Conference on the History and Heritage of Science Information Systems, 23–25 October 1998, Pittsburgh— A Brief Report and Personal Assessment

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This conference, organized by the Chemical Heritage Foundation in October 1998, was a precedent-setting conference on technical information retrieval (IR) establishment and evolution to which all the surviving scientists and special librarians involved in the pioneer IR projects of the 1950s and early 1960s were invited as "Pioneers of Information Science." An important reconciliation between attendees coming to IR from the purely "science side" and those coming from the "library side" was achieved among attendees. The significance of the then-new U.S. Civil Service commission policy for the classification of sci-tech graduates as "reports analysts" was to add needed subject expertise to the IR process.

A rare event in the history of the profession occurred in Pittsburgh on 23–25 October 1998, Friday evening through Sunday noon. The Conference on the History and Heritage of Science Information Systems convened at the Pittsburgh Hilton as a preconference to the annual conference of the American Society for Information Science (ASIS) and was sponsored by that body and its Special Interest Group on the History and Foundations of Information Science, as well as the Chemical Heritage Foundation that assumed the role of coordination and support. The event attracted over one hundred registrants, including twenty-five speakers and more than a dozen pioneers in the field.

Strong cases can be made that the foundations of science information systems were laid in the Boston area, the Philadelphia area, and the area of California known as "Silicon Valley." Since many have long felt that the discipline of chemistry had been involved early on in the movement, Eugene Garfield, founder and chairman emeritus of the Institute for Scientific Information (ISI), was the logical choice to approach the relatively new Chemical Heritage Foundation of Philadelphia for support for a postdoctoral residency (financed by Garfield) and for the planning of a conference on the history of science information systems.

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The foundation, established in 1982, stated in its call for conference papers that

> The mission of the Chemical Heritage Foundation is to advance the heritage of the chemical sciences by collecting and disseminating information about historical resources; encouraging research, scholarship, and popular writing; publishing resource guides and historical materials . . . and taking other appropriate steps to make known the achievements of chemical scientists and the chemical process industries.

Signifying a somewhat broader interpretation of its mission, the foundation's support attracted a number of conference cosponsors that included, in addition to those named above, the University of Pittsburgh School of Information Sciences and the International Federation for Information and Documentation (FID). The landmark event included dinner and programs in the evenings of the first two days. Plenary sessions opened the meetings Saturday morning and closed them before mid-day on Sunday; and six concurrent program sessions filled the balance of Saturday and Sunday mornings.

The most unusual feature was the introduction of a group of individuals as "Pioneers in Information Science," most of whom had been active in the information retrieval field since the 1950s. At the reception before the opening event, nineteen of the pioneers were introduced and given five minutes to introduce themselves and make a statement of a basic belief. (This pioneer-writer said that the establishment of "need to know" categories was a crucial part of processing research reports for distribution, and that subject-based technical staff were vital to this.)

The group photo of the pioneers, shown in Figure 1, includes Ben-Ami Lipetz, Pauline A. Cochran, Charles F. Bourne, Winifred Sewell, Robert M. Hayes, Madeline M. Henderson, Herbert M. Ohlman, David Kronick, Frederick G. Kilgourm, Clair K. Schultz, Eugene B. Jackson, Hal Borko, Eugene Garfield, Miles Davis, Charlotte Davis Mooers (representing recently deceased Calvin Mooers), and Belver Griffith. (F. W. Lancaster also earned the title but was not present.)

Another feature of interest was the opening of the Information Science Theatre, open throughout the conference. It included photo albums and videos and provided the basis for a Web site (www.libsci.sc.edu/bob/confprog/confprog.htm), prepared by Robert V. Williams, professor at the University of South Carolina, that became available in late spring 1999.

The title for the Saturday morning plenary session was "History and Historiography of Science Information Systems." The speakers, some of whom appear in Figure 2, "Historians of Information Science," were

Figure 1. Information Pioneers: Back row: Ben-Ami Lipetz, Pauline A. Cochran, Charles F. Bourne, Winifred Sewell, Robert M. Hayes, Madeline M. Henderson, Herbert M, Ohlman, David Kronick, and Frederick G. Kilgour. Front row: Clair K. Schultz, Eugene B. Jackson, Hal Borko, Eugene Garfield, Miles Davis, Charlotte Davis Mooers, and Belver Griffith. Courtesy of the Othmer Library of the Chemical Heritage Foundation.

historians by profession and included Arnold Thackray of the Chemical Heritage Foundation, Timothy Lenoir of Stanford University, Henry Small of the Institute for Scientific Information, Eugene Garfield of the Institute for Scientific Information, Bruce M. Lewenstein of Cornell University, and Robert W. Seidel of the Babbage Institute at the University of Minnesota.[1]

At the buffet luncheon on Saturday, the pioneers were asked to scatter themselves so that visiting library and information science students could approach them more easily. Because this did not work out as hoped, Winifred Sewell and I drafted a review of the 1950s information retrieval conferences we had shared. Sewell and I were successive presidents of the Special Libraries Association (SLA) in 1960–61 and 1961–62, and each had attended all the information retrieval conferences during the preceding decade. We also recalled American Documentation Institute (ADI) president Hans Peter Luhn's hope that the ADI and the SLA would merge.[2] Regretably, the SLA executive board was cool to the idea—a big mistake in the minds of some people. Figure 3, "Attendees at 1950s IR Conferences," shows a continued discussion later that evening, which included colleague-wife Ruth L. Jackson and Madeline Henderson, who had also attended all the 1950s information retrieval conferences. At an earlier date, the Jacksons had made presentations to the Regional

Figure 2. Historians of Information Science: Timothy Lenoir of Stanford University, Henry Small of the Institute for Scientific Information, Eugene Garfield of the Institute for Scientific Information, Bruce M. Lewenstein of Cornell University, and Robert W. Seidel of the Babbage Institute, University of Minnesota. Courtesy of the Othmer Library of the Chemical Heritage Foundation.

Civil Service Commission Classification Board and had proposed that individuals with university degrees in science or technology be called "subject analysts." This was before the Washington, D.C., area governmental units could do so.[3]

The first two concurrent sessions included "Science and Scientific Information Systems" and "Chemical Information Science Systems." The latter dealt with the history of *Chemical Abstracts* and DuPont's internal services. The second two concurrent sessions treated "Building Information: Retrieval Systems for Science" and "Information Retrieval in Science: The Professional Aspects." The first of these included what may have been the most interesting and important paper of the

Figure 3. Attendees at the 1950s IR Conferences: Winifred Sewell, Eugene B. Jackson, Ruth L. Jackson, Madeline Henderson, Richard Henderson. Courtesy of the Othmer Library of the Chemical Heritage Foundation.

afternoon: "The Creation of the *SCI*" by Paul Wouters of the University of Amsterdam, who had access to Eugene Garfield's personal archives dealing with the origin and development of the *Science Citation Index (SCI)*. (See Figure 4, "Eugene Garfield and Paul Wouters.") Wouters's well-presented paper, a chapter in his dissertation, contained a great deal of interesting data and provoked a lively discussion period in which a variety of interpretations was voiced, including the use made of *SCI* citations for tenure review decisions. The fourth session received good reviews from the audience, especially Mark D. Bowles's paper on "Science in Crisis: The Conflict over Information Retrieval, 1945–1963." The conferences, then hosted by Case Western Reserve University, were marked by bitter exchanges between library-based and subject-based attendees.

Eugene Garfield's keynote address, following an excellent dinner, was entitled "On the Shoulders of Giants." Garfield conducted a verbal tour, augmented by some fifty transparencies, of the careers of leading scientists who had been supportive of his ideas as exemplified in ISI products.

The final pair of concurrent sessions on Sunday morning included "Information Retrieval in Science: The Technical Aspects" and "Science and Information: Some National Perspectives." The former dealt with technological issues such as early information retrieval systems, microfilm, and mechanical indexing. The latter consisted of papers on the implications of Soviet and post-Soviet information retrieval efforts (Ruggero Gilliarevsky and Pamela Spence Richards) and the status of academic libraries and of library and information science education in Japan (Takashi Satoh).

Figure 4. Eugene Garfield and Paul Wouters. Courtesy of the Othmer Library of the Chemical Heritage Foundation.

The final program event, chaired by ASIS president Michael Buckland, was the "Conference Summary and Reaction to Results," delivered by Robert M. Hayes. A masterful review of the significance of the conference, the presentation was warmly applauded at its end. Hayes suggested that three periods seem to mark the development of information retrieval development. The 1950s featured central processors as giant shufflers in alpha/numeric order. Byproducts included KWICs (Key Words in Context) and KWOCs (Key Words out of Context), a program series invented by ADI ex-president Hans Peter Luhn of IBM's Mohansic

Laboratories.[4] The 1960s saw beginning efforts to go on-line operationally. *Engineering Index* (*EI*) called the effort "COMPENDEX" and at first had only six customers—each of whom had an *EI* trustee heading its own information program.[5] The 1980s saw legal, medical, chemical, space engineering, and most other subject areas with on-line information services as a way of life. Those in these fields would have it no other way. All honor is due to those who have brought information retrieval to this threshold.

In short, this splendid conference was a landmark event in the history of information science and technology. Its implications for libraries and other information institutions are readily apparent. A great deal of credit belongs to the conference planning committee chair Robert V. Williams of the University of South Carolina's College of Library Science.[6] Many look forward to the publication of the proceedings, scheduled for fall 1999.

Finally, there is something auspicious about ASIS supporting this conference at the same time that interest has mounted for historical perspectives in the Society of American Archivists (SAA). These groups can join the American Library Association's Library History Round Table, which celebrated its fiftieth anniversary in 1998, to provide a valuable record for the information professions.

Notes

1. As it happens, I was most interested in Seidel's talk on "Secret Scientific Communities: Classification and Scientific Communication in the DOE and DOD," because the one agency he omitted—the U.S. National Advisory Committee for Aeronautics (NACA)—had issued a large number of Research Memorandums that originally had a military security classification. I had been the Secretary of the Classification/Declassification Board of NACA for five years and so clarified the record. Subsequently Seidel said that the agency was not represented in the files of the Babbage Institute and he requested that my personal files on NACA be shared with the institute, a request agreed to. I also observed that unclassified airfoil reports of NACA were widely cited in unclassified conferences on submarine design.

2. Luhn was the inventor of Keywords in Context (KWIC) and Keyword out of Context (KWOC) indexes that were widely used types of information retrieval strategies in the 1950s and 1960s.

3. Subsequent discussion at the 1949 SLA Annual Conference in Los Angeles, with the presence of newly decommissioned WAVE officers (such as Bonniwell of BuShips) resulted in their decision to push for such a title so that subject expertise could be applied immediately to information retrieval procedures and publications.

4. A personally memorable use was a KWIC index to General Motors Research Laboratory's informal Research Memorandums, which had been marked up by cooperative teams from the Library and each department. The resulting printout took one entire Christmas week to run full-time. When one foot of

entries in the KWIC print-out with the word “Progress” was discarded, there was still a stack of print over six feet tall! On one occasion, five entries were found on the “Dieselization of Oldsmobile Engines” that settled a then-current lawsuit.

5. A jest of the time was that their only broad-band operational system was the width of the Yellow Cab contracted to take the week’s *EI* output to the GTE laboratories on Long Island each Friday afternoon at 5 p.m.

6. As the Garfield Fellow in the History of Scientific Information at the Chemical Heritage Foundation, Williams developed a large, two-sided, multicolored broadside, distributed at the conference, entitled “Chronology of Chemical Information Science: celebrating the 50th anniversary of the founding of the Chemical Information Division of the American Chemical Society.”