that role. Dave was also much more comfortable writing than either Will or Bernie, so he produced most of the documentation of the software system. The IMPs were to serve as communication switches to enable mainframe computers supported by ARPA (the "Hosts") to communicate, and Bob Kahn wrote the manual specifying the Host-to-IMP interface. Dave had a specific responsibility to write the IMP code supporting this interface, so Dave worked as closely with Bob as he did with the software team.

The first IMP was successfully deployed at UCLA on September 1, 1969 (Labor Day weekend), and additional IMPs were installed at a rate of about one per month for the next few years, forming what was called the ARPAnet [16]. Dave was part of the two-person team (with Ben Barker) who installed the IMP at UCLA, and he installed the fourth IMP at the University of Utah by himself. A few months later Dave and Bob Kahn spent a few weeks at UCLA running tests of the network performance. Bob had predicted that the

mechanisms Will Crowther had invented to prevent network congestion were inadequate, and the tests proved Kahn correct. Until new mechanisms could be designed and implemented, BBN told the Host organizations how they could break the network and asked them to please refrain from doing it. They complied. IMP software updates were punched on paper tape and Dave flew from site to site (Los Angeles, Santa Barbara, Palo Alto, and Salt Lake City) with the paper tapes installing the software. Early in 1970, the 5th IMP was installed at BBN, and after that new software could be distributed through the network itself.

In mid-1970 Dave and Sara fulfilled a dream of living abroad. They and their infant son moved to Oslo, Norway where Dave had found a job working for the Norwegian minicomputer manufacturer Norsk Data Elektronikk. Norsk was building the world's second packet-switching network, for the Norwegian Air Force Research Institute (LFK) [13], and Dave was the project leader [14, p. 14].

The Walden family returned to the Boston area in mid-1971, and Dave was rehired at BBN. At that time the ARPAnet project was building the Terminal IMP (TIP) [15] and Dave took on the job of writing the user manual, which had the effect of specifying the behavior of a lot of the TIP software.

By that time the ARPAnet project had grown fairly large: the network was continuing to grow, there was a 24/7 operations center, the group was designing a multiprocessor high-performance IMP (the Pluribus [9]), and the world was beginning to take notice of packet switching, which offered BBN the opportunity to build networks for other government and commercial clients. Frank had come to trust Dave's judgment and promoted him to Assistant Division Director, responsible for all the division's communications activities. Dave describes his role in that position as "to basically take stuff away from [Frank]. Frank probably manages stuff a little too closely. He'd come to trust what was going on with me because I'd report everything. But once I had it under my hands I would delegate it to somebody else. I helped Frank grow the division by taking stuff and delegating it more than he probably would've been willing to delegate" [29, p. 20].

As a manager, Dave was intent on supporting those who he managed. He described his management philosophy this way. "There are always plenty of things that need to be done in any organization and different people are skilled at different things. . . Whether as a worker or a manager I always want to succeed. . . As a worker I know I will ultimately go farther by focusing on what I am good at and want to do. . . As a manager, I know my success depends on the people working for me succeeding, and

so I must try to match them to what they are good at. . . When something becomes too much of a burden for someone (i.e., they are failing rather than succeeding at a task) then the person tends to wander away (mentally or physically) to do something that is more fun. This is something that one has to constantly guard against, and to take steps to make the job accomplishable or to quickly move the struggling person to a more suitable assignment" [8, pp. 3–4].

Sara, who had been a sailor in her youth, took Dave to the Boston Harbor Sailing Club (BHSC) in 1980 for a one-week learn-to-sail course in Soling boats (ex-Olympic class three-person racing sailboat). The next week, Dave returned to BHSC to learn more and joined a Wednesday night racing crew. The captain of his crew was John Bell, and they worked well together. In his characteristic fashion, Dave dug in to learn all he could about racing. He and John raced together at BHSC for eight years, with a variety of third crew members, one of whom would become John's wife, Jil Westcott, who also was a BBN colleague. John and Dave accumulated a shelf full of trophies. In 1988 Dave, Sara, John, and Jil bought a two-year-old Express 37 equipped for racing in a "three year partnership." In 1989 they participated in a race from Marblehead, Massachusetts to Halifax, Nova Scotia, finishing mid-fleet. The partnership lasted until 1997 when John and Jil took over the boat. Dave continued to race with them for 15 more years, finishing third in class in a Newport, Rhode Island to Bermuda race in 2001, and sailing from Newport to Antigua in 2002 [3].

TECHNOLOGY EXECUTIVE

In 1980 Dave decided he wanted to try his hand at running a business. He and John McQuillan persuaded BBN to let them start a subsidiary to create a networked email project. They called it Infomail, and Dave served as President. The software ran on a variety of systems including Unix, TENEX, IBM CICS, and on the IBM 360 line. They sold Infomail to a number of organizational users, but not enough to actually make money; the concept was ahead of its time. Dave recalls: "the real realization I had was after Ray Tomlinson did the demonstration of email, and email took off. And then from that moment on, I was convinced the ARPANET or packet switching or what became the Internet was going to be everywhere in the world. And my surprise was it didn't come 15 years earlier. You know, it really only hit the world with the World Wide Web" [29, pp. 13–14].

In 1981 Dave moved to the BBN Communications subsidiary where he served for a year as Executive VP and Chief Operating Officer. This subsidiary was originally called BBN Computers and tried to market a BBN

computer, the C-70, to the Unix market. It was not successful, and Dave came on board to help reorient the subsidiary to provide packet-switched networks. BBN Communications became very successful, and for several years was the world's largest supplier of packet switches. With this change of focus, a new President was hired and Dave became the General Manager and then President of the contract Research and Development part of BBN's (traditional) business, now a subsidiary first named BBN Laboratories and then called BBN Systems and Technologies (S&T). Dave reorganized the two old BBN divisions in S&T that did computer systems work, which had reported to Frank Heart and Ray Nickerson, into a single division with Frank as Director and Ray as Assistant Director. This finally put an end to the inter-divisional rivalries that had been going on throughout the 1970s, and which frequently irritated major clients, such as ARPA (now renamed DARPA). In commenting on the projects he had been involved with managing, Dave observed: "The argument is that [when moving to a new environment] it is always easier to start from scratch. [On the contrary] it is almost *never* easier to start from scratch, and if it is easier starting from scratch then it is less reliable. . . It's a lot better to modify what you have than starting over" [7, p. 37].

In 1992 BBN Communications was in serious trouble. The company had missed the transition from packet switches to routers as the ARPAnet transitioned to the Internet, and ceded the router market leadership to Cisco Systems. Ben Barker was appointed President of BBN Communications and Dave was called back as Executive Vice President to help restructure it (again). Portions of the business were canceled, portions were sold by Ben to Cisco, portions were transferred to BBN S&T, and a small portion of the business was retained. "Then George Conrades [became President and Chairman of BBN] sometime in 1994 and by late 1994 he asked Frank Heart, me, Ian Rankin and [Ben Barker] who were leading pieces . . . to leave because we weren't the kind of marketing people he thought should be running divisions [and] subsidiaries. Frank and Ian left. Ben and I stayed on. . . winding down BBN Communications before I left" [29, p. 23].

QUALITY EXPERT

In 1989 the CEOs of a number of New England high-tech companies attended a seminar at MIT presented by Shoji Shiba of Tsukuba University (Japan) on the topic of total quality management (TQM). The principles of TQM were of great interest to companies in the United States, particularly manufacturing companies, which were experiencing considerable competition from their

Japanese counterparts. BBN became one of seven founding members of the Center for Quality Management (CQM) in 1990, a consortium intended to apply the principles of TQM to their own companies [12].

"Having decided to form the CQM, the founding companies next needed a specific plan for what the CQM would do and how it would function. Ten executives from the founding companies and three members of the MIT faculty and staff spent five weeks together under the guidance of Professor Shiba. . . The most important conclusions of the design study were:

- ▶ active participation of the most senior executives is key to the success of the TQM implementation;
- ▶ TQM is a thought revolution. It requires a culture change. The ability to plan and implement must reside in the organization itself. The organization cannot continually depend on consultants, in the traditional US way" [10, pp. 5–6].

The second point mandated that each member company appoint a Chief Quality Officer (CQO). BBN's President, Steve Levy, asked Dave to become the company's CQO. Dave immediately plunged into his work as CQO, becoming "a key evangelist for the TQM movement inside and outside BBN" [12].

In a 2009 interview, Dave was asked how he felt about this sudden change in his career path. He responded, "Well I was always a person who was interested in learning new stuff. I mean different people are motivated by different things, right? I tend to be motivated by learning some new thing. You work in some area for several years and pretty soon you know quite a lot about it and then I was ready to go do something else. . . I was also pretty tired of being the head of BBN S&T by the time. This was very much the height of the government-contractors-are-bad era. . . When Steve said, 'Do you want to do this' I said 'Sure, that will be fun.' I didn't know anything about it so I got interested in it by doing it. By the time I was done with that I had written a book on it" [29, p. 23].

With his love for writing, Dave became the chairman of the CQM Editorial Committee which began publishing the Center for Quality Management Journal in 1992. In an introduction to the first issue, Dave wrote: "An important component [of CQM Work] is dissemination of useful practices and concepts, especially through actual case studies. CQM companies have shared many practices through case studies presented in courses, company visits, committee meetings, and casual conversations. However, most of this sharing has been heard only by those in attendance. . . This journal is

intended to capture and disseminate TQM experience in print, and thus to develop a written collection of the TQM knowledge shared by TQM members" [20]. Dave also contributed several articles to the Journal, continuing his practice of learning by writing.

As part of the CQM learning experience, Dave attended several courses given by Shoji Shiba. As was his habit, he took copious, almost verbatim, notes. These notes became the basis for *A New American TQM* [17], a popular and enduring book documenting the success of TQM implementation in CQM companies. This book was the first in a long collaboration with Shoji Shiba on publications reflecting an expanded approach to management improvement [11], [18], [19].

In 1994 the CQM changed its name to Center for Quality of Management, indicating that the organization's members were interested in the overall quality of management in their companies, building on the base of quality improvement. Dave had continued in his position as chair of the Editorial Committee during his return to BBN Communications. With his ties to BBN broken, Dave joined the staff of CQM as Director of Research and Development in 1995, and served as CQM Executive Director for 15 months starting in late 1997.

In addition to his work on the CQM Journal, Dave was active in CQM's efforts to identify and define new management knowledge of value to CQM's membership, which peaked at about 120 organizations in 1997. In particular, Dave was a significant contributor to CQM's Research Study Group in Conversational Competence (2004–2005), including the development of a new curriculum for CQM members, which he repeatedly refined and taught, and a Study Group in Cycle Time Reduction (2007–2008).

In 1998 Dave formally retired, but he continued to serve as Chair of the Editorial Board until the Journal discontinued publication in 2003. Also during this period, Dave taught courses on TQM in the MIT Leaders for Manufacturing (LFM) program. LFM was a joint project of the MIT Sloan School of Management, MIT's Engineering School, and industrial partners. Dave held the position of Senior Lecturer in the Sloan School from 1996 to 1999.

ELECTRONIC PUBLISHER

At about this time the publisher of *A New American TQM* [17], authored by Shoji Shiba, Alan Graham, and David Walden in 1993, asked for a second edition. Professor Shiba and Dave agreed that "because of advances in the field since the first edition's publication, the second edition would be significantly longer and quite different from the first edition" [21, p. 211]. Dave had

become very dissatisfied with using Microsoft Word to support his writing because of the frequent changes in successive releases and chose this opportunity to look for an alternative approach. He settled on LaTeX. In 2006 he wrote: "Part of my preference for LaTeX over Word comes from the fact that all of the markup is in a file where I can see it and change it rather than it having to be accessed by various menus and being largely unseen. . . . Another aspect of Word that annoys me is that it is forever guessing what I want. . . . and, while Word's 'help' sometimes does result in what I want it seems more often to choose what I don't want. . . . My use of LaTeX is primarily about productivity" [22, pp. 51–52].

Of course, Dave had a lot to learn about producing a large book using a system new to him. In a 2006 interview, he said: "I found a version of TeX somewhere on the Internet and bought a copy of *The TeX-book*. As I almost always do when I try to learn something new, I looked around for 'the organization,' found TUG [the TeX Users Group], joined, and began looking at the issues of *TUGboat* [the TUG journal]. I quickly became aware of LaTeX [a set of TeX macros which allow an author to work at a higher level], bought some more books. . . . and began to develop a major revision of my first book in LaTeX" [4, p. 6]. Dave converted the old book to LaTeX and then completed the revised book, *Four Practical Revolutions in Management* [18] with that system, as documented in [21].

As part of his continuing education in TeX, he began a project of interviewing key people in the TeX world in 2004. He published 89 interviews from 2004 to 2021 [26]. In 2006, when he has interviewed himself, he said: "My general view of learning any new subject is that the more I put into it the more I will learn. For me volunteer work is not so altruistic; I don't volunteer for things unless I really want to know more. . . . I also prefer projects that can be done incrementally so I am not under too much pressure to finish too much too soon; one of my rules of thumb is to avoid trying things out that are so hard or have such near-term deadlines that it becomes stressful or an unpleasant burden to work on them. Thus, this Interview Corner project was a natural for me. I get to learn about various well known TeX people and gain perspective on how the various parts of the TeX world fit together and why, [and] I only have to finish an interview every month or so to feel I am making good progress" [4, p. 8].

In 2005 Dave was invited to become a member of the TUG board, and soon after that, he accepted the job of Treasurer. Also in 2005 he helped establish an online journal, *The PracTeX Journal* [30], and wrote the

software to generate the journal's website. Dave also wrote a regular column for the journal called "Travels in TeX Land," about which he said: "In general I try to twist jobs I volunteer for so they are not so hard to do that I soon will stop wanting to do them. This is the main reason [this column] mostly describes something I did rather than claiming to be a tutorial on a subject that I would then have to really become expert about. It would be hard to become an expert, but it's relatively easy to describe what I did" [4, p. 9]. There were 17 "Travels in TeX Land" columns between 2005 and 2010 [23].

FOLLOWING THE PUBLICATION OF THE SPECIAL ISSUES, DAVE WAS INVITED TO JOIN THE ANNALS, EDITORIAL BOARD. IN 2008 HE ACCEPTED THE JOB OF ANECDOTES EDITOR, A POSITION HE HELD UNTIL 2021 (EXCEPT FOR A FEW ISSUES IN 2012–2013).

Dave remained Treasurer of TUG until 2011 and was a board member until 2015. He was the prime mover in the first two books TUG published, both around 2010. His last talk for TUG was presented online (because of COVID) in 2020.

COMPUTING HISTORIAN

In the late 1990s Dave was asked if he would care to contribute an ARPAnet/Internet story to the *Anecdotes* column of the *IEEE Annals of the History of Computing*. He did not have sufficient time then, but it got him thinking about submitting something. In 2002 he and Nils LIAAEN, a friend from Norsk Data, submitted "Remembering the LFK Network" [13]. It is likely that Dave chose to write about this because the ARPAnet had been written about extensively while the LFK Network was all but forgotten. That experience encouraged Dave to think about other activities he had been involved with that he felt should not be forgotten. In 2003 he and Bernie Cosell published "Development of TELNET's Negotiated Options" in *Annals* [5].

With these examples of the quality of Dave's writing and his demonstrated interest in history, the *Annals* Editor-in-Chief, Tim Bergin, asked Dave to consider becoming editor of a special issue of *Annals* on computing at BBN. Dave recruited Ray Nickerson as co-editor and a number of his BBN

colleagues as authors covering various aspects of BBN's computing activities. Their work was eventually published in two special issues, in 2005 and 2006. Dave and Ray then expanded this work in the 2011 book *A Culture of Innovation: Accounts of Computing and Life at BBN* [24].

Following the publication of the special issues, Dave was invited to join the *Annals*, editorial board. In 2008 he accepted the job of *Anecdotes* editor, a position he held until 2021 (except for a few issues in 2012–2013). In this position, Dave was responsible for soliciting and editing unrefereed personal recollections that shed light on computing history. In 2011 the Editor-in-Chief, Jeffery Yost, asked Dave to start an *Interviews* column. Dave accepted, and conducted interviews of people important in computing history, in addition to the interviews he was still carrying out for TUG. Also in 2011, Dave became chair of the IEEE Computer Society's History Committee. In addition, from June through December of 2014 Dave served as Acting Editor-in-Chief of *Annals* during the search for a new Editor-in-Chief.

Besides book reviews, interviews, and brief reports in the *Annals' Events & Sightings* column, Dave published an article about the "resurrection" of the IMP program from an old listing for use in a patent trial [25], and coauthored articles about maintenance of the early ARPAnet [27], the history of Interleaf [6], and a two-part article about the history of TeX [1], [2].

In 2014 San Francisco State University awarded Dave an Honorary Doctor of Science degree. Of all the many honors Dave received he was especially proud of this one.

In 2015 Dave developed a rash on his head. It was petechiae: 1–2-mm spots of internal bleeding, which led first to blood tests and then to a bone marrow biopsy. The eventual diagnosis was that Dave had contracted mantle cell lymphoma a number of years previously. Mantle cell lymphoma is aggressive and incurable, but there are chemotherapy options that provide significant periods of remission without undue negative effects on a patient's functioning. These worked well for Dave until February 2021, when a new type of therapy was tried. This resulted in Dave's being in hospital for five weeks, several of them in intensive care. He had no memory of a couple of those weeks. By August he had totally lost his hearing and his doctors were warning of possible blindness. They wanted to retry the therapy they had started in February but Dave, who had lost most of his ability to deal with complexity, opted instead for a complete stop of

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treatment and the beginning of palliative care. He continued to work, socialize, and generally interact with family and friends, although with greatly reduced energy, until late in February 2022. He died at home in his sleep on April 27, 2022. His obituary in the *New York Times* appeared on May 3.

ACKNOWLEDGMENTS

David Walden was the subject of three oral histories [7], [14], and [29] and two published interviews [4], and [8]. I thank the interviewers for their insightful questions and their organizations for preserving Dave's comments. I thank Sara Walden, Steve Levy (BBN), Karl Berry (TUG), Eric Bergemann (CQM), and John Bell (sailing) for sharing unpublished details of Dave's life. I thank David Hemmendinger for inviting me to write this biography and for allowing me to retract my initial refusal. Most of all I thank Dave for being a good friend for 54 years. Dave, I love you and I miss you!

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