

Current Comments®

Scott Adams and *Medical Bibliography in an Age of Discontinuity*— A Tribute to a Visionary Leader in the Field of Medical Information

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In spring 1982, I attended the meeting of the Council of Biology Editors in Louisville, Kentucky. I also visited my old friend Scott Adams, who had moved to Kentucky some years earlier. I knew he had been ill with emphysema for some time, so I was glad for the chance to visit him. Even though he had only 25 percent of his lung capacity left, he greeted me cheerfully. We talked about old times and plans for his memoirs. We both planned to—and did—attend the annual meeting of the Medical Library Association (MLA) shortly thereafter, in Anaheim, California. That was the last time I saw him. He died several months later, on October 3, 1982.¹

Scott and I also discussed his book, *Medical Bibliography in an Age of Discontinuity*.² It was the culmination of Scott's long and distinguished career. I told him about my plans to discuss it in an essay. I had, of course, gone over the chapter he had written about ISI® while the book was in preparation. However, I suppose that I really had not accepted the ultimate significance of Scott's illness. So my crowded agenda pushed those thoughts of an essay from my mind—until I received word of Scott's death.

Adams was born in Agawam, Massachusetts, on November 20, 1909, to Scott and Edith Fisher (Ferre) Adams. He attended various public elementary schools in Springfield, Massachusetts, famous for its Webster's dictionaries. He

graduated from Springfield's Classical High School in 1926. His undergraduate years were spent at Yale University, New Haven, Connecticut, where he majored in English. He graduated with a BA degree in 1930, and taught English and Latin for a year at a small school in Wynnewood, Pennsylvania—a suburb of Philadelphia.

In 1931, he joined the US merchant marine as an ordinary seaman on the *S.S. The Angeles*, plying the route between New York and Rio de Janeiro, Montevideo, and Buenos Aires. In 1932, he was working as a wholesaler's representative engaged in book distribution to libraries. By 1939, he was doing his graduate work at Columbia University, New York. He received his master's degree in library science from Columbia in 1940.

From 1940 through 1942, Adams served as head of the order department at Columbia Teachers College Library. He filled a similar position at Providence Public Library, Rhode Island, from 1943 until 1945. In the latter year, he was named head of the Acquisitions Division of the Army Medical Library, Washington, DC. The library later became the National Library of Medicine (NLM). The following year, he was chosen to serve on the Library of Congress Mission to Europe. Upon his return, he was named acting librarian of the Army Medical Library, a post he held until the end of the decade. During that time, he was elected president of the District of



Scott Adams

Columbia Library Association, 1948-1949.

In 1950, Adams became librarian of the National Institutes of Health (NIH). At the time, according to a 1967 editorial in the *Bulletin of the Medical Library Association* by the then outgoing association president Frank Bradway Rogers, the NIH library held a number of outdated books on public health.³ Moreover, it was inadequately housed in a basement of the old NIH Administration Building in Bethesda, Maryland. Adams supervised moving the library into the new NIH Clinical Center, also in Bethesda. He also began the process of building a collection capable of supporting the myriad NIH research programs.

Although one could mention numerous other innovations at NIH, Scott was also instrumental in the development of the concept of the bibliographic aide, an information scientist who functions as an integral part of a particular scientific research team. I single this out because I recall that it was modeled after similar concepts developed in industry during the 1950s. I know that Scott was impressed by the experience of our mutual friend and former colleague, Robert Hayne.⁴

While with NIH, Adams served on the board of directors of MLA, and as president of the American Documentation Institute, which was the predecessor of the American Society for Information Science (ASIS).

Scott became engrossed in the challenge of providing translations of foreign medical literature. From 1956 through 1958, he directed the NIH's Russian Scientific Translation Program. With Rogers, he edited the *Guide to Russian Medical Literature*,⁵ which provided information on the status of Soviet medical research.

In 1959, Adams left NIH to direct the Foreign Service Information Program for the National Science Foundation's (NSF) Office of Science Information Services. In 1960, he returned to NLM as its deputy director, first under Rogers, who was director of NLM from 1949 to 1963, and then under Martin Cummings, who has been director since 1964. At NLM, Adams became involved in the development of the Medical Literature Analysis and Retrieval System (MEDLARS) program, the well-known computerized bibliographic retrieval system. In 1967, he was elected president of MLA. In 1969, he was cochairman with Sune Bergström, 1982 Nobel recipient, of the Third International Congress of Medical Librarians in Amsterdam.

One of Adams's early efforts while he was with NLM was directed toward developing a framework for a program of grants to medical libraries throughout the US. The need for such grants was a direct result of the unprecedented increase in the rate of national health expenditures in the US following the end of World War II. The magnitude of these expenditures had risen to almost \$200 billion annually by 1978—or 9.1 percent of the US gross national product (GNP), as compared with only 6.8 percent of the GNP just ten years earlier.⁶ The corresponding growth in the volume of medical research literature generated enor-

mous problems in identifying, storing, retrieving, and delivering medical information. The knowledge being compiled was simply not reaching the practicing physician.

To resolve this problem, the Medical Library Assistance Act was passed by the US Congress in 1965. The act gave NLM "broad responsibilities...to help the nation's medical libraries provide vital services to those engaged in medical education, medical research, and medical practice."⁷ Adams was heavily involved in framing the provisions of the act, which among other things established the Regional Medical Library system and the NLM's extramural program, which supports library resources, research, training, and the publication of various indexes, bibliographies, and histories.

After leaving NLM, Adams worked on a program called UNISIST, a combined project of Unesco and the International Council of Scientific Unions (ICSU). Its purpose was the exchange of scientific information between developed and developing nations. He also worked with the World Health Organization and numerous institutions in the US as a consultant in international scientific communications. In 1975, Adams moved to Louisville, Kentucky, to take a position teaching international education at the University of Louisville. He continued, however, to serve as a consultant to Unesco and to the Agency for International Development.

Included among the many awards Adams received over the course of his career is the MLA's highest honor, the Marcia C. Noyes Award, which was granted to him in 1969 for his long service to MLA. He was the first recipient of the MLA President's Award in June 1982. He was also posthumously given the ASIS Special Recognition Award in November 1982 for his book, *Medical Bibliography in an Age of Discontinuity*.² It was cited as "a perceptive and

elegant history of an important period in the development of our profession by a principal participant on the scene."⁸

Adams was the author of more than 50 publications on various aspects of librarianship and information science. Much of his early work in the 1940s was devoted to such prosaic matters as the book trade,⁹ the out-of-print book market,¹⁰ and acquisitions programs.^{11,12} During the 1950s, he continued to write about pragmatic subjects of general interest to librarians. But in time, his writing also began to reflect his accumulating occupational experience. For instance, out of the Army Medical Library years came a series of articles on medical libraries,¹³ publication programs,¹⁴ and medical library architecture.¹⁵ His activities in the Russian Scientific Translation Program led to an article on Soviet science.¹⁶ The time spent as director of the Foreign Service Information Program led to an article on the program's sponsor, NSF.¹⁷ The social concerns of the era also found expression in Scott's writing, as evidenced by his article entitled "Books and the bomb,"¹⁸ which provides a discussion of the problems involved in safeguarding any given library's collection during a nuclear war.

During the 1960s, Adams perceived a looming crisis facing medical libraries, due to the vast growth in the volume of medical literature.^{19,20} In the face of the problems he himself was experiencing as deputy director of NLM in providing bibliographic services, he became concerned with the development of the resources of medical libraries in general,²¹ and with searching the medical literature.²² However, in a series of articles written throughout the decade,²³⁻²⁸ Adams described a system that would solve many of the problems experienced by libraries at that time—MEDLARS, the computerization of NLM's indexing operations. MEDLARS proved to be a great bibliographic breakthrough. The system currently consists of 16 online

clinical data bases, including MEDLINE, TOXLINE, CHEMLINE, and CANCERLIT. The work load handled by these data bases is staggering. In 1981, just nine years after its establishment, more than two million searches were conducted on the system.²⁹ It has also fostered and stimulated a whole new aspect of the information industry, with complex interconnections and simultaneous rivalries between many private firms.

Scott's publications during the 1970s reflected his activities in the international community and his work for the United Nations. For instance, in his paper entitled "Information for science and technology: the international scene,"³⁰ he examined the emergence of US governmental policies following the end of World War II that concerned the international exchange of scientific and technical information. Other articles are devoted to how US data bases, including ISTs, are introduced and used in other countries,³¹ and to the proper functions a library must serve to aid in conducting a scientific investigation.³²

However, Adams's best work, and the one of which he was most proud, was his book, *Medical Bibliography in an Age of Discontinuity*,² published the year before his death. The book is a discussion of medical bibliography from World War II to the present. (The contents page is presented in Figure 1.) To a certain extent, it is a sequel to Estelle Brodman's *The Development of Medical Bibliography*.³³ However, where Brodman chronicles individual efforts to bibliographically control the medical literature from the sixteenth century through the mid-twentieth century, Adams concentrates on medical bibliographies organized by governmental, university, and corporate institutions. Brodman details the scope, arrangement, and usefulness of such bibliographies as Albrecht von Haller's *Bibliotheca Medicinæ Practicae*, Wilhelm Gottfried Plouc-

Figure 1: The contents page of *Medical Bibliography in an Age of Discontinuity*, by Scott Adams.

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quet's *Literatura Medica Digesta*, and Adolph Callisen's *Medicinisches Schriftsteller Lexicon*, among others. However, Adams's viewpoint is that of the compilers of bibliographies, rather than that of their users. As such, his book breaks new ground.

The main theme of *Medical Bibliography in an Age of Discontinuity* is the presumed conflict or discontinuity between the interests of the traditional, academic, discipline-oriented sciences typical of the nineteenth and early twentieth centuries and the needs of mission-oriented science that arose in the mid-twentieth century. Discipline-oriented science, as in chemistry, physics, or biology, emphasized the gathering of knowledge. Mission-oriented science stressed

the needs of specific goals or missions—such as the Manhattan Bomb Project or the war against cancer. Other missions take the form of general problems, like environmental control or the delivery of health services. The purpose of the book, as Adams states in the introduction, is “to sketch the course of medical bibliography in relation to the political, social, scientific, and technological changes in the United States that have influenced [the] directions and forms [medical bibliography has taken since World War II].”² (p. xi)

The “discontinuity” in the title of Adams’s book, as well as the context of his analysis of bibliography, owes much to Peter F. Drucker’s *The Age of Discontinuity*.³⁴ “Discontinuity,” in the sense in which both Drucker and Adams use the word, is an abrupt, rapid, and dislocating change that transforms not merely the format of bibliographical tools, but their content and the way they are compiled as well. Drucker identifies four major sources of discontinuity: new technology; changes in the world economy; shifts in the structure of various national governments; and the rise of knowledge as a capital resource—the so-called “knowledge society,”³⁴ based not on productivity but upon the acquisition, possession, and application of specialized knowledge.”² (p. xi)

“New technology” is also a source of discontinuity on a similar list composed by Adams. But Adams is interested in those sources that have particular relevance for medical bibliography, rather than bibliography in general, so he differs with Drucker on the other three. Adams lists instead: the growing desire to protect society from the harmful effects of science; the displacement of academically oriented, disciplinary research by government- and corporate-financed, mission-oriented “Big Science”; and the birth and growth of the information industry, of which ISI is described as prototypical.

The postwar era (1945-1970, for Adams’s purposes) constituted the most explosive period of library and information science development in US history. Focusing on medical research in particular, Adams examines the role played by NIH in the development of mission-oriented bibliographies to facilitate goal-oriented government- and industry-supported research, such as that directed toward cancer, heart disease, and mental illness. He broadly describes a number of the bibliographic innovations of the early-1950s, and discusses in detail the bibliographic tools and information dissemination programs of the National Cancer Institute.

Adams also discusses each of the five major organizations that provide medical indexing and abstracting services: NLM,³⁵ *Excerpta Medica*,³⁶ *Biological Abstracts*, *Chemical Abstracts*, and ISI. In each case, Adams provides a capsule history and detailed, up-to-date information on the origin, purpose, coverage, similarities and differences, cooperation, and independence and interdependence of each service.

Scott felt it appropriate to include ISI in his book not only because of the size and usefulness of our data base, but also because he believed that the unique quality of citation indexing is itself a sort of “discontinuity” from established bibliometric procedures. “ISI has been the least constrained by bibliographical traditions [of all the services discussed in the book]...and has been in a state of continuous development since its inception.”² (p. 154-5)

Adams is cautious in predicting the future of biomedical bibliography. It is not difficult to understand his wariness. In an “age of discontinuity,” speculation is risky. Technological innovations during the past 30 years have made possible the best of both the mission-oriented and discipline-oriented worlds, because they have reduced the possibility of conflict between the information needs of

basic research and those of applied research. However, he does not believe that we will move completely to a paperless society. He does concede that easy access to online data bases has diminished the number of printed subject bibliographies.

Adams was the consummate diplomat. He was able to treat with evenhandedness the roles of government agencies he once served and the private interests with which they were often in conflict. Nowhere in his work would one recognize the personal antagonisms that often played a key role in the history of this field. That was not his style. He had much more faith in international organizations than I could ever muster. There is little in the work of Unesco that renews my faith in the ability of international bureaucracies to perform any better than national bureaucracies.

However, one of the beautiful things that one can cherish about a professional relationship is that, in spite of honest differences, you can come out liking and respecting one another anyway. Adams was a gifted writer and one of the great statesmen of medical librarianship. His book will be read by students of information science for years to come.

Just as this essay went to press, I received the April 1983 issue of the *Bulletin of the Medical Library Association* containing an obituary written by Rogers. Since he worked with Adams closely for many years, he has provided numerous insights relevant to his career. Those

who are interested can and should read the entire obituary essay. But it is appropriate to close by repeating a quote from a letter Scott wrote to Rogers in response to some criticism of his book: "The one talent I can boast is that of political synthesis; I do have some ability to identify the common goals among the individuals of a given period, and to relate these to the socio-political trends in the country. What fascinated me was not the individual booms and busts of [Tom, Dick, and Harry] as they tried to peddle their goods down the congressional and executive sides of the street, but why was the market there in the first place? I introduced the [X] meeting, the [Y] imbroglio, and the [Z] activities to demonstrate the nuisance function of self-serving interest accompanying the 'information explosion.'"³⁷

It is with a mixed sense of pain and respect that I dedicate this essay to the memory of Scott Adams, and to the surviving members of his family: his wife, the former Joan Titley; his daughter, Susanna; two sisters, Frances and Barbara; and one grandson. I deeply regret that Scott did not have the opportunity to read this tribute to his life and his work.

* * * * *

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