

Documenting Industrial Activity for the History of Computing: Phase II

With support from the National Historical Records and Publications Commission and the Control Data Corporation, CBI is entering a second phase in its appraisal of corporate records for use in the study of the history of information processing. In this project, CBI will employ the documentation strategy approach to probe three areas broadly representative of the development and application of the electronic digital computer. The three case studies will help us develop appraisal information for records in the computing industry, test the effectiveness of the approach for archivists involved in collecting industrial records, and assess the value of records available outside of the company as an alternative source of historical documentation. We believe that information about the third objective will be helpful when it is not possible to gain access to

records held by a business, either because the records no longer exist or the business will not permit access. Records outside of business include oral histories, court records, patent files, publications, professional and trade literature, and records held by individuals.

Undoubtedly, archivists would value better methods to document business activity, independent of the type of business. However, we feel that such work is especially important for the history of computing. Industrial activity has dominated computer development since the mid 1950s. Few other technological developments have spawned industries that can match the remarkable growth and change of the computer industry in the United States. Since all of this has occurred within a single

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CBI Joins RLIN Database

Information about CBI's archival collections is being added to the Research Libraries Information Network (RLIN), an on-line database whose members consist of major academic libraries in the United States and Canada. RLIN was formed primarily to share bibliographic information, but in the past three years it has added a format that now ranks as the largest on-line source of data about archival collections.

The database was made possible when a standard format, known as MARC-AMC (Machine-Readable Cataloging, Archives and Manuscript Control) was redesigned to reflect better actual archival practice. Since then it has been used increasingly by government, academic, and other public repositories. Common archival data such as collection name, date, quantity, and subject are divided into a variable number of defined fields. The format enables collection data to be shared in machine-readable form, and has promoted the growth of a number of local and linked database systems.

RLIN itself has powerful searching capabilities, featuring boolean operators and truncation of phrases and keywords. Searches may be performed on fields such as main entry, title, subject, ID number, form and genre, dates, and other characteristics. RLIN also features expanded fields for biographical and historical text, as well as scope and content notes. This allows each record to contain a good amount of information about the subjects of each collection and the collections themselves. However, since these fields are not indexed, effective searches rely on developing good (and voluminous) subject terms.

As of March, 1987, only a few test database records had been created by CBI. Work on coding entries will continue through the spring, and each collection should be represented by a RLIN entry at mid-year. As time permits, entries from CBI's oral history collection will also be listed. This will enable researchers to find basic information about CBI's holdings from any RLIN site.

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Betty Jo Ellis, pictured at the keyboard, donated this photograph of the Control Data 1604 computer.

European Museums: A Review of History of Information Processing Exhibits

With the increasing attention to information processing in the modern world, there is an international movement among museums to collect related artifacts, reorganize their existing collections to accentuate information processing themes, and to open new galleries and exhibits. This article reviews the exhibits and exhibit plans of four European museums: The National Technical Information Centre and Library in Budapest, Hungary; the Technisches Museum in Vienna, Austria; the Deutsches Museum in Munich, West Germany; and the Science Museum in London, England. Future newsletters will review other museum exhibits. CBI welcomes all information about museum exhibits relating to computing and information processing.

The **National Technical Information Centre and Library** in the downtown (Pest) area of Budapest opened this February a new permanent exhibit on the life and work of John von Neumann. The exhibit displays photographs, archival materials, and historical publications concerning von Neumann. The exhibit is especially strong in its documentation of the Hungarian context, both von Neumann's early life and education in Budapest and his life-long correspondence with Hungarian scientists. A wider range of archival materials is available for scholarly use. For more information, contact Mr. Ferenc Nagy, National Technical Information Centre and Library, Reviczky u. 6, Budapest VIII, Hungary.

The **Technisches Museum** in Vienna has a computer history display that was organized by Dr. Heinz Zemanek as a consultant to the museum. One major portion of the exhibit is devoted to a history wall in the style of the IBM history wall of Eames; however, the Vienna history wall has a European orientation and also more strongly reflects Dr. Zemanek's interests, e.g. in cybernetic machines. The exhibit also includes a number of important artifacts: the Mailuefterl, a European UNIVAC II, Tauschek punched card calculator, and other calculating devices. Elsewhere in the museum are related artifacts: a 1760 Knaus writing automata, an early Antonius Braun typewriter, and various early musical automata. The museum is located at Mariahilfer Strasse 212, Vienna 14, Austria.

The **Deutsches Museum** in Munich holds a number of artifacts related to information processing distributed throughout the museum. These include Jacquard looms, musical automata, clock automata, a small data processing collection featuring Zuse's Z3 computer, and a wide range of historic telecommunications equipment. The museum will open a major new exhibit on calculating machines and microelectronics in May, 1988, for which they have collected many historic

artifacts. The new exhibit will cover the following themes: mechanical calculating instruments in ancient times, mathematical tables, mechanical calculators, coding systems, digital computers, programming systems, cryptographic machines, logic machines, historical automata, analog computation, electronics technology, components technology, and microelectronics. For more information about the exhibit or scholarly use of the collections, contact Dr. Joachim Fischer, Deutsches Museum, Postfach 260102, 8000 Munich 26, West Germany.

The **Science Museum of London** holds many artifacts from the seventeenth to the twentieth centuries related to computing in a special gallery devoted to calculating instruments. These include early slide rules, sectors, callipers, and drawing instruments; Napier and Genaille rods; various mechanical calculators, including the 1666 Morland calculator, the 1777 Stanhope calculator, portions of Babbage's difference and analytic engines, and the Scheutz difference engine; various integrators and differential analyzers from the Thompson harmonic analyzer to the Hartree-Porter Meccano differential analyzer and the Manchester University differential analyzer; various early modern computers include the Air Trainers Link, Ltd. Mechanical Analogue Computer, the National Physical Laboratory Pilot ACE, a DEC PDP-8, and the Apollo Guidance computer; and many components, including an EDSAC mercury delay line, an experimental magnetic drum from Birkbeck College, a Whirlwind magnetic plane, a Ferranti Mark I Williams tube, and Colossus components. There are also computer educational exhibits, a display on computer graphics, and elsewhere in the museum Jacquard looms, telecommunications artifacts, and Enigma cypher machines. The museum is in the early stages of planning a new computer exhibit. The museum is located on Exhibition Road in the Kensington section of London. □

National Archives for the History of Computing Established in Britain

A grant from the Leverhulme Foundation has enabled the formation of a national archives for the history of computing in Britain. The new archives, to be located at Manchester University, will serve as a central repository for materials documenting computing in Britain. A search for an archivist is now underway, and the center will presumably become active in the coming academic year. For further information, contact Mr. John Pinkerton, History Department, Manchester University. □

Two Conferences Commemorate John von Neumann

An international committee of scientists and historians has organized two conferences for 1987 to commemorate the life and work of John von Neumann. The first of these conferences, held at the National Technical Information Center and Library, Eotvos Lorand University, and the Hungarian Academy of Sciences in Budapest from February 8 to 11, commemorated the thirtieth anniversary of the death of von Neumann. The conference began with the placement of a memorial plaque on the von Neumann family house and the opening of a permanent von Neumann exhibit at the National Technical Information Center and Library. A session held at the Luther Gymnasium, where von Neumann was educated, focused on his life and early education. Sessions at the academy and the university surveyed various fields in the social and natural sciences and the contributions von Neumann made to them.

A second conference is being held April 12 to 15 at Arizona State University in Tempe. At this conference colleagues of von Neumann, historians, computer scientists, and cognitive scientists will examine von Neumann's legacy in the study of the computer and the brain. For further information about this conference contact Dr. Jeanie R. Brink, Arizona Center for Medieval and Renaissance Studies, Arizona State University, Tempe, AZ 85287.

CBI Associate Director William Aspray is participating in both conferences. He lectured in Hungary on "John von Neumann's Contributions to Scientific Computation" and is presenting a survey lecture in Arizona on von Neumann's contributions to computing and computer science. □

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CBI Awards Pre-Doctoral Fellowship for 1987-88



Frederik Nebeker

CBI is pleased to announce the award of its 1987-88 Pre-Doctoral Fellowship to Frederik Nebeker of Princeton University.

Nebeker is writing a doctoral dissertation on "Computation in Meteorology: The Impact of Electronic Computers on a Science." Background chapters discuss the work of Wilhelm Bjerknes and Louis Fry Richardson at the beginning of the twentieth century. Nebeker next traces the meteorological uses of punched card machines, desk calculators, and graphical and nomographic techniques in the decades prior to the second world war. An investigation of the contributions of John Mauchly and John von Neumann leads Nebeker into the modern period. Here he studies the Institute for Advanced Study numerical meteorology project, the establishment of the Joint Numerical Weather Prediction Unit, and the subsequent development of the modern theory and practice of numerical meteorology. The objective is to investigate in detail an important example of what happened to various sciences when the computer became available to them and of how their employment of the device worked in turn to shape its development.

Nebeker received a bachelor's degree in mathematics from Pomona College in 1970. He studied at the University of Wisconsin, Madison, where he received a master's degree in mathematics in 1973 and a master's degree in history of science in 1974. He studied at the University of Copenhagen from 1979 to 1983, before entering the Program in History of Science at Princeton University. His dissertation research is being directed by Professor Michael Mahoney. □

CBI Prepares Bibliography on the History of Software

CBI is nearing completion of a bibliography of secondary sources on the history of software. The bibliography includes annotated entries on all historical and some technical survey literature on software we have uncovered, together with a detailed name index. For these purposes "software" includes programming languages and their compilers, operating systems, database management systems, utilities, and software engineering, as well as their historical contexts. Applications software is specifically excluded. For further information about the nature and availability of the bibliography, contact CBI Associate Director William Aspray. □

Update on Auerbach Collection

As reported last fall, Calculon Corporation donated to CBI the private reports of Auerbach Consultants. The reports, dating from 1958, have been processed and portions of the collection are now available for research use.

Under the agreement between Calculon and CBI, reports must be twenty years old before they may be released. This currently allows researchers access to material created from 1958 through 1967. Furthermore, CBI must secure permission from the contractor of the report to release the information. This largely affects reports sponsored by private industry. At this point approximately a third of the 750 reports prior to 1968 is available for research.

A small database of report titles, numbers, sponsor, and date has been created and may be searched with the assistance of the CBI archivist. This database will be updated as more of the reports fall outside of the twenty year restriction.

CBI has begun contacting corporations for permission to release the information. At this point none of the corporations have withheld permission to open the reports, and all have recognized the historical importance of the information. RCA, one of Auerbach's largest private contractors, has agreed to open most of their reports and is considering the release of military-related documents. Ampex has given permission to release a study of the magnetic core memory market in 1962. Other requests are pending.

The subjects covered by the reports range from detailed system analyses to broad market studies. The following is a sample of some of the reports open to research:

4318-TR-2 [no author], *Magnetic Tape Recording Systems and Formats*, 2nd Edition, 1960.

1415-TR-1 [no author], *Jointly Sponsored Survey of the Small Business Computer Market*, 1967.

1151 Department of Defense, *Interview Guide Handbook for the DOD Study to Determine How Scientific and Technical Information is Acquired and Used by RDT&E Personnel*, 1964 (Advanced Research Projects Agency).

1069-TR-07 Department of the Navy, *Intent of the OPCON System Design the 1604-A Computer*, 1962.

1155-TR-1 FAA, *5-Year Plan for Use of Automatic Data Processing in the Federal Aviation Agency*, 1963 (Office of Management Services).

1188-TR-1 General Services Administration, *Analysis of Three Data Retrieval Problems Associated with the National Supply System of the Federal Supply Service*, 1964.

1469-TR-1 NASA, *First Quarterly Report for Data-Management System Study*, 1967 (Electronic Research Center).

1392-100-TR-4 National Bureau of Standards, *Study of Teletypewriter Interface and Communications Standard* [2 volumes], 1967 (Center for Computer Science and Technology).

1381-TR-1 National Library of Medicine, *Recommended Selection Procedure for the National Library of Medicine Library Automation System*, 1966.

1242-TR-1 National Security Agency, *Multi-Processor System Studies Part 1 System Definition*, 1965.

1048 Office of Naval Research, *European Electronic Data Processing—A Report on the Industry and the State of the Art*, 1960.

1048-TR-1 Office of Naval Research, *European Information Technology, A Report on the Industry and the State of the Art*, 1961 (Information Systems Branch).

1229-TR-200-12 Office of the Secretary of Defense, *User's Guide A Program for Systems Effectiveness and Analysis—SEE/AN-II*, 1965 (Defense Communications Agency).

1429-TR-03 Office of the Secretary of Defense, *Transportation Planning Systems Survey Work Plan*, 1967 (Defense Communications Agency).

1043-TR-26 RCA, *General Philosophy of the Com-LogNet Program*, 1961 (Industrial Electronic Products).

1059-TR-1 RCA, *Study of the Automatic Data Collection Market*, 1961 (Electronic Data Processing).

1471-600-TN-1 U.S. Department of Labor, *Proposed Objectives of the New York Area Manpower Data System*, 1967 (Bureau of Employment Security).

1245-TR-1 USAECOM, *System Performance Analysis of the IBM 705 II Computer System*, 1965 (Fort Meade Procurement Division, P & P Directorate).

1134 U.S. Air Force, *Quantitative Methods for Information Processing Systems Evaluation*, 1964 (Electronic Systems Division). □

lifetime, historians and archivists are faced with a remarkable opportunity to analyze and understand the effect of this technology upon society. If archivists are unable to develop quickly the proper tools to document industrial activity, the opportunity will be lost.

During this eighteen-month project CBI will study three activities of the Control Data Corporation in order to identify the best sources of documentation for the computer industry. We will produce three case studies based on the analysis of two major computer products of Control Data, and an early data processing company that was acquired by the corporation. Products have been chosen because they involve every aspect of business (R & D, management, marketing, legal, etc.). The two products chosen are the CDC 1604 and Plato. These two products were chosen because their development each involved two sectors. In the case of the 1604, CDC developers interacted heavily with the Federal government, especially the Navy. Plato was a joint endeavor of the University of Illinois and CDC. A corporate acquisition has been included for the same reason, and because their records are especially imperilled (the acquiring company usually saves only legally-required records and destroys the rest). The acquisition of interest is C-E-I-R. For the two products we will study the technological processes involved in the development and delivery of the products, analyze the records-keeping environment, and identify and investigate all potentially-valuable records both inside and outside the company. For the acquisition we will choose representa-

tive activities, following the same general method of research as used with the products.

The study has three aims:

- To develop appraisal criteria transferable to other business-related collections. While we do not believe that there is a uniform set of appraisal criteria that can be successfully applied in every circumstance, we do believe that other archivists wishing to document similar industrial activity will be able to base effective appraisal strategies on our findings.
- To determine the value of alternative sources to records held by businesses. These include patent, contract, and legal files held by the government, records held by other institutions and individuals, publications and near-print documents, and oral history.
- To assess the effectiveness of the "documentation strategy" approach in an industrial environment, and the method's soundness in developing appraisal information for a broad subject area such as the application and development of the computer.

The ultimate objective of the project is to improve the state of historical documentation for the early computer industry. The results of the project will be made available to other repositories whose collecting programs would profit from such information. We believe the results will enhance archivists' ability to document all industrial activity, though it will be particularly beneficial for technology-related businesses. As a subsidiary benefit the project will create historical information about the subjects of the three case studies and will aid Control Data in identifying records of long-term value to the corporation. Since the project will require interviews of key individuals,

we will tape selected interviews to improve the documentation of the case studies as needed. This project is a key component of a three-year plan to develop a national collecting strategy for the history of information processing. (For additional information on CBI's plan to develop a national collecting strategy see *CBI Newsletter* Vol. 8, No. 2, winter 1986.) □

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CBI continues to experiment with automating its archival operations. Its work with RLIN will be used to determine the suitability of the database for recording collection data from the other archival units at the University of Minnesota. The establishment this year of a local, on-line catalog for the University of Minnesota Libraries also creates an opportunity to provide better local access to CBI's collections. Even the use of oral history is enhanced by the computer. Last month a number of requests were received from researchers wishing to purchase oral history transcripts available on MS-DOS compatible floppy disks.

Questions or comments about RLIN or other automation projects should be directed to CBI Archivist Bruce Bruemmer. □

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