Archival Elements

**Newsletter of the Science, Technology, and Healthcare
Roundtable of the Society of American Archivists
Summer 2007**

Contents

Message from the Co-Chairs

Janice F. Goldblum
The National Academies

Paul Theerman
National Library of Medicine

We cordially invite everyone attending the SAA meeting in Chicago to come to the Science, Technology, and Health Care (STHC) Roundtable meeting on Wednesday, July 29, from 6:00 - 8:00 pm at the Fairmont Hotel. The Fairmont is the conference site. The STHC Roundtable provides a lively forum for archivists with interests or holdings in the natural, physical and social sciences, technology, and health care, and presents opportunities to exchange information, share successes, and solve problems.

In addition to the Business Meeting, there will be a panel presentation on the use and care of artifacts in archival collections. The program will be followed by a Roundtable Q&A to discuss our "artifactual" issues with our speakers. As many of you know, STHC formal programs are a highlight of the Annual Meeting, and the Roundtable meeting provides the perfect venue for STHC-related presentations.

We welcome both specialists in STHC and generalists who are responsible for one or a few STHC collections, as well as those who want to learn more about the field. We will be brainstorming session proposals for SAA's 2008 meeting in San Francisco and want to hear your ideas! We also encourage participants to share news from their repositories and to attend the STHC-sponsored and STHC-themed SAA sessions.

If you can't attend the meeting or want to continue discussion of STHC issues and 2008 proposal development, please contact any Steering Committee member and use the STHC listserv. You will find Steering committee membership and information to subscribe to the listserv at the STHC website: <http://www.archivists.org/saagroups/sthc/index.html>.

The Roundtable Agenda is below. We look forward to seeing you at the Roundtable.

STHC Roundtable 2007 Meeting

Wednesday, August 29, 2007, 6:00–8:00 P.M.
The Fairmont Chicago

Agenda

Welcome and Introductions

Approval of Minutes

Council Representative

Program Committee Representative

Old Business:
Report on 2006/2007 activities, Section and Roundtable Membership: Janice Goldblum.

Election of new STHC Co-Chair.

Archival Elements Newsletter: Ewa Basinska.

STHC listserv: Russell Johnson.

STHC website: Rose Roberto.

Warnow-Blewett Award: Jean Deken.

Program: "Caring for Artifacts in Archival Collections"
Many repositories have a variety of artifacts such as a collection of specimens used by a professor's research and items used, collected, or donated to famous people. The presence of artifacts raises questions: Why are they part of specific collections? How can they be used as a means of documentation? How do they fit into the broader picture of archives? Finally, what are the best institutional policies and practices to put in place so that archivists can care for them and avoid hazardous situations?

John Zwicky (American Academy of Pediatrics, Elk Grove Village, Illinois), Chair.

Carolyn Texley (Consultant, Ann Arbor, Michigan).

Mott R. Linn, Jr. (Clark University, Worcester, Massachusetts).

Jennifer Searcy (Loyola University and Abbott Labs, Chicago, Illinois).

Judy Robins (American Society of Anesthesiologists, Park Ridge, Illinois).

<u>New Business</u>
"Continuing education on HIPAA aware policies, standards, and best practices for archives with individually identifiable health information" Phoebe Evans Letocha, Alan Mason Chesney Medical Archives of the Johns Hopkins Medical Institutions

Proposed program ideas for SAA 2008—August 23–31—San Francisco

Roundtable Round Robin: "Hot Topics" from STHC members.

<u>Adjournment</u>
Our chief concern is to ensure that the STHC Roundtable reflects the interests of its participants. We welcome all suggestions relating to the above topics or concerning any other issues members might like to see addressed at our meetings. Please do not hesitate to get in touch with either of us:

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Around and About Archives

Collection Announcement: Paul H. DeBach Papers, 1921-1989

Elizabeth Phillips
University of California, Davis

The University of California, Davis Department of Special Collections is pleased to announce the availability of the Paul H. DeBach Papers. This collection, graciously donated by Professor DeBach and the University of California, Riverside Department of Entomology, documents Paul DeBach's pioneering work in the field of integrated pest management and in the biological control of insect pests and weeds. The collection spans the years 1921-1989 (bulk 1955-1980) and includes research notes, background data, manuscripts, reprints, project plans, progress reports, and correspondence related to DeBach's work in biological control of insects.

Paul H. DeBach (1914-1993) was an internationally recognized proponent of biological insect control. His research on citrus pests was fundamental in preserving the continued health of California citrus crops without reliance on chemical pesticides. Following World War II, DeBach was appointed as an assistant entomologist at the UC Riverside Citrus Experiment Station's Department of Biological Control, where he remained until his

retirement in 1983. During that time, DeBach developed the first formal courses offered in biological control at UC Riverside, conducted pioneering research on the biological control of citrus pests, and revised and clarified the taxonomy of parasitic wasps.

Paul DeBach's primary research interests were control of citrus pests, particularly scale insects, whiteflies, and mealy bugs. He took part in extensive foreign exploration to seek out natural enemies of California citrus pests, and successfully established many new species of predaceous beetles and wasps. During the 1960s and 1970s, DeBach was an active participant in the development and work of the International Biological Program's Integrated Pest Management Program. The United States Department of Agriculture and nineteen universities participated in the program, which aimed to reduce reliance on conventional pesticides.

In addition to his research and teaching, Paul DeBach was the principal editor of and author of several chapters in Biological Control of Insect Pests and Weeds (1964). The book has since become the classic text on biological control. DeBach also published Biological Control of Natural Enemies (1991), which he wrote for a non-academic audience.

The finding aid to the Paul H. DeBach Papers is available at the Online Archive of California at http://www.oac.cdlib.org/findaid/ark:/13030/kt2c60258h.

The UC Davis Department of Special Collections is located at 100 North West Quad, Davis, California, 95616. Reading room hours are Monday – Friday, 10:00 AM – 5:00 PM. Inquiries about the Paul H. DeBach Papers may be directed to Liz Phillips at ecphillips@ucdavis.edu.

May 2007

Historical Collections of the Claude Moore Health Sciences Library at the University of Virginia Announces the Opening of Two New Web Exhibits

Joan Echtenkamp Klein
Claude Moore Health Sciences Library, University of Virginia

The Plague Book (http://historical.hsl.virginia.edu/plague/) invites visitors to explore sixteenth-century medicine with a look at a unique book of advice to combat the plague. "*Orders thought Meete ...*" was published under the auspices of Elizabeth I during an outbreak of the plague in England and presents a fascinating look at public health, epidemiology, and illness in the late sixteenth century. The book contains instructions for the Queen's emissaries in identifying towns struck by plague and then directs them in how to proceed with taxation, issues related to quarantine, and the handling of the clothing and bodies of those who died. It concludes with recipes for preparing medicines that would, purportedly, prevent the plague or cure it if already contracted.

Typed transcriptions, both in the vernacular and in modern English, accompany the text to aid comprehension. Over 50 plants suggested for use as preventatives and curatives are linked with corresponding images, most in color from the Missouri Botanical Garden, and with instructive quotes from the 1633 edition of The Herball by John Gerard. Several essays on the site provide further context for the book.

Vaulted Treasures (http://historical.hsl.virginia.edu/treasures/) looks at some of the rare treasures kept in Historical Collections' climate-controlled vault. These printed treasures were published between 1493 and 1819. Some are small pocket-sized volumes only a few inches tall. Others are massive: the largest weighs in at 18 pounds and has a cover that exceeds four square feet. Some consist of only the written word. Others contain exquisite illustrations of the human body or fanciful landscapes.

Big or small, plain or fancy, the books and their authors all contribute to the history of medicine. They are reminders that the ideas and knowledge we take for granted in the twenty-first century have evolved over millennia. Physical symptoms in life have not always been directly correlated with physical findings in the body after death, and two centuries ago the now ubiquitous stethoscope so often draped around the physician's neck did not exist.

Visitors to the site are invited to embark upon a journey into the vault to view more than 50 of Historical Collections most notable books and see how their authors over the years have documented their discoveries and concepts for contemporaries and for us.

For more information, contact Joan Echtenkamp Klein, Alvin V. and Nancy Baird Curator for Historical Collections at jre@virginia.edu. For other Historical Collections Web exhibits, please see: http://www.healthsystem.virginia.edu/internet/library/historical/exhibits.cfm.

May 2007

News from the Massachusetts General Hospital

Jeff Mifflin
Massachusetts General Hospital

Plans and fund raising are currently underway at the Massachusetts General Hospital in Boston for the establishment of a combined museum and archival research facility. The plans call for the renovation of and additions to an existing historical building (the Resident Physicians House, 1891). The MGH Archives and Special Collections will relocate to join the new MGH Museum in the refurbished accommodations in anticipation of the hospital's two hundredth anniversary in 2011.

A museum-related article that first appeared in Archival Elements (September 2003) will be republished for a broader readership this fall in a new electronic journal originating in Spain. See Jeffrey Mifflin, "Archivists and Artifacts: The Custodianship of Objects in an Archival Setting," *Archives and Social Studies: A Journal of Interdisciplinary Research* 1, no. 1 (September 2007). The peer-reviewed journal is available free of charge at http://socialstudies.cartagena.es.

July 2007

PETE: Planning for E-Thesis Enhancement at MIT

Craig Thomas
Institute Archives and Special Collections
Massachusetts Institute of Technology

The MIT Libraries are currently planning the transformation of our pilot e-thesis service into a full production service in DSpace. Dubbed PETE (Planning for E-Thesis Enhancement), the project is based in the Institute Archives and Special Collections, which has traditionally been responsible for collecting and managing theses at MIT. PETE is headed by the Archives' Digital Projects Manager under the guidance of the Archives' Head and the Associate Directors of Administration and Technology.

Historically, MIT has been in the forefront of the ETD (electronic thesis and dissertation) movement. The Libraries have operated an online e-thesis repository since 1998 and, since 1999, have run a pilot program that accepts born-digital e-theses directly from graduate students. The e-thesis collection is currently housed in DSpace@MIT (http://dspace.mit.edu), our local instance of the open-source institutional repository software co-developed by the MIT Libraries and Hewlett-Packard. With more than 18,000 titles, the collection is one of the largest in the world. Since 2004, every new graduate thesis produced at MIT is added to the online collection through either direct student submission or optical scanning of the official paper copy.

To help set priorities and requirements for the enhanced service, we conducted extensive interviews with students, faculty, administrators, and Libraries staff. From these discussions, several potential areas for enhancement have emerged: (1) to develop a user-friendly online process for direct student submission of born-digital e-theses, (2) to provide efficient review and approval workflows for academic departments, (3) to streamline cataloging workflows, and (4) to support thesis-related electronic files like multimedia and datasets. The top priority is direct student submission. We are currently investigating how to use two new tools developed by DSpace Federation members -- Configurable Submission from Tim Donohue at University of Illinois and the customizable Manakin UI from Scott Phillips at Texas A&M -- to create a native DSpace submission workflow that eases online submission, taps into Institute data stores for metadata, and integrates smoothly into the processes of MIT's disparate graduate programs. Final recommendations will be presented to the Libraries Steering Committee in late summer, and the project should advance into a development phase soon thereafter.

August 2007

Opening of the Silverman Collection

John Zwicky
American Academy of Pediatrics

With the very generous donation by his widow, Mrs. Ruth "Roo" Silverman, the American Academy of Pediatrics Pediatric History Center is proud to announce the completion and subsequent opening of the William A. Silverman, MD Collection. A leader in the pediatrics field for over 60 years, Dr. Silverman authored hundreds of articles, papers and lectures and five books, many of which are in the Silverman Collection and are now available for examination and study by interested scholars.

Dr. Silverman's career encompassed general pediatric care, neonatology, medical education and clinical research. Considered the "father of neonatal care" in the U.S., Dr. Silverman pioneered the burgeoning discipline of premature infant care beginning in the early 1940's. His studies of premature infant temperature control, retinopathy of the premature and kernicterus babies are considered classics in the field. He was relentless in his pursuit of "evidence" and insistence on controlled clinical trials in the field. He dedicated much of his later life to work with the blind and to experimental design issues in clinical research.

Dr. Silverman graduated from the University of California's School of Medicine in San Francisco in 1942. He trained at University of California Hospital in San Francisco and The Babies Hospital of Columbia University in New York. He joined the faculty of the Department of Pediatrics at Columbia in 1946 and for the next 22 years studied the problems of prematurely born infants.

Winner of several awards, including the Virginia Apgar Award and the William G. Bartholome Award for Ethical Excellence, his 1956 paper on premature infants with brain damage (kernicterus) was declared a "Citation Classic." Dr. Silverman never rested on his laurels. Even after retirement, Dr. Silverman remained a key figure in the pediatric world lecturing, writing, editing publications and mentoring until his death in 2005.

Subject files include publication reprints, manuscripts for publications and lectures, news articles, invitations, correspondence, awards, books, six folders of photos, photographic negatives and slides, and a Picasa picture slide-show on DVD of his memorial service. This collection may be of interest to researchers wishing to know more about the career of this major figure in pediatrics and neonatology, the development of newborn medical care including incubators and retinopathy of the premature infants, and information about other prominent physicians in the U.S. and other parts of the world with whom Dr. Silverman collaborated and trained. For additional information on this collection, please contact Susan Marshall, Director, Pediatric History Center, American Academy of Pediatrics, at 847/434-4722 or smarshall@aap.org .

August 2007

Conferences, Meetings, and Workshops

SAA Chicago, IL, 28 August - 1 September 2007

The Science, Technology, and Healthcare Roundtable will be meeting on Wednesday, August 29, 2007 from 6:00 - 8:00 p.m. STHC will present a panel discussion, "Caring for Artifacts in Scientific, Medical, and Technology Collections." Panelists representing diverse institutions will share their experiences working with artifacts. For the full agenda see "Message from the Co-Chairs".

TOURS:
For information about tours see:
http://www.archivists.org/conference/chicago2007/chicago2007Tours.asp

American Medical Association and Archives of the American College of Surgeons
1:00 - 5 pm, Tuesday, August 28, 2007
Capacity: 25
For reservations and information contact Heather Stecklein
Heather_J_Stecklein@rush.edu
312-942-7214

The Illinois Institute of Technology, Paul V. Galvin Library, IIT Archives and Campus Tour
10am - noon, Wednesday, August 29, 2007
Capacity: 25
For reservations and information contact Matthew Cook
cookm@iit.edu
312-567-8830

For the full SAA program, please see the following:
http://www.archivists.org/conference/chicago2007/chicago2007prog.asp

The STHC-themed sessions are listed below (but be sure to read the abstracts for other sessions, because we might have missed some):

STHC Roundtable Meeting - Caring for Artifacts in Archival Collections
6:00 - 8:00 pm, Wednesday, August 30, 2007

306. Preserving Electronic Records in the Sciences
2:45 - 4:15 pm, Thursday, August 30, 2007

401. Digital Imaging in the Smaller Shop: Case Studies from the Midwest
4:45 - 5:45 pm, Thursday, August 30, 2007

504. "i'd like to order..." The 21st Century Archival (Researcher) Consumer
2:30 - 4:00 pm, Friday, August 31, 2007

602. More Product, Less Privacy? Applying Minimal Processing with Awareness of Sensitive, Cnfidential, or Restricted Collection Materials
4:30 - 6:00 pm, Friday, August 31, 2007

606. Data Preservation Alliance for the Social Sciences: A Model for Collaboration
4:30 - 6:00 pm, Friday, August 31, 2007

703. Sexuality in the Archives
10:00 - 11:30 am, Saturday, September 1, 2007

708. It's More Than Just a Patent: Documenting Invention Records and the Makers and Players
10:00 - 11:30 am, Saturday, September 1, 2007

SAA Science, Technology Health Care Roundtable: Steering Committee Members (2005-2006)

R. Joseph Anderson American Institute of Physics College Park, MD	Ewa M. Basinska - *Newsletter Editor* Institute Archives Massachusetts Institute of Technology Cambridge, MA	Jean M. Deken Stanford Linear Accelerator Center Menlo Park, CA
Janice F. Goldblum - *Co-Chair* The National Academies Washington, DC	Russell A. Johnson - *ListServ Moderator* Louise M. Darling Biomedical Library University Of Califronia, Los Angeles	Joan Echtenkamp Klein - *Past Chair* Health Sciences Library University of Virginia Health System Charlottesville, VA

Jodi Koste Tompkins-McCaw Library Virginia Commonwealth University Richmond, VA	Suzie Long Missouri Southern University Joplin, MO	Lisa Mix Library and Center for Knowledge Management University of California, San Francisco
Stephen E. Novak Augustus C. Long Health Sciences Library Columbia University New York, NY	Alison L. Oswald Smithsonian Institution Washington, DC	Tim L. Pennycuff Lister Hill Library of the Health Sciences University of Alabama at Birmingham Birmingham, AL
Rose Roberto - *Web Liaison* Bodleian Library University of Oxford Oxford, UK	Paul Theerman - *Co-Chair* National Library of Medicine Bethesda, MD	John Zwicky American Academy of Pediatrics Elk Grove Village, IL

Initial Findings of the Project to Document the History of Physicists in Industry

R. Joseph Anderson and Orville Butler
Center for History of Physics
American Institute of Physics

The Industry Project, the Center for History of Physics' five-year archival documentation study of corporate research and development (R&D), will end this December. The Project represents the first systematic investigation of records-keeping practices and needs in America's high-technology industries. Based primarily on site visits, records surveys, and question-set interviews at fourteen of the largest employers of physicists in industry,[1] the study will provide companies with information and recommendations to preserve essential R&D information. In addition to the question-set interviews, which are usually about two hours in length, we are doing longer career-length interviews with some especially important figures in industrial physics. The Project began in January 2003 and will end in December 2007. It is supported by the Center's parent organization, the American Institute of Physics (AIP), and by grants from NSF, NHPRC, Mellon Foundation, Avenir Foundation, and Research Corporation. In March 2007, the AIP established the Marc H. Brodsky Fund for Oral History of Physicists in Industry and is raising money to fully endow the fund.[2]

FINDINGS

We have completed a large portion of encoding for fifty-nine of the 121 question-set interviews conducted with industrial physicists, managers, and information professionals and have begun coding some additional sources. The results of this preliminary analysis have generated significant and occasionally surprising results.

Career Choices

Physicists' motivations for entering industry have changed over time. Academic status was paramount during the pre-1970 period, and those going into industry justified their preference on highly personal grounds. When we break our interviews of Ph.D. physicists into periods by when they entered industry, those who entered prior

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to the 1970s generally did so for highly personal reasons: their father worked at the General Electric lab, for example, or they had a friend in industry. Most noted the abundance of work available in academia and government labs. One said that he had been offered a position at a government lab that had a job-offer acceptance rate of about two percent.

The mid-1970s through the 1980s found physicists continuing to prefer academic positions but feeling squeezed by the declining academic market. Many planned to return to academia after a few years but never made the shift. Most noted the significant salary advantage to working in industry, and at least one indicated that he did not go to work for industry, he went to work for Bell Labs, noting the inherent academic nature of work at Bell Laboratory during that time. Most in this period chose industrial research either because it provided substantial economic benefits over academia or because they felt they could not or were unwilling to submit to the highly competitive academic market and the destabilizing effects of a drawn-out tenure process on family life. After about 1990, a majority of interviewees were highly critical of academia, questioning the value of publications that only a few would read and noting the rewards of research resulting in products that changed people's lives. They also contrasted the stability of industrial research compared to the experiences of their former professors, who spent much of their time in an uncertain quest for funding.

Nature of Physicists' Work in Industry
In our previous reports we noted a dramatic decline in basic scientific research and a shift towards increased development in industrial R&D laboratories. A more in depth analysis suggests that while potentially true, this division of types of research is not widely accepted by industrial physicists and R&D managers. They prefer to define research in terms of time to payout. Short-term research results in a product or process in one to two years; medium research in three to five years and long-term research in five to ten years. Most research with expected payout longer than ten years is not considered cost effective and is typically relegated to the academic realm. Industrial research, unlike academic research, also addresses operational knowledge. Industrial research is not considered successful until it results in a new or increased value chain for the company. Industrial research has rejected as unsuccessful research models in which basic researchers come up with new knowledge that is tossed over the fence to a development team.

Research teams that integrate manufacturing knowledge from the factory floor and product-use knowledge of customers are viewed as more successful than research that attempts to separate out any one component. The significance of operational knowledge in industrial research is but one distinguishing factor noted by industrial physicists and R&D managers between industrial research and academic research. Research is also defined in terms of the nature of the output. Academic research results in publications while industrial research results in new products or processes that are adding value to the company. This does not mean that industry never does 'academic' research. However, where the focus is on publication rather than product, it is done primarily for branding purposes. That is, published research helps to identify the company as the technological leader and is funded or encouraged either explicitly or implicitly for that purpose. Some companies reward skilled researchers with a 'ten percent' rule allowing them to spend approximately ten percent of their time in non-directed research.

To the extent that industrial R&D managers distinguish between basic and applied research, we found two 'models' regarding the nature of changes in industrial R&D since the 1980s. These two models are not necessarily mutually exclusive.

The dominant view holds that significant changes in business associated with globalization and the increased competitive nature of business has forced a decline in basic research, which lay outside the core business skills of the company. While R&D managers with significant government contracts suggested an apparently unwritten policy shift on the part of DARPA and other government funding agencies that basic research ought to be done in university rather than industrial environments, most criticized government efforts to encourage joint industrial/academic research programs as ineffective. According to this view, the shift on the part of industry

from basic research (historically glorified in the immediate postwar period) to development is a permanent characteristic of broader changes in contemporary business, which exists in a highly competitive global environment. As a result, a company needs to focus on its core business, and many noted that research was not a core business of the company. They frequently would turn not to academia directly for acquisition of new technologies but to the new high-tech startups, often begun by professors and graduate students at academic institutions. Those technologies applicable to the companies' core business would be acquired and further developed in the industrial R&D labs.

A second, though less widespread, perspective holds that this shift towards development over basic research is cyclic. According to this view, the electronics revolution of the 1950s and 1960s provided industry with a rich treasure trove of technological developments. This created a situation that pushed the pendulum away from basic research towards development. As these new technologies have matured, R&D managers holding to this view assert that industry increasingly needs to address fundamental science. They predict a swing back towards increased basic research to develop new, immature technologies.

Almost all companies collaborate with universities on a wide variety of programs, but they view the larger government-mandated collaborative programs as not providing effective research and development. Bench scientists and managers alike noted the inherent conflicts between the academic need to publish, which is the primary output of academic research, and the industrial need to protect its intellectual property through patents and company secrets. Most found academic/industrial collaboration effective only when industry provided academia with clearly directed research programs in which intellectual property issues were clearly defined and the nature of the research program was imposed by industry. However, they frequently found non-directed research useful for other, non-research reasons. For example, they might use it to qualify a professor as a consultant to the company or to check out the quality of students as potential employees. However, even here there are inherent tensions. Physicists in industry noted the multi-disciplinary nature of industrial research in contrast with the narrow, field-specific research typical of academia. They accordingly tend to recruit students whose academic research reflected broad interdisciplinary interests. Many saw physicists in industry as the 'problem solvers' who brought a basic understanding of scientific principles to the industrial realm.

Research and Development (R&D) Records
Turning to a primary focus of our study, we found great diversity both in the nature of records and in record-keeping practices in industrial labs. The Sarbanes-Oxley Act has done much to standardize retention policies for business records, and those companies doing research under government contracts generally have strict retention and disposal policies for those contracts. However, no standard has been set for R&D records in general nor are there any clear best practice guidelines followed widely in industry. This lack of standardization in R&D record-keeping has been exacerbated by the increasing role of electronic records and email communications. Many corporations no longer issue or track paper lab notebooks, but traditional notebooks-- the once ubiquitous means of documenting corporate research--have not been supplanted by electronic versions. Most of the corporate physicists that we interviewed rely on standard presentation programs, word processing, and spreadsheets. However, practices--including the extent to which any documentation is done--depend on individual preferences.

One company's study of electronic lab notebooks suggested resistance on the part of scientists to their use. Rather than viewing electronic lab notebooks as more efficient tools of record keeping, scientists saw them as containing the potential for intrusive supervision of their day-to-day work. Most physicists preferred to store their research data and notes in file folders on their computer. These were typically backed up on a daily basis. However, plans for long-term preservation are up to the individual and are often haphazard. Those companies with large defense or government contracts noted that the shift to PowerPoint presentations has led to increased frequency of outside review of their work. They also noted that presentations that had previously been data-driven now tend to be more visual, providing simpler, graphic explanations of the basic concepts underlying the research, which could be easily understood by outside contract managers.

Within corporations, and sometimes between corporations and contractors over secured networks, some research teams provide common storage of research reports and data in electronic rooms. Reports and data are uploaded to these rooms, and links are sent out in emails rather than attaching the reports and data directly. This permits direct updating of the data and modification of the reports, though few if any companies track these changes. Nor is there generally some standard means of finding a report unless one knows the author's name. Some physicists are trying to address these problems. One has proposed a company-wide wiki but has yet to obtain funding to implement it. Even when companies have provided storage of data, most have not addressed issues of data transfer or the reading of data on outdated media.

Many companies are aware of these problems but none appear to have found a satisfactory solution. The advice of corporate legal departments regarding the retention or destruction of records appears to reflect the outcomes of the last legal battle rather than a consistent philosophy of record retention and disposal. As a result some legal departments recommend saving as little as possible; others propose and, in at least one example, mandate effective records retention systems.

Records management programs range from very weak to highly sophisticated, although actual implementation tends to be spotty even among some of the well-designed examples. As a result there is frequently significant difference between written policies and actual practices. Where there are clear R&D record retention and disposal policies in place, they frequently place responsibility for record retention in the hands of the researchers themselves. However, researchers are often not made aware of their responsibility and authority. Retention programs for research records are typically managed through the technical library, many of which previously handled the distribution and collection of laboratory notebooks. While they may continue to have management of paper research records, in most cases they do not manage electronic records. Absent the mandated use of either paper or electronic notebooks, technical libraries can at best encourage researchers to voluntarily provide research records. However, we found significant declines in library staff and resources at nearly all the companies that we visited as researchers increasingly rely on the internet for literature searches and firms continue to cut infrastructure costs.

With the downsizing of technical libraries and the shift from the paper lab notebook to alternative forms of electronic records, no common authority has evolved for the collection and retention of research records. Further, incentives for developing more effective knowledge management programs appear limited. Our interviews have confirmed studies showing that scientists often depend on oral rather than written sources of information, turning to 'old timers' when they want to know about previous experiments or projects. And many R&D managers seem willing to accept the recurring, one-time costs of re-inventing technologies in new contexts instead of investing in effective records programs that might prevent the need for such reinvention.

Despite these difficulties, we expect to produce useable recommendations for documenting R&D as we continue our analysis. Effective knowledge management can pay dividends over the long run, and many of the problems that we have seen are the result of poor management instead of cost cutting measures. Some of the issues posed by lost and at-risk research and development records can be resolved through the identification of specific problems and straightforward education about existing records programs. A strong argument can be made for the cost benefits of effectively protecting intellectual property. The fact that at least one legal department has mandated a new and more rigorous program to preserve lab notebooks offers the hope that the Sarbanes-Oxley Act and similar legislation, if they survive, may have a 'trickle down' effect in documenting R&D as well as financial and management operations. It is also important to appreciate that history is used by most companies to promote corporate pride and, at least occasionally, as another way of 'branding' the company as a reliable or prestigious operation. For example, Agilent's History Center maintains both archival records and artifacts to help inculcate in staff and associates the entrepreneurial spirit of founders William Hewlett and David Packard. Some businesses have tried to reach back to earlier traditions to respond to new priorities. Maintaining corporate history does not require the added expense of maintaining a corporate archives. Texas

Instruments, which closed their in-house archives in the 1990s, has recently succeeded in transferring it to Southern Methodist University. 3M and several other companies have donated some of their corporate records to local or regional archives. And finally, companies have the option of preserving their core R&D records in effective records management and technical library programs.

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1. The fourteen companies consist of IBM, Xerox, Lucent Technologies Bell Labs, Lockheed Martin, Exxon Mobil, Honeywell, Eastman Kodak, Corning, General Atomics, 3M, General Electric, Texas Instruments, Agilent, and Raytheon.

2. For additional information on this and other documentation research studies conducted by the Center for History of Physics, see R. Joseph Anderson, "Difficult to Document: The History of Physics and Allied Fields in Industrial and Government Labs," *Journal of Archival Organization* 3, 1 (2005): 7-22; and "Documenting the Work of Physicists in Industrial Laboratories," presented at Future Proof II; International Scientific Archives Conference, Deutsches Museum, Munich, April 2005 (http://www.bath.ac.uk/ncuacs/FP2_Anderson.htm).

Managing Technology-Driven Change From a Non-Technical Tradition: An Exploration of Some of the Challenges Facing Modern Archives

Suzanna Long
Department of Management and Marketing
Southern Missouri State University

Archivists working with science, technology, or health care collections face the added challenge of dealing with records created in a highly technical environment while working to incorporate technology into traditional work practices. The resulting sociotechnical system is complex, and managing the requisite changes can be confusing. How do you categorize the system components? What are the technical requirements? What is the impact of organizational culture on systems of this type? These are all facets of systems models that face those trying to understand how to best guide the change process.

For most archivists, the above paragraph may seem alien and confusing. What is a sociotechnical system? How is this applicable to the challenges of modern archival practice? A bit of background may be useful.

Socio-technical systems are defined as "technical works involving significant social participation, interests, and concerns." (Maier and Rechtin, 2002) As originally defined, these systems addressed the architecture of large buildings, monuments, dams, roadways, and other civil structures. More recently, the definition has expanded to include the myriad of hybrid systems that involve technology as a key component. The modern archival institution falls into this category. As workflows become increasingly virtual and electronic records more the norm than the exception, an understanding of sociotechnical systems is a key element to modeling the flow of records and human processes into the archival domain. It is far more than an understanding of the technical requirements of the technology itself. Sociotechnical system design must truly model the human interfaces—a truly difficult process. Sociotechnical systems are heavily dependent on technology and maintain a large degree of "public" participation. Value is often based more in perception than fact and how the user feels about the system provides needed direction for the system architect. Thus, surface or hidden feelings about the value of electronic media over traditional records may seriously impact an archivist's ability to embrace technology-driven change.

Human choices are based not only on conscious but unconscious processes as well. As a result, "common-sense" heuristics are often employed by systems engineers to model the system more accurately (Dasher,

2003). The organization can be divided into sections as part of a process map. This "whole systems" approach is useful in determining sociotechnical interfaces, but there are concerns to this approach as well (Goldstein and Behm, 2004; Long and Spurlock, 2005). A whole systems approach does provide a comprehensive overview; however, it is one thing to claim this level of approach and another to accomplish it. Some argue that sociotechnical systems may actually be systems of systems because multiple organizations are frequently involved. This certainly applies to the archival system where not only internal organizational culture must be considered, but also that of the depositing departments or organizations.

Technology-driven change initiatives are often difficult to implement and failure rates are high. Lack of success is often linked to failures in understanding the change environment, neglecting human factors in the implementation of the new technology, and failure to adjust the organizational structure or culture to truly manage the change process.

In part, this is difficult because change means different things to different people; this makes the organizational response difficult to determine. Proper levels of stakeholder participation must be included in change management plans or initiative implementations (Wright, et al, 2004; Lines et al, 2005; Clegg and Walsh, 2004; Woodward and Hendry, 2004).

Despite the prevalence of those proposing the use of an integrated approach to sociotechnical system design, the reality is often that technology drives the change process. The social component of the sociotechnical system is frequently under-analyzed or not taken into account and human resistance to changing work processes is common. Resistance can stem from many sources including a disparity in what constitutes sufficient training or authority to implement the proposed change. Individuals are far more resistant to change when it involves loss of control over long-standing work patterns or exposing weakness resulting from a lack of understanding of the proposed change. The form of the resistance varies according to the organizational culture and can include the passive form: "if you wait it out, it will eventually go away" (Clegg and Walsh, 2004; Woodward and Hendry, 2004). Archivists often feel a deep affection and sense of loyalty to their collections. For those with a preference for paper records, the move to increasingly electronic archives is difficult to embrace.

When implementing key change initiatives employee acceptance and support is crucial. Leadership models suggest that group decision making is the best tact to take with projects of this type. The challenge comes with engaging the stakeholders in a meaningful way to achieve project goals.

It is not enough for archival managers to insist that change must happen, no matter how difficult, and force participation; stakeholders from the archival manager to the practitioner must be pulled willingly into the process. Training will help non-technical stakeholders find a comfort level with terminology and the system itself. The diversity of the stakeholders can be used as part of the systems model to manage risk and will greatly improve communications. The disparate perceptions of system will offer a stronger risk assessment than would be possible from a team of stakeholders with the same background. When technical experts must explain processes to non-technical stakeholders, it not only provides a solid frame of reference for those without a technical background but also gives the group as a whole the ability to truly understand work flow and system components. Team-building exercises can help develop trust and team identity issues that will guarantee thoughtful, truthful responses to learning scenarios and potential system problems. Even the conflict that is inevitable can be harnessed to more properly model man-machine interface points.

This can have tremendous value to the archives manager striving to properly understand the change environment and provide meaningful guidance to staff. Gleaning the practical issues from the theoretical ones suggests a plan of action that can prove useful at understanding both the social and technical requirements.

Start by examining the flow of records. Do not focus solely on the technical requirements, but explore the social environment in which they were created. What are the attitudes and opinions of the records creators?

What is the reporting structure of the organization and who are the decision-makers? What is the perceived value of preserving information within the creating unit? The answers to all of these questions provide direction for training and team-building. It also gives a valid starting point for creating a systems model. It is helpful to remember long-buried memories from science and math classes: draw a picture; create a flowchart! Look at who deals with records and why. Is the flow unidirectional or bidirectional? What sources of conflict are present and how can these be resolved? Risk assessment and severity matrices (tools illustrating how specific disasters would affect the archives program) are important additions to your information flowchart.

Next, do the same thing for your own institution. Where are the bottlenecks? How can these be circumvented? Can they? With this in hand, figure out the connection points between the two charts. It is critical that the archives manager understand each point where the human connection can impact the technical component of their archives program. Finally, do not forget to re-examine whether organizational culture has been considered. Are the organizational cultures of the depositing units compatible with the existing archives culture and its goals and objectives? The social element is every bit as important as the technical requirements list and must be fully considered to truly incorporate change.

Does this mean that the technical side is not important? Absolutely not! Most archivists continue to be trained predominately in history and library sciences. These programs have some level of training in technology, but not sufficient to design the archival systems needed for managing electronic records. A team of technical specialists is needed and communication between the two groups can be difficult or incomplete. Each nods in understanding during meetings with no real measure of whether the message is truly being encoded or decoded properly. Jargon can become the norm without any real appreciation of what is meant. Many have argued that the archivist of the future should be a hybrid blend of traditional skills with a technology-based overlay. This is a wonderful idea but it does not solve current issues. Archivists are not programmers, media specialists, systems engineers, and vice versa. Care must be taken to develop a common terminology and language so that useful dialogue can take place. Moreover, healthy skepticism is a good thing. When your mother said "don't believe everything you hear or read," that was sound advice. Do not be afraid to ask questions; instead of appearing foolish, you will gain awareness of what you don't know and where your program might be vulnerable to incomplete information or modeling.

The blending of archives with technology is becoming increasingly real. Working to fully understand what this means for archival workflow will aid in systems development and successful preservation of archival programs.

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Interpreting Privacy: A Survey of the HIPAA Privacy Rule's Application in Archives and Precedents for Future Directions

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The following text is based on the presentation "Hiding Information or Providing Access in Archives (HIPAA): Protected Health Information in University Archives" delivered at the Midwest Archives Conference, Columbus, OH, May 2-5, 2007.

In 2006 the Academic Health Center (AHC) at the University of Minnesota began a collaborative effort with the University Libraries to document the institutional history of the AHC. Composed of six schools and colleges, interprofessional research centers, and affiliate institutions, the Academic Health Center was organized in 1970 as a means to promote cross-professional cooperation and encourage imaginative approaches to health care delivery. The goal of the project is to identify, collect, and make available the institutional and historical documentation of the AHC, ensure that this documentation is preserved, and follow all applicable professional standards and local, state, and federal policies. One federal policy identified as being relevant to the project materials is the "Standards for Privacy of Individually Identifiable Health Information," or the "Privacy Rule" for short, which acts as the companion piece to the Health Insurance Portability and Accountability Act (HIPAA) of 1996.(1)

Current State at the University of Minnesota

Like most comparable academic institutions, the University of Minnesota is a hybrid entity according to the Privacy Rule. It performs functions that are both covered and not covered by the Privacy Rule within the institution and can draw a distinction between health care units of the University and those unrelated to health care. The Academic Health Center is designated as a covered component of the University of Minnesota and is charged to oversee HIPAA compliance throughout the University. According to the Privacy Rule, the non-covered components of the University are not subject to the Rule. At the University of Minnesota, this includes the University Archives, a unit of the University Libraries, where all AHC archival material will be stored and managed. With this cursory understanding, it seems that the material located at the University Archives is not subject to the conditions set forth in the Privacy Rule governing research use and access.

However, a university-wide policy on the protection of individual health information quickly derailed this simplistic interpretation. The Privacy Rule defaults to state or local policies when those procedures are deemed to be more stringent than those set forth in the Rule. In this case, the University's policy does not differentiate between covered and non-covered components within the entity. Instead, the policy asserts that it is the responsibility of all units of the University to appropriately safeguard protected health information (PHI) within their custody according to federal regulations.(2)

Although the University Archives does not collect traditional medical or patient records, the Archives does collect the papers of administrators and selected faculty papers within the health sciences. It is within these collections that an undetermined amount of protected health information exists in the correspondence, notes,

research materials for grants, and the occasional medical record or logbook from a clinic or surgical department that is tucked away in the personal papers. The application of the Privacy Rule to these 'incidental disclosures' of protected health information is not well understood.(3)

Approaches to the Privacy Rule
In order to apply appropriate safeguards for any protected health information located in the collections at the University Archives, it is necessary to understand how the Privacy Rule can be applied to archival management and to review practices in place at archival programs covered by the Privacy Rule.

Several key points from the Privacy Rule are applicable to the acquisition and management of archival materials considered to contain protected health information. First, the Privacy Rule applies only to covered entities; it does not apply to all persons or institutions that collect individually identifiable health information. Although certain non-covered archival programs may be exempt from the Privacy Rule, some institutional policies may enforce the regulation's safeguards as a precaution.(4) Second, the Privacy Rule pertains only to protected health information created or collected by a covered entity. Personal health information created or collected by a non-covered entity does not necessarily need to comply with the Privacy Rule. Correspondence from a patient to a doctor or correspondence between two non-covered individuals discussing a person's health are not covered items. Another point to consider is that the Privacy Rule does not pass through its requirements to business associates, which are separate entities contracted to provide some of the functions of the covered entity. A business associate may be required to provide assurances to the safeguarding of protected health information but is only subject to the contract, not the Privacy Rule.(5) Providing open access to documents that have been redacted or de-identified of all protected health information is not in violation of the Privacy Rule. Finally, enforcement of the Privacy Rule is complaint-driven. Working with collections that contain protected health information involves a level of risk management for the institution.

During a review of the archival literature on protected medical information and access policies in place or being drafted, it became apparent that the difficulty of applying the Privacy Rule to archival programs resulted in a range of responses. A strict interpretation of the Privacy Rule limits access to material only to the original covered entity and its business associates. Further access would only be available through an application process to an institutional review board (IRB) or privacy board as provided in the Privacy Rule. A conservative approach is to conduct an item-by-item review during the course of processing to identify and redact any protected health information found in the collections.(6) Other institutions are exploring methods to offer tiered access to documents containing protected health information depending on whether the individual is living or deceased while still operating within the parameters of the Privacy Rule. At the Archives and Special Collections at the Columbia University Medical Center, the process for granting researcher access to a living person's protected health information is allowed only by permission of the individual. Access to protected health information of a deceased individual is granted by the Privacy Officer after the review of a written request.(7) At the Alan Mason Chesney Medical Archives at Johns Hopkins, the duty to safeguard protected health information is passed on to the researcher during the application process to access the materials. In much the same way a covered entity can require a business associate to guarantee the protection of private data through a contractual agreement, the Chesney Medical Archives requires researchers to maintain the confidentiality of any protected health information encountered during the research process.(8)

Looking for Precedents
After reviewing the Privacy Rule guidelines and the interpretations of those guidelines in access policies at other archival institutions, it is clear that archivists and their institutional legal counsels are still building consensus in the Rule's application to archives. Yet the anxiety over compliance is overshadowing our opportunities to advocate for the records in our charge. Nancy McCall and Stephen Novak are to be commended for their own advocacy work in this area, but more is needed to assure that health related records continually move toward long-term preservation and open access while providing protections for privacy rather than automatic destruction of protected health information or sweeping restrictions imposed on collections.(9)

As part of the process to establish professional guidelines, archivists should look at models found in other federal precedents and encourage their incorporation into the Privacy Rule. One such precedent is the interpretive practice surrounding the "Fair Use" provision in the U.S. Copyright Law when working with copyright protected materials and managing use and access.(10) Another precedent is the federal definition of "research" and its application to historical research and oral histories.

In regard to copyright, archivists are aware of the balance between the protection of an individual's rights and the application of fair use; however, many archivists routinely enforce copyright protections over public domain materials or create unnecessary barriers to access.(11) The lesson learned from this behavior is that claims to copyright cannot always be taken at face value. As a profession, we have become better at questioning the authority to which copyright is claimed and at using the fair use provisions offered to us by law. We have also educated the users of copyrighted materials that they play a role in compliance. Copyright notices are on our registration forms, call slips, and copy machines. It is well understood that archivists provide access; we do not patrol for federal law violations. Archivists are also partnering with a growing number of librarians active in the scholarly communication arena to help educate content creators about their options and roles in setting the stage for fair use.

Many of these same techniques can be applied to the Privacy Rule and access to archival materials. First, archivists must become more familiarized with the principles of the Privacy Rule and its applications. Not all institutions or medical information is protected by the regulation. We must learn to differentiate the covered from the non-covered entities in order to determine appropriate safeguards for private information. We must also learn to question under whose authority are privacy protections enacted and for whose benefit. Second, inserting a fair use provision into the Privacy Rule allowing for access to collections with an undeterminable amount of private information that may or may not result in incidental disclosures of protected health information would continue to protect individual privacy and re-release many of the collections that were already open to research prior to 2003. Finally, we can share the burden of compliance with the researcher through registration and request forms. This approach uses the business associate agreement provided in the Privacy Rule by applying it to our users. Similar to the way researchers are made aware of copyright, those wanting access to collections with protected health information could sign a contract agreeing to certain conditions of use. This is already employed at Johns Hopkins as mentioned above and is being discussed at other institutions with their legal counsel.(12)

The ongoing debate regarding oral histories for scholarly research and the need for human subject protection placed many such projects in the hands of university institutional review boards. Considered to be the subject of research, some participants in oral histories were provided many of the same protections given to individuals involved in medical research. In 2003, a joint statement by the Oral History Association, the American Historical Association, and the U.S. Department of Health and Human Services Office for Human Research Protection (OHRP) provided some clarity on this debate by explaining that "oral history interviewing projects in general do not involve the type of research defined by HHS regulations and are therefore excluded from Institutional Review Board oversight."(13) The U.S. Department of Health and Human Services defines research according to the Common Rule as a "systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge."(14) Although easily interpreted by institutional review boards and historians alike to include historical research, the OHRP clarified its position by explaining that

> Although the HHS regulations do not define "generalizable knowledge," it is reasonable to assume that the term does not simply mean knowledge that lends itself to generalizations, which characterizes every form of scholarly inquiry and human communication. While historians reach for meaning that goes beyond the specific subject of their inquiry, unlike researchers in the biomedical and behavioral sciences they do not reach for generalizable principles of historical or social development, nor do they seek underlying principles or laws of nature that have

predictive value and can be applied to other circumstances for the purpose of controlling outcomes. Historians explain a particular past; they do not create general explanations about all that has happened in the past, nor do they predict the future.(15)

While some historians may bristle at this description of their work, the OHRP is specific in what it does and does not deem research in need of institutional oversight.

The definition of research in the Privacy Rule is the same definition used in the Common Rule. With the precedent set by the OHRP, it is logical to assume that the majority of historical research use of archival collections that contain protected health information falls outside the purview of the OHRP and subsequent university institutional review boards. If that is the case, then the Privacy Rule's guidelines on research access are not written for the types of use commonly associated with materials located in libraries and archives. Here again is an opportunity for the regulation to be amended to include a fair use provision that provides access while also implements appropriate safeguards for individual privacy.

It is clear that archivists and archival work were not considered during the writing of the Privacy Rule. Be that as it may, we are not powerless in the future direction of the regulation. Archivists have the opportunity to raise awareness about these issues with those who make policy at their institutions. Individual interpretations and responses to the perceived application of the Privacy Rule to archives will continue until clear professional and legal guidelines are established. At the University of Minnesota, with our understanding of the particular needs for the materials collected, the methods employed at other institutions, and the possible precedents for action, the AHC archives project will move forward to collect materials and provide access based on our own interpretations, the advice of our colleagues and legal counsel, and applicable models until the time that a consensus is met and the best practices for applying the Privacy Rule to archives are established.

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9.   Both Nancy McCall and Stephen Novak have written and presented on the subject as well as provided testimony to the National Committee on Vital and Health Statistics.

10. *U.S. Code*, Title 17, Sec. 107, 2003 ed. Accessed 16 April 2007. http://www.copyright.gov/title17/92chap1.html.

11. See: Peter Hirtle, "Archives or Assets?" *American Archivist* 66 (Fall/Winter 2003): 235-247.

12. Alan January discussed the possibility of the Indiana State Archives granting access to protected materials via a business associate agreement with their patrons during his presentation "Managing and Accessing State Hospital Records: The Indiana Experience" (paper presented at the Midwest Archives Conference, Columbus, OH, 4 May 2007).

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