

CHARLES BABBAGE INSTITUTE

CENTER FOR THE HISTORY OF INFORMATION TECHNOLOGY

NEWSLETTER

Vol. 32 No. 1

Spring 2010

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Digitized Price Speeches on CDC

The Charles Babbage Institute is pleased to announce a research resource that is unparalleled in the history of computing. For the last nine months, we have been working with a unique archival resource donated to CBI by Robert M. Price, former CEO of the Control Data Corporation.

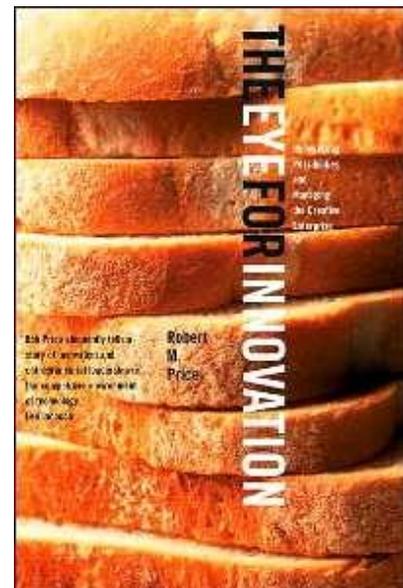


When Bob Price asked us if we might digitize and make publicly available the set of speeches he gave across his 40-year career, we initially didn't know what to say. The size of the collection posed some logistical challenges. We knew the set of speeches would be an invaluable window into Control Data—detailing its emergence as a large multinational corporation in the 1970s, its evolving business strategies, including hardware, software, and services, and its challenges and transformation in the 1980s and beyond. We believe there is nothing like this, anywhere, giving an insider's candid perspective on the dynamics of a major American corporation across nearly three decades. Since CBI already had the Control Data Corporation

records, as well as personal collections from Bill Norris and Bob Price, we wanted somehow to find a solution to the challenge.

The scale and scope of the speeches were daunting. The set came to us direct from Bob's office, in ten boxes neatly labeled: 450 speeches, many with multiple drafts, around 10,000 pages. Bob wished to make accessible not merely his public speeches to civic groups, professional organizations, university audiences, and his testimony to the U.S. Congress; that would have been remarkable enough. He also wished to include his presentations to financial analysts and the investment community, to Control Data's board of directors, and also to numerous internal employees groups including the CDC sales force that he headed for some years. The first speech is one Bob gave to the CDC Board in November 1970 and the most recent one is to an audience at Tulane University in March 2009.

Readers of this newsletter may already know that Bob Price is no casual observer of Control Data's history. When he retired from CDC in the late 1980s, he taught at Duke University's Fuqua School of Business and began thinking about the deeper implications of his CDC years. He lived through the "Seymour Cray" years where CDC's supercomputing sales seemed to drive limitless growth (and yet he knew that the sales of peripheral products such as disk storage units were the underlying source of the company's prosperity). He also spearheaded CDC's diversification into the new field of computer services. Reflecting on this experience prompted him to write *The Eye for Innovation: Recognizing Possibilities and Managing the Creative Enterprise* (Yale University Press, 2005). In writing this book, he needed to review and absorb CDC's rich history, so he led an effort to help CBI to systematically organize and properly catalog the 350 boxes



of the CDC corporate papers, creating along the way a permanent treasure trove for computer history.

Bob also wanted to set down his personal perspectives and reflections on these years, so we readily agreed to arrange a series of oral history interviews. He met with CBI director Tom Misa for fifteen sessions over the past year. The detailed career-spanning oral history transcript, being finalized yet this spring, may reach 500 pages in length. In numerous ways, the oral history helps clarify the CDC corporate records, by filling in unrecorded details and outlining the core business strategies.

Perhaps one small anecdote can suggest the breadth and depth of this historical effort. In a conversation on CDC's participation in the Air Force's immense Advanced Logistics System, Bob recalled that while he gave numerous speeches on the project, it was Fred Laccabue who was the key figure. We had several questions about this enormous and controversial computerized logistics system and, alas, an insufficient historical record. With Bob's encouragement, Fred agreed to an oral history on ALS with CBI's associate director Jeffrey Yost. Jeff flew out to California for a memorable interview with "HP's oldest employee," as Fred refers to himself, and also collected additional archival documentation on ALS. The satisfying result is that Jeff was able to pull together the first balanced account of the ALS project and is set to give a talk on it this September at the IFIP World Computer Congress in Brisbane, Australia.

When you go to the CBI site with Bob's speeches, you'll discover there are several ways of exploring the collection. You can find the set of 450 speeches in strict chronological order, or explore them by the varied categories (CDC board, professional, financial, CDC employees). You can even do a Google-language search across the entire set of speeches, with the search results returning a set of PDF documents that are themselves text-searchable. In scant seconds, you can find specific passages on CDC's Northside factory or PLATO or 'net profits' or literally thousands of other topics. Alternately, you can trace his thinking on computer services. You can even find jokes about fishing and the weather in Minnesota, a fine topic for laughter in southern climes. These materials join other CBI-hosted research resources; see <www.cbi.umn.edu/hostedpublications/RMP>. We believe the combination of structured content and flexible searching will keep researchers busy for years to come.

We were lucky in conducting this project to secure the help of Siddhartha Shanker, a master's student in the Electrical and Computer Engineering department with a hands-on interest in history. He carefully conducted the digitization and OCR process, as well as built the website you can visit today. (In the next few years, we will transition the set of speeches to a content management system that the University Libraries is yet perfecting.) We also wish to acknowledge financial assistance from Bob Price and PSV.

Thomas Misa

Director's Desk

At CBI, we are building an infrastructure for computer history. For more than three decades, we have been developing a unique profile of print materials, archival collections, and oral histories as well as producing top-quality scholarship, often generated by externally funded projects and extended by various public outreach activities. CBI's mission is to create an infrastructure for computer history research that will enable better understanding and deeper appreciation of the computer and information revolutions.

With this column, I'd like to explore a curious number: 30,000. This past year has seen unusually high demand for our oral histories. We are succeeding in getting the word out about the value of computer history!

CBI now has around 400 oral-history transcripts, and nearly all of them are available online. Until around two years ago, we recorded downloads of the transcripts at a rate of about 20,000 *per year*. Then the downloads started doubling every 6 months or so. Our most recent tally indicates a download rate of 30,000 *per month*. That's about one download each and every minute.

The top-ranked oral histories have a number of familiar famous names as well as two surprises. It's not difficult to figure out why people want to learn more about Edsger Dijkstra, Martin Hellman, Gene Amdahl, J.C.R. Licklider, Donald Knuth, and John McCarthy—all recognized giants in computing. Yet, recently, the number one download is one that Erwin Tomash did in 1987 with Curt Herzstark. His story is of special interest since in 1943 Herzstark, an Austrian Jew, was sent to the Buchenwald concentration camp where (to save his life) he worked on designs that led to the ingenious Curta mechanical calculator. (The German original of Herzstark's interview has been the number 3 download.) The number five download is an 1988 interview with Herbert W. Robinson, president of the computer services company C-E-I-R, Inc., later acquired by Control Data Corporation.

CBI's expanded presence in Wikipedia is the root of this dramatic expansion. About two years ago I noticed that my own web searching often returned Wikipedia as a top-ranked site. And even then Wikipedia had entries for many of our interviewees. I put two and two together and decided to experiment with adding direct links to the CBI oral histories. We now find that for many oral histories up to 90 percent of the download traffic originates with Wikipedia entries.

The heavy traffic itself confirms the value of the CBI oral histories and suggests a wide audience for computer history. In addition, Wikipedia's subject editors at WikiProject Computing identify CBI's oral histories as a leading source to consult in preparing, revising, and evaluating computer history entries.

How about a little summertime reading? May we suggest the CBI-content on Wikipedia: Marvin Minsky, Atanasoff-Berry computer, Diffie-Hellman key exchange, John von Neumann, Semi Automatic Ground Environment [Project SAGE], Standard Generalized Markup Language [SGML], Structured Query Language [SQL], Donald Knuth's TeX, Robert Kahn, Vint Cerf, and TCP/IP, C.A.R. Hoare, Jack Kilby, Control Data, and many

more. More than 200 topics with links to CBI materials (oral histories and archival collections) can be found here:

<http://en.wikipedia.org/wiki/Special:WhatLinksHere/Charles_Babbage_Institute>

We're always interested in hearing from people with interesting ideas for the next phase of computer history. Give me a call!

Thomas J. Misa

Stephanie Crowe Named CBI Archivist



Starting in June 2010, Stephanie Crowe will be the new CBI Archivist. She brings a great wealth of knowledge, experience, talent, creativity, and initiative to this position. Since 2007, as CBI Assistant Archivist, she has managed CBI's processing and reference activities with distinction—supervising project archivists and student processors, assisting researchers, and creating finding aides in Encoded Archival Description.

She has creatively used the World Wide Web to draw on the expertise and knowledge of the computing community to gain new information on CBI's Control Data photograph collections—developing a pioneering knowledge networking online tool to aid with processing archival materials that will be useful with other CBI records and likely replicated at other institutions.

Earlier this year, Stephanie was curator of a major exhibit on the history of the Association for Computing Machinery (ACM) that was housed in the main exhibit atrium of the University of Minnesota's Andersen Library (see related article in this issue). She has also recently curated an exhibit on the history of Y2K.

Stephanie has been very active with professional associations, presenting her research at the Society for American Archivists, the Rare Books and Manuscripts Section (RBMS) of the American Library Association (ALA), and the Society for the History of Technology (SHOT). She has published in the *North Carolina Libraries Journal*, and has just completed a collaborative research project to address archival collection backlogs.

She has also been very active in public service, giving presentations to numerous classes at the University of Minnesota and serving on many committees for University Libraries.

Prior to joining CBI, Stephanie worked at North Carolina State University Special Collections Research Center as a graduate fellow. She has a Master's of Library Science from the University of North Carolina-Chapel Hill, a M.A. in Public History from the North Carolina State University, and a B.A. in history from University of Maryland-College Park.

We are proud to see CBI Archivist Arvid Nelsen moving up (to a senior management position overseeing Special Collections, Rare Books, and Manuscripts for University Libraries), and grateful for his many achievements in collection development, leadership

within professional organizations, and other activities at CBI and the archival and rare book professional communities. We congratulate him on this significant promotion. CBI is extremely fortunate to have such a highly capable professional archivist as Stephanie to build upon the momentum of Arvid's leadership and to continue to take the CBI archives to new heights.

As part of the same reorganization within University Libraries Department of Archives and Special Collections that led to Arvid's new position, we are pleased to announce that former acting archivist at CBI, Karen Spilman, will head a department-wide processing unit that will assist with processing CBI collections.

Jeffrey R. Yost

Tinn is CBI Tomash Fellow for 2010-1011

Honghong Tinn, a doctoral candidate in the Department of Science & Technology Studies at Cornell University, has been named the Adelle and Erwin Tomash Fellow for the 2010-2011 academic year. She received a B.A. in sociology and a M.A. in journalism from National Taiwan University before pursuing her doctorate at Cornell.

In her first two years at Cornell, Tinn studied Taiwanese "Do-It-Yourself Computers," which refer to microcomputers or personal computers that users or computer shops built by piecing together computer components. She presented her paper titled, "From Do-It-Yourself Computers to Illegal Copies: The Controversy over Building One's Own Computer in Taiwan, from 1980 to 1984" at the recent Society for the History of Technology and Society for the Social Study of Science conferences.

Her dissertation, "Tinkering with Computers, Constructing a Developing Country," is centered on the history of electronic computing in Taiwan during the Cold War. She explores two themes—first, the development discourse that is central to understanding the history of science and technology in Taiwan during the Cold War, and second, the social meanings and the materiality of electronic computing technologies that were critical in shaping that discourse. She argues that tinkering with computing technology is the critical lens for understanding how the ideology of development permeated every corner of post-colonial Taiwanese society.

Tinn will be visiting CBI later this year to conduct research in our International Computing and other collections, and to present her ongoing research to CBI staff.

The Tomash Fellowship is awarded each year to a doctoral student researching and writing a dissertation on the history of computing. CBI is grateful for the generous support of CBI founders Erwin and Adelle Tomash for making this fellowship possible.

Jeffrey R. Yost

Russell and Nikiforova Receive Norberg Travel Grants

Stevens Institute of Technology assistant professor Andrew Russell and Georgia Tech Ph.D. candidate Irina Nikiforova are the 2010-2011 Norberg Travel Grant recipients.

After completing his B.A. (Vassar) and M.A. (University of Colorado) in history, Andrew Russell earned his doctorate in the History of Science, Medicine, and Technology from Johns Hopkins University. He was a post doctoral fellow at the John Hope Franklin Humanities Institute (Duke University) before joining the faculty at Stevens Institute of Technology. He is a past recipient of the CBI Tomash Fellowship and numerous other awards.

Russell will be visiting CBI to conduct research for his current book project, “An Open World: The History and Ideology of Network Standards.” He plans to use the Alex McKenzie Collection of Computer Networking Development Records, the Charles Bachman Papers, and the John Day Papers during his visit. He believes analysis of these records will add greater nuance to his ongoing research on the “standards war” between Internet engineers and their colleagues who were designing Open Systems Interconnection (OSI) network architecture for the International Organization for Standardization (ISO).

Irina Nikiforova is a doctoral candidate in the School of History, Technology, and Society at Georgia Institute of Technology. In 2007 she received her M.S. from this department. She has a B.A. in computer science, and government and international relations from Clark University. She is a past recipient of an ACM history fellowship.

Nikiforova will be visiting CBI to conduct research for her dissertation entitled, “The Turing Prize Scientists: Their Paths to Contribution and Recognition in Computer Science.” She will be researching the ACM organizational records as well as personal papers of a number of ACM leaders (including Edmund Berkeley) at CBI.

Norberg Travel Grants are awarded each year in honor of CBI’s founding director, Arthur L. Norberg.

Jeffrey R. Yost

Exploring the Archives: Resources on Scientific Computing

The following article is the sixth in a series highlighting materials in the CBI collections. The topics in this series have been chosen both for their historical significance as well as to call attention to materials/collections that may not be known to the research community.

The computer arguably has been the most influential scientific instrument of the second half of the 20th century (and beyond). Computers have fundamentally transformed possibilities for the sciences—from geology, physics, and chemistry to cognitive science, genomics, and medicine. In 1998, CBI, under the leadership of then-director Robert Seidel,

conducted a major National Science Foundation (NSF) sponsored research project to study the history of scientific computing, “The Computer as a Scientific Instrument.” The project produced a series of articles on high energy physics (Siedel), taxonomy (Joel Hagan), and cognitive science/artificial intelligence (Stephen Johnson). As a co-PI on this project, I produced an annotated reference book, *A Bibliographic Guide to Resources in Scientific Computing, 1945-1975* (Westport, CT: Greenwood, 2002).

Despite this NSF project’s scholarly and infrastructural contributions to the study of scientific computing, and some important recent research conducted outside of CBI, the history of scientific computing remains a vastly understudied area relative to its scientific and societal importance. The following article draws from my bibliographic book (which includes citations and annotations for more than a thousand articles, books, reports, oral histories, and manuscript collections at CBI and elsewhere), along with some recent follow-up research of our finding aids and collections, to highlight a portion of the great wealth of scientific computing resources held at CBI.

The Design, Development, and Installation of Scientific Computers

CBI has excellent archival resources detailing the research and development of scientific computers. Chief among these is our Control Data Corporate Records and the William C. Norris Papers. Control Data (CDC) was founded as a scientific computing company in 1957 and for decades, under the leadership of William Norris, produced some of the most powerful scientific computers in the world. CDC completed its 1604 computer in 1960. Among the earliest customers was the Atomic Energy Commission, which installed CDC 1604 computers at AEC laboratories to conduct research on high-energy physics. Other CDC 1604 installations included computer laboratories at a number of major universities—where these machines were used primarily for scientific research. The CDC 1604 was followed by the CDC 6600 (announced in 1962 and delivered during 1964), the first computer commonly labeled a “supercomputer.” The first customer of the CDC 6600 was Lawrence Livermore National Laboratory, where the system was used to advance understanding and weapons applications of chemical engineering and high-energy physics. As with the CDC 1604, a number of leading universities in the United States purchased a CDC 6600 for research at their institutions. Among other customers, the National Weather Service moved quickly to install a CDC 6600 (to do advanced computer modeling to more accurately predict the weather). CBI’s Control Data Corporate Records, and to a lesser degree the William C. Norris Papers, contain a plethora of material on the design and development of these powerful CDC scientific computers as well as resources pertaining to the installation and scientific uses of these systems.

Supercomputers were used predominantly, but far from exclusively, for big science at government laboratories and universities. While CDC, and later Cray Research, was an unparalleled leader in supercomputers, other powerful mainframe computers, including IBM Stretch (developed under contract for Los Alamos National Laboratory) and the IBM System 360/90 series, were also significant. IBM scaled back its focus on supercomputers in light of CDC’s and later Cray Research’s success in this area in the 1960s and 1970s, but reemerged as among the international leaders in supercomputing with BlueGene in the last decade. CBI has far less material on IBM, Cray Research, or other manufacturers’ supercomputers than on CDC’s; nevertheless there are a number of reports, manuals, and other documents of interest at CBI on such systems—particularly in CBI’s United States Government Computing Collection.

CBI's other immense corporate collection, the Burroughs Corporation Records, also contains much valuable material on the history of scientific computing. While most of Burrough's pre-World War II accounting machine business was heavily focused on business applications, as it entered into the computer business in the late 1940s it became a major U.S. government contractor providing equipment for a range of scientific and defense applications. This included contributions to the SAGE air defense and ATLAS missile guidance systems. Additionally many of its early computers were used extensively in scientific laboratories, including the Burroughs 205 and 220 systems in the second half of the 1950s. In the early 1960s Burroughs' B5000—noted for its superior integration of architecture and software—was a highly influential computer used extensively in the sciences. CBI's Burroughs Corporate Records (450 cubic feet of material) richly document these systems and many other topics related to scientific computing.

As supercomputers and other mainframes created new possibilities for big science, a range of less powerful machines became fixtures in smaller scientific laboratories in government, universities, and industry during the 1960s and 1970s—minicomputers/mid-range systems. Following a collaboration between MIT's Lincoln Laboratory and computer industry start-up Digital Equipment Corporation (DEC), DEC announced (1961) and delivered (1962) the first “minicomputer,” Laboratory Instrument Computer (LINC). DEC continued as the leader in the field of minicomputing for many years, producing a range of Programmed Data Processor (PDP) systems—computers much smaller and somewhat less powerful than mainframes, but far more affordable and practical (in terms of not just cost, but also space, energy efficiency, etc.) than larger systems. DEC's PDP-8 series was the first major commercial success in this field. This series was introduced in 1965, and in time, had more than 50,000 installations. While the PDP-8 series and other minicomputers were versatile and had a range of data processing and control applications in industry and other settings, a substantial number were housed in laboratories for scientific research. In the second half of 1966 DEC combined the LINC and PDP in one cabinet to produce the LINC-8. CBI has an abundance of reports on DEC and its PDP series in its Market and Product Reports Collection and DEC Users Group Proceedings and Publications. Additionally, in CBI's Computer Product Manuals Collection there is an important 200-page manual on programming the LINC-8.

Scientific Uses of Computers

A wide range of CBI collections contain material on specific computer applications in the sciences. Chief among these are collections focused on two of the major settings of scientific work: the federal government (United States Government Computing Collection) and universities (Academic Computing Collection).

Organizational Resources

The U.S. government, and particularly the Department of Defense (DoD) and the Department of Energy (DOE), were absolutely fundamental to the rapid growth of computing during World War II and the early post-war period. With mainframes costing from many millions of dollars to design and develop, computing technology and the computer industry would have grown at a far more measured pace without government investment. The DoD and DOE were particularly focused on applications for atomic/nuclear weapons and energy—but many types of scientific research occurred at

government laboratories, government-sponsored research on university campuses, nonprofit research corporations (RAND, System Development Corporation, MITRE, and Aerospace Corporation), and other institutions. The materials in CBI's Government Computing Collection were produced by various government departments, funding agencies, and entities including: Advanced Research Projects Agency (ARPA), National Science Foundation (NSF), Atomic Energy Commission (AEC), Atomic Support Agency (ASA), National Bureau of Standards (NBS), Jet Propulsion Laboratory (JPL), Argonne National Laboratory, Oak Ridge National Laboratory, Rome Air Development Center, Naval Ordnance Laboratory, and others. The vast majority of U.S. government-funded scientific research supported work in high energy physics, aeronautics, chemistry, and chemical engineering.

The Academic Computing Collection focuses on resources detailing the production and/or use of computers on college and university campuses. Some of the research, development, and scientific applications of computers were funded by federal government agencies such as ARPA and NSF. The drive to advance the sciences was a fundamental factor in universities designing and building, or acquiring, early mainframe computers and launching computer centers. While the collection is defined around the production of influential systems such as Whirlwind (MIT), ILLIAC (University of Illinois), and ALOHA (wireless network of the University of Hawaii system), there is also meaningful documentation to analyze how anticipated and actual scientific uses influenced initial and subsequent design of systems and the development of software. In all, there is data on computer centers or laboratories at more than 20 universities.

Many organizations and companies that engaged in scientific computing research belonged to one or multiple user group organizations. The IBM user group SHARE was by far the largest. It was founded in the mid-1950s by Los Angeles-area IBM 701 users in aeronautics (including RAND, North American Aviation, and Lockheed Aircraft Corporation), but its scope (range of scientific/industrial fields) and geographic reach quickly expanded. Sperry Univac's users formed a similar group, Univac Scientific Exchange (USE), around the same time. CBI has the SHARE, Inc. organizational records as well as smaller collections on USE, Inc and DEC Users Group. Early scientific and engineering computer user group organizations' members shared ideas, libraries of programming code, other resources, and provided feedback to computer firms that helped facilitate the development of computing and software products and services.

Personal Papers

CBI also holds the personal papers of a number of scientists who engaged in pioneering scientific computing work. Of these, none is more significant than the Wallace J. Eckert Papers. Eckert joined the faculty of the Astronomy Department at Columbia University in 1931. In the 1930s he encouraged IBM to produce a scientific calculator. After leaving to take the position of director of the Nautical Almanac Office of the U.S. Naval Observatory, Eckert returned to Columbia University in the mid-1940s and partnered with IBM in the development of the Selective Sequence Electronic Calculator (SSEC). Eckert was one of the early leaders in scientific computing in astronomy, as is detailed in this collection.

A similarly rich collection is CBI's Margaret R. Fox Papers. The National Bureau of Standards was an important force in early scientific computing and Fox began work in the

Electronic Computers Section of NBS in 1951. From 1966 to 1975 Fox was Chief of the Office of Computer Information at the NBS Institute for Computer Science.

CBI's Carl Hammer Papers document scientific computing in Europe among UNIVAC users. In addition to materials on UNIVAC's European Computer Center in the mid-to-late 1950s, there are records from Hammer's role in serving as manager of RCA's Scientific Computing Applications Department in the early 1960s.

CBI's Cuthbert C. Hurd Papers briefly address his role in the late 1940s as technical research head of the Oak Ridge, Tennessee facility of the AEC. The collection more fully covers Hurd's important role in founding IBM's Applied Science Department.

Meanwhile, CBI's John Purcell Nash Papers touch upon his role as a physicist for Kimberly-Clark, and concentrate on his work as a faculty member in the 1950s at the University of Illinois Digital Computing Laboratory. In this capacity he oversaw the development of ORDVAC and ILLIAC as well as numerical analysis research for the Office of Naval Research (ONR).

Most existing archival records on cognitive science and artificial intelligence (AI) are contained in the special collections of the universities in which pioneering faculty members in these fields conducted their work—from Edward Feigenbaum, John McCarthy, and George and Alexandra Forsythe at Stanford University, and Herbert Simon and Allen Newell at Carnegie Mellon University to Anthony Oettinger at Harvard University, and Joseph Weizenbaum and Norbert Weiner at MIT. Nevertheless, CBI has significant personal papers in these fields, as well as an abundance of reports and grey literature in the National Bureau of Standards Computer Literature Collection (this collection contains important reports on other areas of scientific computing also). With regard to personal papers of AI and cognitive science researchers, CBI has the Calvin N. Mooers papers. Mooers founded and served as research director of Zator Corporation. This company conducted Air Force Office of Scientific Research studies of artificial intelligence in the late 1950s. Of particular importance, the collection documents Mooers' development of the Text Reckoning and Compiling (TRAC) language—an AI text recognition program that integrated elements of LISP and COMIT.

Also of significance, CBI's Gordon D. Goldstein Papers document his work as an electronics scientist with the Naval Ordnance Laboratory in the 1950s and 1960s.

Medical Computer Applications

Computer applications in medicine were smaller in scale and began roughly a decade later than in the physical sciences. Like other areas of scientific computing, government funding was important—but rather than coming from a range of organizations, most federal funding for medical computing research was from the National Institutes of Health (NIH). Far fewer archival resources exist on medical computing and bioscience computing than most other areas of scientific computing.

CBI has two significant collections pertaining to medical computing, the Claire K. Schultz Papers and the Willis H. Ware Papers. Shultz was fundamental to the development of automated computing systems for Merk, Sharp, and Dome in the 1950s, and subsequently,

at Sperry Univac. In the early 1960s Schultz contributed to the development of MEDLARS/MEDLINE—a critical tool to conduct medical research.

The Willis H. Ware Papers include an abundance of data on his work and leadership on several government commissions in the early 1970s examining government records and privacy (this work led to the Privacy Act of 1974 and follow-up initiatives). Along with analyses and testimony of many experts on financial records privacy, there is much material on privacy and medical records.

Oral Histories Addressing Scientific Computing

CBI has many oral history transcripts that provide important data on the history of scientific computing—particularly in the physical sciences. Of particular note are oral histories with: Carl Hammer (on working at Columbia’s Thomas J. Watson Scientific Computing Laboratory in the 1950s), Nicholas Metropolis (on computer applications for his and others scientists’ work at Los Alamos National Laboratory), Stanislaw Ulam (on computer programming work for the Super—hydrogen bomb—project at Los Alamos), Saul Amarel (on the relationship of AI to computer science at various institutions), John McCarthy (on LISP, robotics, and other AI topics), Raj Reddy (on AI and speech recognition), and Terry Winograd (on work with Marvin Minsky and other AI researchers at MIT and Stanford).

Even though the term “scientific computing” appears in none of the 200 collection titles in the CBI archives and is rarely used as a descriptor in finding aides—CBI has a great abundance of material on this understudied and important topic. Additionally, many university special collections throughout the United States contain rich materials on scientific computing developments at their institution. This is particularly true at some of the early leaders in computer research and the emerging discipline of computer science, such as MIT, Stanford University, Columbia University, Harvard University, Carnegie Institute of Technology (now Carnegie-Mellon), University of Illinois, University of Michigan, Case Institute of Technology, and University of Pennsylvania. Additionally, the Library of Congress (Vannevar Bush Papers, J. Robert Oppenheimer Papers, etc.) and the American Institute of Physics’ Center for the History of Physics hold particularly strong manuscript resources on scientific computing.

Jeffrey R. Yost

History of Computing Workshop in Austin

University of Texas, School of Information professor William (Bill) Aspray and CBI Associate Director Jeffrey Yost co-organized/co-led a workshop entitled, “New Voices, New Topics in the History of Computing and Information” at the University of Texas-Austin, April 2-3, 2010.

The workshop was designed to bring together scholars conducting cutting-edge research in new areas of the history of computing and information who have not previously published articles in *IEEE Annals of the History of Computing*. The revised papers from the event will be submitted for consideration to *IEEE Annals* for a special issue (April 2011) of the journal edited by Aspray and Yost.

On Friday, April 2 half of the participants presented their papers, with intensive discussion and analysis following each of the presentations of the pre-circulated manuscripts. This was followed by a workshop dinner at a nearby Indian restaurant that evening. The following day was devoted to presentation and discussion of the other half of the papers.

The papers explored many rich and previously unstudied or understudied topics—from the history of embedded computing (slot machines and hearing aids) and tinkering with microcomputers to computer applications in medical diagnosis and therapeutics.

The authors/titles included: Mara Mills (University of Pennsylvania), “Hearing Aids and the History of Electronics Miniaturization”; Joseph November (University of South Carolina), “Yesterday’s Computerized Medicine, America’s Future Medicine”; Christina Turdean (University of Delaware), “More Than Just Spinning Their Wheels: Casinos, Gamblers, Regulators and the Creation of the Digital Slot Machine (1950-1990)”; Honghong Tinn (Cornell University), “The Controversy Over Tinkering With Microcomputers in Taiwan, 1980-1984”; Patricia Galloway (University of Texas), “Personal Computers, Microhistory, Shared Authority: Documenting the Inventor—Early Adopter Dialectic”; and George Royer (University of Texas), “The Origins and Evolution of the American Videogame Console: The Rise of the Entertainment Computer.”

In addition to the workshop presenters and organizers, a number of faculty members of Texas’ School of Information attended and participated in the discussions, adding greatly to the workshop.

CBI and *IEEE Annals* are grateful to Bill Aspray and the School of Information at the University of Texas for sponsoring and hosting this highly engaging event.

BHC 2010

The Business History Conference held its annual meeting in Athens, Georgia, March 25-27, 2010. This year's theme—which was particularly broad, “The Business History of Everything”—was chosen to highlight the breadth and inclusiveness of business history and its premiere conference. The trend toward ever greater focus on the social history of business was evident, as there were a greater percentage of papers on African American business history and gender/women and business than previous conferences. The conference program included several papers on the history of computing.

CBI Associate Director Jeffrey Yost presented a paper entitled, “Programming Enterprise: Women Entrepreneurs in Computer Services, 1965-1985” in the session “The Business History of Women: Women, Work, and Female Entrepreneurship.” Also in this session were three papers on various aspects of women's history and entrepreneurship in 19th century America by Susan Ingalls Lewis (SUNY-New Paltz), Laura Kelley (Tulane University), and Susan Gensemer (Syracuse University). Ohio State's Mansel Blackford chaired the session and University of North Carolina-Ashville's Pamela Nickless provided the commentary. A revised version of Yost's paper will be published in the forthcoming volume edited by CBI Director Thomas Misa, *Gender Codes: Why Women Are leaving Computing* (IEEE Computer Society/Wiley, 2010).

Other papers on or related to the history of computing included: Christina Turdean's “From Catwalks to Video Cameras: Casino and the Business of Surveillance, 1950-1980,” and Andrew Mead McGee's “Confronting Automation: Enlisting Economists to Address Great Society Fears of Technology and Unemployment.”

“The Machine That Changed the World: ACM and the History of Computing, 1947-2010”

From January 11 through March 5, the main exhibit in the Andersen Library gallery was entitled, “The Machine That Changed the World: ACM and the History of Computing, 1947-2010.” The exhibit, curated by CBI assistant archivist Stephanie Crowe, highlighted historically significant content from the recently processed [Association for Computing Machinery Records](#) as well as associated collections documenting the history of ACM. It covered eight distinct themes: Origins and Founders, Membership, Special Interest Groups (SIGs), Conference Activity, Awards and Honors, Education and Outreach, Publication Activity, and Planning and the Future.



The Origins and Founders case contained documents and photographs from the early years of ACM, including the official notice of its organization, early meeting reports, one of the first constitutions and bylaws, and images of founding officers such as Edmund Berkeley. It also included some of the first work accomplished by the association, such as the *First Glossary of Programming Terminology* published in June 1954. In the Membership section were materials about ACM's membership activities – both promotional activities by the parent organization and information about ACM's members. Items included a membership directory from 1948, membership cards and handbooks, membership brochures, and images of ACM's membership booths at conferences.

The section on the SIGs contained a snapshot of materials documenting individual SIGs, such as SIGART (artificial intelligence), SIGGRAPH (computer graphics), and SIGPLAN (programming languages). SIGGRAPH in particular is becoming well documented by collections at CBI, not only through the ACM Records but by associated personal papers and organizational records. This section of the exhibit also included overall information about and guides to the SIGs as a whole.

Conference Activity contained two sections. The case on general conference activity included programs, schedules, posters, and photographs representing various types of conferences in which ACM was involved (for example, the International Computer Chess Championships). The exhibit also included a case on Milestone Years, which contained materials from milestone and anniversary conferences from ACM's twentieth anniversary through its fiftieth. The Awards and Honors section contained documents, photographs, and artifacts representing prizes that have been awarded by ACM. A highlight of this case was Charles Bachman's 1973 Turing Award certificate.

The section on Education and Outreach also included two sections. The main case contained representative documentation on work that ACM has done within the field of education (including, for example, a sample high school computer science curriculum) and

with the community at large (including outreach to the vision-impaired). We also included a case on *The Machine That Changed the World*, a television series sponsored in part by ACM in 1992 on the history and future of computing.



A section on Publication Activity displayed sixteen books published by ACM Press on a wide variety of topics within the field of computing and information technology. Finally, the Planning and the Future case encompassed documentation on ACM's attempts to define itself through the years and its efforts to plan for the future of the computing field.

Exhibit guides, containing a more detailed description of contents and a summary of each section, are available for anyone interested – just send us an email. Additionally, an online exhibit with the above content and some additional materials is in process and will be shortly be available on CBI's website. Please contact us for more information about the ACM-related collections held at CBI.

Collections Used for Exhibit:

[Association for Computing Machinery Records \(CBI 205\)](#)

[Edmund C. Berkeley Papers \(CBI 50\)](#)

[CBI Reference Files \(CBI 24\)](#)

[Information Processing Glossaries \(CBI 92\)](#)

[Carl Hammer Papers \(CBI 3\)](#)

[Walter Carlson Papers \(CBI 114\)](#)

[Association for Computing Machinery Publications \(CBI 110\)](#)

[Charles W. Bachman Papers \(CBI 125\)](#)

Stephanie Crowe

ACM History Committee at CBI (25-26 February 2010)

The Association for Computing Machinery (ACM) History Committee held its annual working meeting in Andersen Library during 25-26 February 2010. The meeting was arranged so that committee members could view the CBI exhibit “The Machine that Changed the World: ACM and the History of Computing, 1947-2010.” For this and earlier CBI exhibits, see <www.cbi.umn.edu/exhibits/index.html>.

This exhibit has special meaning for the committee members, since they were the original force that prompted ACM headquarters staff to develop a plan for archiving its records. With financial support from ACM, CBI was able to hire a project archivist, Lora Bloom, who organized the records and prepared them for public access (see the Fall 2010 *Newsletter*). During breaks, the group toured the CBI office suite as well as Andersen Library’s state-of-the-art underground archival storage. CBI is actively working with several ACM members in efforts to fill out the documentary record of the organization.



Left to right: Tom Misa (CBI), Martin Campbell-Kelly (Warwick), Len Shustek (Computer History Museum), Rick Snodgrass (Arizona), Mary Hall, chair of ACM-HC (Utah), David Wise (Indiana), Carol Hutchins (Courant Institute, NYU), Mark Scott Johnson (retired). [Face in blue background is Edmund Berkeley, a founder of ACM in 1947 and author of Giant Brains (1949). Berkeley’s papers are at CBI.]

News from the Archives

Staff Changes

I will be leaving my position as Archivist for CBI this spring, in late May or early June. Stephanie H. Crowe will replace me as CBI's Archivist. I am not going far (in fact my office will be right next door to CBI, in room 213), assuming the position of Head of a new unit in Archives and Special Collections called Special Collections, Rare Books and Manuscripts. This is a merger of two previously separate units, the Manuscripts Division and Special Collections and Rare Books.

I have truly enjoyed my time at CBI and have grown considerably through my interactions with CBI's staff, researchers, and donors. I am pleased that I will remain close to CBI and look forward to continuing to work with Stephanie in the context of the larger Archives and Special Collections Department. Stephanie has been a wonderful colleague to work with (as I'm sure many of you know for yourselves) and I look forward to seeing her leadership with this amazing collection.

Web Exhibits

CBI has been working to translate physical exhibits that we have staged within the suite or in the Andersen Gallery on the first floor into long-term, virtual exhibits available to a wider audience. On the CBI website you will now find a link on the left for "Exhibits." This will take you to small exhibits featuring the Y2K exhibit, curated by Stephanie Crowe, and the Social Issues in Computing exhibit, curated by Arvid Nelsen. A larger resource featuring text and scans from 2008's *Gendered Bits* exhibit – as well as a virtual tour of the exhibit as it appeared in the Andersen Gallery – is in process. There is actually quite a bit more content from *Gendered Bits* available online than may at first appear, so please explore. Once all of the content is finalized, a new interface will be added. The web version of this last winter's exhibit on the history ACM is also in process.

<http://www.cbi.umn.edu/exhibits/index.html>

R. Arvid Nelsen

Recent Publications

Abbate, Janet. "Privatizing the Internet: Competing Visions and Chaotic Events, 1987-1995." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 10-22.

Bachman, Charles W. "The Origins of the Integrated Data Store (IDS): The First Direct-Access DBMS." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 42-54.

Bassett, Ross. "Aligning India in the Cold War Era: Indian Technical Elites, the Indian Institute of Technology at Kanpur, and Computing in India and the United States." *Technology and Culture* 50:4 (October 2009): 783-810.

Bergin, Thomas J. and Thomas Haigh. "The Commercialization of Database Management Systems, 1969-1983." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 26-41.

- Brooks, Frederick P. "Stretch-ing Is Great Exercise—It Gets You in Shape to Win." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 4-9.
- Brueck, Robert L. "System 2000: The MRI Systems Corporation." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 76-86.
- Brugger, Neils, ed. *Web History*. (New York: Peter Lang Publishing, 2010).
- Campbell, Scott M. "On the Absence of Obsolescence." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 118-120.
- Clark, Martyn. "State Support for the Expansion of UK University Computing in the 1950s." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 23-34.
- Edwards, Paul. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*. (Cambridge, MA: MIT Press, 2010).
- Haigh, Thomas. "How Data Got Its Base: Information Storage Software in the 1950s and 1960s." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 6-25.
- Henin, Silvio. "Two Early Italian Key-Driven Calculators." *IEEE Annals of the History of Computing* 32:1 (January-March 2010):34-43.
- Klepper, Steven. "The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit." *Journal of Urban Economics* 67:1 (January 2010): 15-32.
- Kruntorad, Judith M. "History of the CA IDMS Database Management System." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 100-106.
- Laws, David A. "A Company of Legend: The Legacy of Fairchild Semiconductor." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 60-74.
- Light, Jennifer. "Taking Games Seriously." *Technology and Culture* 49 (2008): 347-375.
- Lundin, Per. *Documenting the Use of Computers in Swedish Society Between 1950 and 1980*. (Stockholm: KTH Royal Institute of Technology, 2009).
- Maguire, John Norris. "Adabas: Software AG of North America." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 92-99.
- McGee, William C. "The Information Management System (IMS) Program Product." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 66-75.
- Mounier-Kuhn, Pierre-Eric. *L'Informatique en France: De la Second Guerre Mondiale au Plan Calcul*. (Paris: PUPS, 2010).
- Nies, Thomas M. "Cincom Systems' Total." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 55-61.
- Patrick, Robert L. "IMS @ Conception." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 62-65.

Stevens, Orrin Jr. "The History of Datacom/DB." *IEEE Annals of the History of Computing* 31:4 (October-December 2009): 87-91.

Sumner, James. "Standards and Compatibility: The Rise of the PC Computing Platform." *History of Technology* 28 (2008): 101-127.

Tinn, Honghong. "Cold War Politics: Taiwanese Computing in the 1950s and 1960s." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 90-92.

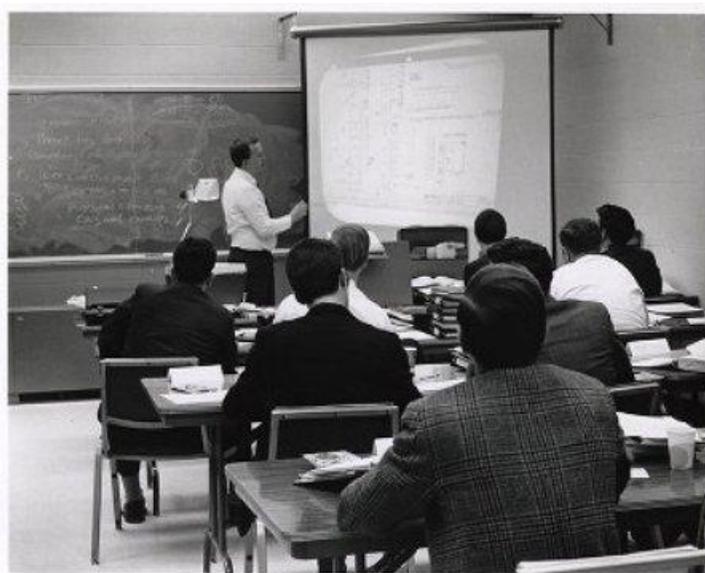
Van Laer, Arthe. "Developing an EC Computer Policy, 1965-1974." *IEEE Annals of the History of Computing* 32:1 (January-March 2010): 44-59.

Zuse, Konrad. *Der Computer: Mein Lebenswerk* (Berlin: Springer, 2010).

Compiled by Jeffrey R. Yost

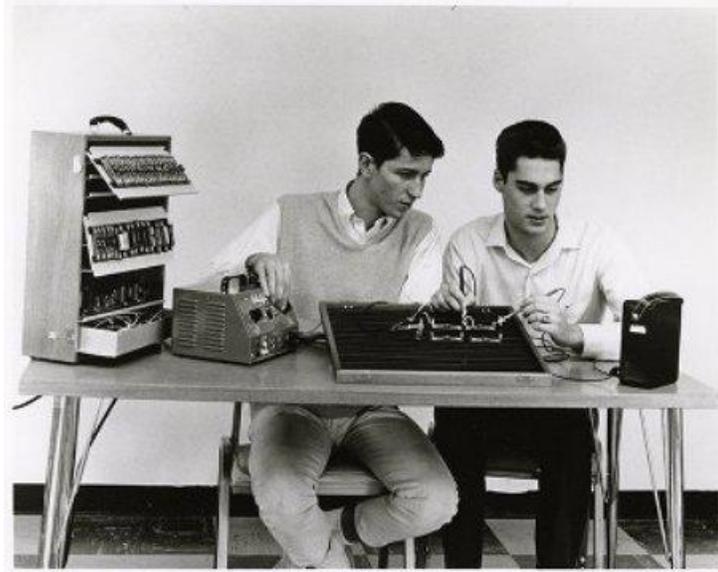
Featured Photographs: Control Data Institute

The Control Data Institute (CDI) began in 1964 as a response to the rapid development of the computer industry during that era. Companies such as the [Control Data Corporation \(CDC\)](#) were unable to find enough trained computer technicians to work in various areas of the field. A history of CDI written several decades later indicates that at the time, computer companies relied on the individual re-training of electronic technicians, which was not a cost-effective process. According to this history, CDC "concluded that the only practical solution to the problem was the large scale training of entry level computer technicians – as a business...Control Data would enroll them as students, train them for a price and then compete for their services in the open market."



*Control Data Institute Classroom, 1970.
From Control Data Corporation Records (CBI 80).*

The first CDI center opened in downtown Minneapolis. Its first course, Computer Technology, began on September 29, 1965. CDI quickly expanded to Los Angeles and Arlington, Virginia, followed in the next few years by a number of other U.S. and international locations. By 1969, there were sixteen domestic and five foreign sites. At the same time, it broadened and experimented with new course offerings.



*Control Data Institute Circuitry Testing, 1966.
From Control Data Corporation Records (CBI 80).*

The Charles Babbage Institute holds the corporate records of the Control Data Corporation, the parent company of CDI. The CDC Records contain further historical information about CDI, but the records do not have individual student transcripts or attendance information.

Stephanie Crowe