CBI Completes NSF-Sponsored Software History Project

Project Highlighted by the National Science Foundation

The Charles Babbage Institute has completed its National Science Foundation (NSF)-sponsored project "Building a Future for Software History" (NSF 9979981) and submitted its final report to the NSF last month.

At the end of 2003, the project was chosen by the NSF as one of a small number of the projects funded under the Knowledge and Distributive Intelligence (KDI) Directorate to highlight research outcomes of the KDI initiative. CBI is grateful for this honor, and the NSF's article on our project can be accessed at:
http://207.238.28.149/nsf/ideas/new_know.html

Some elements of this Web-based project will continue in the future in order to further enhance the infrastructure for the development of the history of software through disseminating scholarship in the field (in the peer-reviewed scholarly software history journal, *Iterations: An Interdisciplinary Journal of Software History)* and updating reference resources (such as the CBI software history online bibliographic resource).

From the founding of CBI more than a quarter century ago, the Institute has had a commitment to the history of software. This has resulted in collecting and providing access to some of the most significant archival resources on the history of software, as well as producing significant scholarship and reference resources in whole or part on software history. Nevertheless, the primary resources and scholarship on the history of software, both within and outside the Institute, lagged behind that on the history of computer hardware.

In 1997 the Charles Babbage Foundation (CBF) formed a task force led by CBF's George Glaser to and report back its findings to the Institute. In 1998 Glaser presented the report of examine methods and ideas to advance understanding and resources in the history of software his committee (which included: William Coleman, Paul Edwards, Henry Lowood, and Keith Uncapher) at the annual Charles Babbage Foundation Trustees Meeting in Berkeley, California.

CBI Staff drew ideas from and refashioned elements of the CBF Software Task Force Report to produce a proposal to the NSF that was submitted in early 1999. In the Spring of that year the project was awarded in full at $488,000, and commenced in September 1999. After conducting a national search, Dr. Philip Frana, a recent Ph.D. from the History of Technology and Science Program at Iowa State University, was hired as the

post-doctoral fellow and project manager. Jeffrey Yost served as the Principal Investigator/Project Director, and Arthur L. Norberg, Elisabeth Kaplan, and Robert Seidel were Co-Principal Investigators on the project. The project also benefited from the work of three graduate research assistants from the Program in the History of Science and Technology at the University of Minnesota: Juliet Burba, Karin Matchett, and Elisabeth van Meer.

The project consisted of three primary components: working with the software community to create an online dictionary of software history, initiating an electronic scholarly journal on software history, and conducting 32 research-grade oral histories with pioneers of software history. On top of completing these objectives, CBI developed a major online software history bibliography. A brief description of the results of each of these components is presented below.

Software History Dictionary

Originally the project sought to draw on not only the expertise of the software community, but also volunteer labor in helping to produce the software history dictionary entries. Though committees of experts (five to nine individuals) were assembled in nine fundamental areas of software, these individuals were utilized for expert advice more than the production of dictionary entries. Most of the dictionary entries were researched and written at CBI. The end result is an online reference resource that contains more than 200 one to three page entries that provide not only an explanation of software terminology and technology, but also an historical analysis explicating continuity and change over time. The areas of focus within the software field were carefully chosen to supplement existing reference sources. Thus only a small number of entries were produced on programming languages, while many more focus on software technologies and techniques in graphics, scientific applications, business applications, and databases. The dictionary is available online at http://www.cbi.umn.edu/shp/entries/dictionaryindex.html and CBI will likely add to it periodically as time allows.

Iterations: An Interdisciplinary Journal of Software History

The journal *Iterations* was launched in October 2002 and has published a number of scholarly articles on a variety of topics in the history of software. These range from technical, managerial, and legal examinations of the industry, such as James Cortada's article on the history of software applications within the petroleum industry, Arthur L. Norberg's study of early software development at the Eckert-Mauchly Computer Corporation, and Paul Ceruzzi's analysis of the Microsoft anti-trust case to articles concentrated more on the structuring, use, and impact of software technology such as Jeffrey R. Kuester and Ann K. Moceyuna's article on the history of software patents, Julian Kilker's study on the early construction of email use, and Elisabeth van Meer's exploration of PLATO and the commitment to social responsibility demonstrated at the Control Data Corporation. In addition to scholarly articles, the journal has also published a number of reviews on electronic resources in the history of software,

including a major review article by Juliet Burba and Philip Frana. Finally, the journal has provided a forum for discussion of issues in software history with contributions from Robert Kahn, Jonathon Spira, Richard Stallman, and others. As originally planned, CBI is continuing the publication of *Iterations* now that the NSF-funded portion of the project has ended.

Iterations is available at http://www.cbi.umn.edu/iterations/index.html

Oral History Initiative

The Charles Babbage Institute has a long history of producing research-grade oral histories on the history of information technology. As part of the software history project, 35 oral histories (about 10 percent more than planned in the project proposal) were conducted and transcribed. Most are already available on the Institute's Web site, the remainder soon will be—as they make their way through the final editing process and are loaded onto the oral history database.

Individuals interviewed as part of "Building a Future for Software History" include:

Charles W. Bachman
Laszlo A. Belady
Henry N. Camp
Richard Canning
Don Chamberlin
Stephen Cook
Dick Coupe
John Cullinane
Roger Dahlen
Edsger Dijkstra
Gary Durbin
Scott Gaff
Martin A. Goetz
Jim Gray
Glenn Henry
C. Anthony R. Hoare
Ernest E. Keet
Donald E. Knuth
Kenneth W. Kolence
Larry Lamb
Carl Machover
Harry M. Markowitz
Mark McCahill
William McGee
Donn Parker
Peter C. Patton
Herb Pelnar

Ben Persons
Douglas T. Ross
Vladimir Slamecka
H. Kenneth Walker
Willis Ware
Peter Watson
Gio Wiederhold
Stan Williams

CBI's Oral Histories are available at http://www.cbi.umn.edu/oh/

Software History Bibliography

The software history bibliography contains more than 2,500 resources on software history. Citations include books, articles, reports, and archival collections. Some resources predate available online indexes, and others are not searchable or difficult to search in indexes for a variety of reasons. The Institute has received a number of comments from scholars who have found this bibliography useful in their studies of software history. The bibliography is available at:
http://www.cbi.umn.edu/shp/bibliography.html

Final Thoughts

The software history project represented an intensified effort to develop new resources (software oral histories, a historical software dictionary, and software bibliography) to advance understanding and research in the history of software, as well as build a continuing source for dissemination of scholarship in the field: *Iterations*. The project fits within and adds to a long existing commitment at CBI in the history of software technology and the software industry, both in terms of research and efforts to advance our collections in this area.

The Institute is grateful for the participation of many individuals on this project, from our interviewees on the oral history initiative, those who served as experts on the various area committees, and those who refereed articles for *Iterations,* to the people who continue to support the project's ongoing initiatives, in particular, the *Iteration's* editorial board and future referees and authors. Your contributions are deeply appreciated.

Jeffrey R. Yost