Fiscal Year 2001 ended with steady progress by CBI in historical research, collection development, publication, and outreach. Settled into its new quarters for the first full year, CBI staff turned its full attention to pursuing the Institute's mission. With help from the University of Minnesota and the Charles Babbage Foundation, CBI expanded the range of its work in each of its principal areas of activity, as well as engaged in some new ones. Highlights of the year include:

- Holding a conference at the Xerox Palo Alto Research Center (PARC) on the Emergence of the Software Product in the 1960s. (Sponsored by the Tomash Family Foundation)
- Developing and implementing a new, upgraded CBI Web site
- Initiating and preparing for the launch of an on-line journal of software history
- Conducting and transcribing oral histories with pioneering figures in software history
- Publishing four CBI Newsletters and an archives brochure
- Developing a Burroughs photographic image database now available on the CBI Web site
- Preparing five articles for publication in various journals, with continuing progress on two book manuscripts
- Presenting research at a number of national and international professional conferences
- CBI accomplished each of these results as part of continuing programs. Besides pursuing these programs, CBI staff attended to over 350 individual patrons, which produced over 1,500 transactions for delivery off-site. In addition, there were two dozen researchers at the Institute, with innumerable service requests during their extended stays. The CBI Newsletter called attention to many aspects of the historical research and archives programs

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CBI Launching Two New Electronic Publications


Accounts and analysis of the development and use of software technology have long taken a back seat to the history of computer hardware. The new journal intends to address this deficiency and better balance our understanding of the history of information technology over the past half century. As the subtitle of *Iterations* suggests, the journal will publish articles on the history of software drawing from a wide-range of different perspectives. The journal welcomes submissions analyzing the technical, economic, industrial, institution, social, and cultural history of software, as well as first hand accounts detailing the

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CBI Newsletter Switching to an Electronic Format

This issue of the *CBI Newsletter* will be the last to be published in a paper format. Future issues of the *CBI Newsletter* will be published electronically on the CBI Web site at http://www.cbi.umn.edu/newsletter

This change will allow the CBI staff to take advantage of the many opportunities of an electronic format, and offer the widest possible distribution.

Please send your email address to CBI (cbi@tc.umn.edu) to be added to the e-list to receive notice of the availability of future issues of the *CBI Newsletter*.

All back issues of the *CBI Newsletter* (1979 to the present), are now available in PDF format on the CBI Web site. Users can read of past CBI historical research projects, conferences, acquisitions and other news on the history of information processing over the past two decades.
Recent Publications

Abate, Janet, “Government, Busi-
ness, and the Making of the Internet,”
Business History Review 75:1 (Spring
2001) 147-176.

AIP Study of Multi-Institutional Col-
caborations. Final Report. (College Park: American Institute of Physics, May 2001)
[AIP reports are available at: http://
www.aip.org/history/pubslist.html#collabs].

Berlin, Leslie R., “Robert Noyce and
Fairchild Semiconductor, 1957-1968”
Business History Review 75:1 (Spring

Campbell-Kelly, Martin. “Not Only
Microsoft: The Maturing of the Per-
sonal Computer Software Industry, 1982-1995”
Business History Review 75:1 (Spring
2001) 103-146.

Cortada, James “Think Piece: Is the
Annals at Risk of Falling Behind?” IEEE
Annals of the History of Computing 23:2
(April-June 2001) 88.

Gerovitch, Slava. “Mathematical
Machines of the Cold War: Soviet Comput-
ing, American Cybernetics and Ideological
Disputes in the Early 1950s” Social Studies

Grier, David Alan. “The Rise and Fall of
the Committee on Mathematical Tables
and Other Aids to Computation” IEEE
Annals of the History of Computing 23:2
(April-June 2001) 38-49.

Hogan, Joel B. “The Introduction of
Computers Into Systematic Research in
the United States during the 1960s.”
Studies in History and Philosophy of
Biological and Biomedical Sciences
32C:2 (June 2001) 291-314.

Haigh, Thomas. “Inventing Informa-
tion Systems: The Systems Men and the
Computer, 1950-1968” Business History

Hook, Diana H., Jeremy M. Norman,
and Michael R. Williams. Origins of
Cyberspace: A Library on the History of
Computing and Computer-Related
Telecommunications (San Anselmo, CA:

John, Richard R. “Rendezvous with
Information? Computers and Communication
Networks in the United States”
Business History Review 75:1 (Spring
2001) 1-14.

Mareba, Franco, et al. “Competition
and Industrial Policies in a ‘History
Friendly’ Model of the Evolution of
the Computer Industry” International
Journal of Industrial Organization 19:5

Malone, Michael S. Betting it All: The

Marsch-Jankowski, Rebecca; Stuart
Macdonald; and Dimitris
Assimakopoulos, “In Bed With a
Stranger: Finding Partners for Collaboration
in the European Information Tech-
ology Programme” Science and Public
Policy 28:1 (February 2001) 68-78.

Miroswski, Philip. Machine Dreams:
Economics Becomes a Cyborg Science
(New York: Cambridge University Press,
2001).

Moores, Calvin N. “The Computer
Project at the Naval Ordnance Labora-
tory” IEEE Annals of the History of
Computing 23:2 (April-June 2001) 51-
67.

Rojas, Raul. Encyclopedia of Comput-
ers and Computer History (London:
Fitzroy Dearborn, 2001).

Shoup, Richard. “SuperPaint: An
Early Frame Buffer Graphics System”
IEEE Annals of the History of Computing

Systems: An Anecdotal and Historical
Overview” IEEE Annals of the History of

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Recent Archives Acquisitions

CBI acquired several important
research collections during the
spring and summer of 2001. Particularly
notable among them are the personal
papers of William C. Norris, founder of
Control Data Corporation; the papers of
information security expert Donn B.
Parker; the research files of software
industry analyst Curt A. Monash; the
personal papers of Gertrude Blanch, who
directed the Mathematical Tables Project
for the National Bureau of Standards; the
John Day Papers, which document the
development of early Internet protocols;
and the corporate records of MRI
Systems, Inc. An important accession to
the Willis Ware Papers was also
acquired, and CBI is especially pleased to
announce that an oral history interview
with Adelle Tomash was added to the
oral history collection. As these materi-
als are processed and made ready for
research, they will be announced in the
CBI Newsletter.

Wanted: ICP Quarterly and ICP
Software Newsletter

International Computer Programs,
Inc., based in Indianapolis, published a
series of directories, variously titled the
ICP Quarterly, the ICP Directory,
Business Software Review, and others,
from 1967 through the 1990s. Although
the ICP publications were widely
distributed, they are now quite scarce.
The CBI archives is missing many issues
of this important publication. If you
have copies of the ICP publications and
would be interested in donating them to
the CBI archives so that an international
community of researchers can benefit
from them, please contact Elisabeth
Kaplan at kapla024@umn.edu
Burrow Before Web: Gopher and the Recent History of the Internet

Shortly after joining the staff of the Charles Babbage Institute, Software History Project Manager Philip Frana began casting about for a short-term research project in the history of computer software. He did not have to look very far. CBI's director, Arthur Norberg, suggested looking at the University of Minnesota's Internet Gopher or Lumina, the university's Digital Library Gateway. "At the time I knew a lot more about Gopher, having burned the midnight oil using it in the computation center at Iowa State," Frana remembers.

Frana seized upon this unique opportunity to study Gopher, a protocol that democratized the information handling power of the Internet. He contacted two of the inventors of Gopher, Mark McCahill and Paul Lindner and began collecting primary and secondary literature on the subject, including published articles, newspaper clippings, relevant requests for comments (RFCs), a taped interview, and the rapidly-disappearing material found in gopherspace menus. In all, Frana submitted more than 900 pages of material on Internet Gopher for deposit in the Software History Project archive and in the University Archives. An oral history with McCahill has also been conducted.

The history of Internet Gopher is brief and star-crossed. When McCahill and company released Gopher in 1991, they had no idea it would rise in popularity so quickly. "The project started in a funny way," McCahill recalls. "The university had just put in a network. There was a fashionable idea at computer centers then that there should be a campus-wide information system, a super bulletin board for the whole campus. Most of the universities that were building campus-wide information systems thought it

Tomash Fellows Adding Value to the Business History of Computing

This past spring saw the publication of a special issue of Business History Review on computers and communications networks. The issue, edited by University of Illinois-Chicago professor of business history Richard R. John, features articles by three Tomash Fellows, Janet Abbate, Leslie Berlin, and Thomas Haigh, and a fourth by longtime friend of CBI and leading historian of computing Martin Campbell-Kelly. Abbate, Berlin, and Haigh's articles all draw significantly on their dissertation research, and the journal's cover, and several of the contributions, include images from the CBI archives.

John's introduction provides a brief historiographical analysis on the business history of computing, framing much of the discussion on a fundamental issue raised by University of California sociologist Manuel Castells, the extent to which recent developments in information technology mark a decisive break with the past. While none of the articles focus on this issue directly, John demonstrates how they all contribute to

Iterations
Continued from page 1

Iterations: An Interdisciplinary Journal of Software History is now

seeking article submissions. Iterations provides an outlet for scholarly articles on software history, a forum for first-hand accounts of significant events and developments in software, reviews, and feedback from readers and authors.

Articles should be a minimum of 5,000 words. Inquiries and submissions should be sent electronically (MS Word attachment is the preferred form for submissions) to cbi@tc.umn.edu.

Inquiries can also be made by contacting Jeffrey Yost or Philip Frana at (612) 624-5050, sending email to cbi@tc.umn.edu, or mailing the Institute (CBI's address is on page 2).
CBI Annual Report
Continued from page 1
during this past year, but it is useful to summarize CBI's accomplishments here.

Historical Research

At CBI, we pursue historical research of several kinds for multiple purposes. First, there is the traditional project wherein we seek to interpret significant developments in information processing. These projects tend to be long-term enterprises that are completed over several years. Examples of present CBI projects are Jeffrey Yost's bibliographical and historiographical examination of scientific computing prepared as part of a CBI NSF-sponsored study of the "Computer as a Scientific Instrument," and Arthur Norberg's study of ERA and Eckert-Mauchly Computer Company and the beginnings of the computer industry in the United States. Other efforts include Philip Frana's history of the development of Gopher at the University of Minnesota and a study by Norberg on table making and the calculating efforts of astronomers of the 18th and 19th centuries prepared for a conference at Oxford University, an essay which will be published in the conference proceedings.

Second, CBI historians engage in projects whose results aid the research and writing of others. Much of the work of the CBI NSF-sponsored Software History Project fits into this category. The project consists of three primary components: producing an on-line software dictionary in cooperation with technical committees from academia and industry, conducting oral histories with software pioneers, and publishing an electronic software history journal.

The on-line software history dictionary proceeded apace with the assemblage of eight technical committees to oversee the preparation of entries. More than 150 pages of entries on software technologies and techniques were prepared during the year. Work on these entries inside CBI has been useful in other areas of CBI activities as well, such as identifying new collection areas. CBI staff also compiled an extensive bibliography of more than 1,800 resources on software history that is now available on the CBI Web site.

With regard to oral histories, the first seven interviews with software pioneers were completed. These interviews, soon to be ready for research, were conducted with Edward Feigenbaum, Richard Hedger, Douglas Hofstadter, Peter Patton, Herb Pelmar, Ben Persons, and Douglas Ross. Yost reported on the project at the annual conference of the American Association for History and Computing, and a revision of his address was published in the Journal of the Association for History and Computing.

To advance the final component of the project, Yost and Frana prepared the launch of CBI's new on-line journal of software history, appropriately titled Iterations. An editorial board has been assembled and policies formulated. This distinguished board of historians, computer scientists and individuals from industry includes Martin Campbell-Kelly, Mary Croarken, Peter Denning, Bernard Galler, Martin Goetz, Casimir Kolakowski, Michael Mahoney, and Raul Rojas. The journal will be launched in FY2002 and will take full advantage of the medium to establish ongoing discourse between authors and readers. Iterations will serve much the same function as a professional conference, providing a forum for high-quality research, and encouraging feedback for polishing arguments and presentation.

Third, cooperation between the archivists and historians at CBI led to evaluations of significant developments in new areas for collecting. We have been improving CBI's industry database to add information to our international catalog of records collections.

Preparatory investigations for oral histories, conducting the interviews, and many other historical research activities contribute to this effort. With the help of several CBF Trustees, we have been emphasizing some traditional collecting areas, notably software and software companies, analyses by market research firms, and networking. We also opened some new areas to target collecting activity, including: security, professional services firms, and intellectual property.

Fourth, as an outgrowth of the Paderborn conference on "Issues in the History of Software" (April 2000), in September 2000 CBI sponsored a conference devoted to the development of the early software industry. A large number of software pioneers spoke at the conference, including, keynote speaker, Charles Wang (Computer Associates), Martin Goetz, John Postley, Watts Humphrey, Peter Cunningham, Walter Bauer, Burton Grad, Larry Welke, Duane Whittow, Luanne Johnson, and historians Martin Campbell-Kelly and Steve Us Fixedman. Fundamental issues examined included the emergence of software products in the 1960s, the unbundling controversy, and the rapid growth of the industry after unbundling. At the conclusion of all the sessions, there was lively participation by the audience, most of whom, like the speakers, were distinguished individuals relating valuable experiences and perspectives from their involvement in the early history of the software business.

Unveiling of an Upgraded Web Site

CBI has had a digital presence for over a decade. In the early years, some of CBI's materials could be found using Gopher, a University of Minnesota developed Internet application. As the Internet exploded, CBI took full advantage and enhanced its site to provide quality research tools and materials on the Web. The maintenance of the CBI Web site has become a major activity at the Institute. This year, the staff developed and implemented a new, more comprehensive, and effective Web site with greater search capability for examining the increasingly large body of records, finding aids, oral histories, and photographs in the CBI collection. New capabilities and materials include a photograph database (sponsored by the Unisys Corporation), information about CBI activities across a broad range of subjects, early results of the Software History Project, other historical research, and information about the staff. A newly designed search engine supplied by the University Libraries with greater functionality allows more elaborate searching of the site. In addition, CBI staff prepared a new, up-to-date brochure describing the archives holdings. The
brochure provides a different and complementary perspective of the collection to that presented on the Web site.

Archives Activities

Collection development during the year can be categorized into three areas. First, we continued to acquire quality collections that complement existing CBI holdings, and offer new opportunities for historical research and writing. CBI added approximately 45 new accessions in FY2001. Among these collections are:

ADR, Software Product Division records
Martin A. Goetz papers
Curt A. Monash papers (market research)
Ada programming language materials
International Y2K Cooperation Center records
Willis Ware papers (significant additions)
Eugene M. Cook papers

We also received two collections related to Soviet computing (Seymour Goodman) and mathematics (American Institute of Physics).

Second, CBI staff either intensified or began searches in several new collecting areas. Among these areas are:

Market research materials
International computing
Enterprise software
System management tools
Professional services firms
Artificial Intelligence
Search technology
Networking
Computer security, computer crime
Software industry, services and products
Software patenting, intellectual property
Mergers and acquisitions

Third, more collections became available for research and interpretation as processing of previously received collections continued. A wide variety of collections received attention, from Auerbach Associates to Burroughs to the Goetz Papers, as well as much preparatory work for mounting materials like the oral histories on the CBI Web site.

Outreach and Service to the Community

Tomash Fellows: Last year's Tomash Fellow, Nathan Ensenganger, recently completed his dissertation, which explored the occupational development of the computer programming profession and the emergence of technological and managerial responses to the so-called "software crisis" of the late 1960s. Some of his findings were presented in a paper he wrote with William Aspray, the first Babbage Fellow, a paper they presented at the Paderborn, Germany, software history conference cosponsored by CBI. Nathan is now on the staff of the University of Pennsylvania.

We awarded the 2001-2002 Tomash Fellowship to Rachel Youd of Oxford University. Ms. Youd is investigating the types, content, and intended function of Web pages over time, the changing demographics of Internet users, and frequency and types of Internet use in the U.S. and Japan. Youd, a Rhodes Scholar, Truman Scholar, and winner of the United States Congressional Gold Award, worked as a consultant to the United States Department of Defense (on the Japan Desk) immediately following the completion of her undergraduate degree in East Asian Studies at Stanford University.

CBI International Scholar: Corinne Schlombs of Bielefeld University served a six-month honoray fellowship at CBI while examining the history of the Logic Theorist of Herbert Simon and Allen Newell and the changing views of their development and impact over time. Schlombs returned to Bielefeld to complete her Ph.D. dissertation in sociology studying how the concept of human intelligence has changed over the last five decades in relation to computing technology.

Publications by Individual Staff Members


Carrie Seib Joins CBI as Assistant Archivist

Carrie Seib has a MA in Library and Information Studies with a specialization in Archival Management from the University of Wisconsin-Madison, and a BS in English from the University of Wisconsin-La Crosse. She has worked in various capacities at the State Historical Society of Wisconsin, most recently as project archivist managing a federally funded archival mentoring program. She has also worked on the archives desk at the La Crosse Public Library, and is a member of the Society of American Archivists, the Midwest Archives Conference, and the American Library Association.

Elisabeth Kaplan

CBI is delighted to announce that Carrie Seib joined the staff as Assistant Archivist in May 2001. Carrie

CBI Hires Two New Graduate Research Assistants on Software History Project

The Charles Babbage Institute welcomes two new graduate research assistants who will be working on CBI’s NSF-sponsored Software History Project during the current academic year, Juliet Burba and Karin Matchett. Both have advanced to candidacy for their doctorate in the Program of the History of Science and Technology at the University of Minnesota.

The Institute also wishes to extend thanks to Elisabeth van Meer who served admirably as the graduate research assistant last academic year and is now researching and writing her dissertation in the Czech Republic.

Burroughs Corporation Image Database

CBI is pleased to announce that the Burroughs Corporation image database is now available on the CBI Web site. The database includes over 500 images from the Burroughs collection, depicting the entire visual history of Burroughs from its origin as the American Arithmometer Corporation in 1886 to its merger with the Sperry Corporation to form the Unisys Corporation in 1986. The database, which was created with funding from the Unisys Corporation, went online in July 2001. It permits browsing and retrieval of the images and can be searched by subject, personal and corporate names, geographical locations and dates. Visitors to the Web site can contact the CBI archives to request publication-quality prints or scans of images in the Burroughs database. http://www.cbi.umn.edu/IMAGES/index

Elisabeth Kaplan

Burroughs employees at a trade show in Zurich, 1950

Don't Forget
to send CBI your email address to receive notice of the next and all future issues of the CBI Newsletter on the CBI Web site. This issue (Volume 23:4) will be the last published in print format. (cbi@tc.umn.edu)
Gopher

would be a good thing to centralize [them].” Instead, the Gopher Team decided to install a distributed network. “We got the idea that maybe we should let the people, who create the information, publish it under their own computers,” notes McCahill.

Gopher use declined rapidly after the implementation and adoption of Web browsers like NCSA Mosaic in 1992. Web surfers replaced “gophermeisters” due to the introduction of visually rich pages and a new way to negotiate through torrents of information: hypertext. Still, McCahill—who is often asked if he missed his chance to found a company like Netscape—defends his text-only, commercial-free Internet application. “The Web means there’s more advertising in the world than information systems,” he says in an interview with the St. Paul Pioneer Press. “I think I’m in the library business, not the billboard and ad business.”

Philip L. Frana

Recent Publications

Continued from page 2


Comp. by Jeffrey R. Yost

Business History of Computing

Continued from page 3

its understanding by broadening analysis beyond firms and industries to infrastructure.

Haigh’s article concentrates on the promotion of management information systems in the 1960s by academics, journalists, computer vendors, and consultants. Early MIS, like the “systems men’s” efforts to displace accountants from the top rung of the corporate ladder in the 1950s, was unsuccessful. Haigh, however, demonstrates how many of the goals of corporate computing in the 1990s, such as enterprise resource planning, the heightened status of chief information officers (CIOs), and the establishment of data warehouses, had significant precursors in the ideas and agendas of early MIS proponents three to four decades earlier.

Leslie Berlin’s study of Robert Noyce and Fairchild Semiconductor follows. She seeks a middle ground that avoids both the hagiography often displayed by journalists in declaring Noyce the founder of Silicon Valley, and scholarship that de-emphasizes the role of any one individual. Drawing upon the ideas of Joseph Schumpeter, Berlin broadly examines Noyce’s entrepreneurial contribution at Fairchild, and how his particular insights and skills that led to the firm’s early success proved inadequate in leading a multidivisional mass producer.

In contrast, Martin Campbell-Kelly outlines developments at Microsoft, a firm with an entrepreneurial leader, Bill Gates, that led his company to success in both start-up and market-leading mass production phases. In addition to providing a balanced look at Microsoft’s history, Campbell-Kelly details the various strategies other successful software firms, such as AutoDesk and Symanetc, have used to gain and maintain market share in various segments of the industry. He concludes with a postscript on Judge Thomas Penfield Jackson’s decision in the U.S. versus Microsoft case, indicating that the company failed to learn that it could not engage in the same practices upon achieving the status of an industry giant that it did as a young firm.

Unlike the Microsoft case, defined by conflict between the federal government and a major corporation, Janet Abbate examines a largely cooperative transition of the government sponsored Internet into the private sector. She focuses on the fundamental question of how the Internet’s non-commercial past shaped its commercial existence of the past half-decade. Her analysis details how the government and private sector had long borrowed from, criticized, and at times, cooperated with one another. She concludes that the “creative tension” between nonprofit and business perspectives and practices yielded a more successful system than either could have created independently.

Collectively, the articles display a rich diversity of topics and approaches in the history of computing that speak to a broad range of issues in the history of technology, business, management, and government. They benefit from studying failures as well as successes, technological development as well as the consumption and use of technology, and the importance of individual actors as well as broader cultural and social trends.

Jeffrey R. Yost

CBI Newsletter, Vol. 23 No. 4 Summer 2001
Fifty Years Ago

In 1952, pioneering computer firm Engineering Research Associates (ERA) completed its three-year Underground Explosion Test Program, known as “Project BOOM.” Under contract to the U. S. Corps of Engineers to study protective structures, ERA detonated TNT charges weighing from 320 to 320,000 pounds and measured the blasts from up to several thousand feet out from the blast center. Salt Lake City was chosen as operations center for the program. Blasting tests were performed at Dugway Proving Grounds, eighty-four miles southwest of Salt Lake City, Utah, and Unaweep Canyon, twenty-one miles southeast of Grand Junction, Colorado.

Final blasting tests took place on the historic Old Spanish Trail in Buckhorn Wash, sixteen miles east of Castle Dale, Utah. The June 13, 1952 issue of ERA’s company paper, The Orbit, described the Buckhorn Wash field camp as “typically old west – without modern conveniences,” consisting of “small bunk houses, a mess hall, an office, tents for working space, and a shower room.” Communications to and from the Buckhorn Wash camp were transmitted by short-wave radio through a small branch office located in the Castle Dale public library. In the August 15, 1952 issue of The Orbit, Thomas C. Hyers, chief field engineer for the program, declared “Project BOOM” a success and heartily thanked all ERA employees involved and the citizens of Castle Dale for their assistance and hospitality.

Carrie Seib