

**HISTORIANS AT WORK IN THE SLAC ARCHIVES:
An Archivist's Perspective**

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Abstract

Active collecting of the archives of the SLAC National Accelerator Laboratory – as well as of other US national laboratories – began in earnest in the late twentieth century as a result of the interest and agitation by both Historians of Science and Archivists. This paper examines the use and dissemination of knowledge of the histories of the US science laboratories as exemplified by the SLAC Archives and History Office (AHO) experience. We find that the development of the SLAC AHO program has been and continues to be propelled by ongoing exchanges between the two disciplines, shaped by their sometimes limited understanding of each other's goals, methodologies, and constraints, and by the two disciplines' relationships to the records-creating scientists.

Introduction

In its 50 year history, the SLAC National Accelerator Laboratory in Menlo Park, California has accomplished work of historical significance in science, technology and engineering, and has striven with mixed success to document the record of its achievements. Throughout the life of the laboratory, historians and scientists have played important roles as both users of, and advocates and advisors for the archives of the laboratory and for the history that the archives documents. The evolving partnership has been mutually beneficial, if not outright symbiotic, as we have worked to understand each other's interests, needs, and constraints and have striven to best preserve and present the history of the lab.

I will begin this paper with a brief explanation of SLAC's purpose and mission, and will then follow with a discussion of the Archives and History Office's continuing partnership with scientists, and with historians of science and technology.

What is SLAC?

The idea for a two-mile linear accelerator at Stanford University was conceived in 1956, proposed in 1957, and authorized by the US Congress in 1961. Initially called "Project M," the venture was renamed "The Stanford Linear Accelerator Center" (SLAC) in August of 1960; and again renamed, SLAC National Accelerator Laboratory in 2008. SLAC's official dedication occurred on September 9, 1967.¹ SLAC is owned by the United States government, and is operated for the US Department of Energy by Stanford University. Its present-day mission is to grow into a premier photon science laboratory, maintain its position as THE premier accelerator laboratory, and to pursue strategic programs in particle physics, astrophysics, and cosmology.² SLAC is proud to serve the large international user community at the lab, whose time on site can range from days to weeks to years.

SLAC's expertise in the acceleration of electrons, in theoretical physics, and in the design and construction of particle detectors enables its researchers to pursue answers to basic questions about the structure of matter and about the fundamental forces that operate in our universe. To date, 3 Nobel Prizes in Physics and 1 in Chemistry have been awarded for research conducted on the SLAC site.^{3 4}

1980's: Beginnings of the SLAC Archives and History Office

Impetus for the establishment of the SLAC Archives and History Office can be traced to several converging sources. The 1980's were marked by high interest in the history of particle physics both generally in the United States, and more locally at

Stanford University. Early in the decade, the American Institute of Physics (AIP), working on contract with the US Department of Energy (DOE), completed a study of the records management and archives programs at several DOE contract laboratories. A final report and several guides for the selection and preservation of permanent records at physics laboratories resulted from this study.⁵ Following the completion of their DOE project, the AIP then initiated a much larger research project, called the “Study of Multi-Institutional Collaborations.” To assist in organizing the new project AIP tapped – among others – then-Stanford University Curator of University Archives Roxanne Nilan, known to the AIP for her interest in the history of science and for her work on the Institute’s Committee for the History of Physics.⁶

In the meantime, Joan Warnow-Blewett of the AIP had been actively encouraging staff at SLAC, as well as two successive SLAC Directors – W. K. H. Panofsky (1962-1984) and Burton Richter (1984-1999) – to take steps to preserve SLAC’s history. Warnow-Blewett was a long-time member of both the History of Science Society and the Society of American Archivists, which named her a Fellow in 1990. To meet the challenge of documenting the new institutions of the postwar physics community, she pioneered the “documentation strategy” approach to preserving archival records. At her instigation, archivists, sociologists, scientists and historians joined forces in document-research projects that studied the archival records and archival requirements of both post-war physics laboratories and multi-institutional collaborations. In recognition of her groundbreaking documentation strategy research, the History Center received the Distinguished Service Award of the Society of American Archivists for offering, in SAA’s words,

"a model that has been emulated by other scientific disciplines, and should be a prototype for other subjects and institutions as well. The Physics Center has made scientists, historians, and archivists aware of the necessity of documenting the processes and achievements of science and technology. More importantly, it has shown that it is possible to document fields that previously seemed beyond our ken. . . ."

Warnow-Blewett had also begun encouraging Nilan to take an active interest in the history of SLAC, and to do what she could to support the SLAC administrative and library staffs in their efforts to preserve the lab’s historical record. Locally at SLAC, awareness had been growing among senior management that the laboratory was beginning an important transition period as the founding generation began to reach retirement age. Further motivation for the SLAC History Project was provided, beginning in 1982, when Peter Galison, Stanford University professor of philosophy and of physics, initiated his research on problems in the history of physics at Stanford, including the history of physics at SLAC.⁷

1986- 1995: Advocacy Bears Fruit

As a direct result of this increasing interest and advocacy by the history of science community, the SLAC Archives and History Office began its life in February 1986 as the

“SLAC History Project” with a records survey in administrative groups throughout the lab. Identification of important records was followed by creation of an inventory database (SLACHIST) for some 500 separate records collections, and by the inauguration of a physical archive of important records no longer needed for current business. The records survey was followed up with an oral history program to gather information not fully documented in the available records.^{8 9}

SLAC’s History Project officially became the “SLAC Archives and History Office” (AHO) in the Fall of 1989, when Roxanne Nilan came “up the hill” from the main Stanford campus and joined SLAC for a year’s sabbatical to head up the new office and to “evaluate, gather and make available” SLAC’s historical materials.¹⁰ Nilan also continued to work as SLAC’s and Stanford’s representative on the AIP multi-institutional collaboration study. She was succeeded as head of the Archives and History Office by Robin Chandler, who served as SLAC Archivist from 1990 to 1995.¹¹ Throughout this period, SLAC staff made significant contributions to the AIP’s first, high-energy physics phase of their multi-institutional collaborations research by conducting oral histories, collecting data for a sociological census study, and by supporting Peter Galison’s related research on the history of the discovery of the J/Psi particle at SLAC in 1974.¹² During this very active period a number of historical publications – including a volume entitled Big Science – were completed and focused on the evolution of the laboratory over time.¹³

1996-to the Present: Evolving Partnership

In 1990 Roxanne Nilan left the employ of Stanford University to begin a course of study leading to a doctorate in American History; Robin Chandler left in 1995 to become Archivist at the University of California medical campus in San Francisco. I came to SLAC as Archivist in 1996, after 13 years with the U.S. National Archives and Records Administration. When I arrived, I found an archival program that had a solid foundation, but which had languished un-staffed for nearly a year.

I also found myself in a collegial but foreign culture that is intensely focused on the **next** project and the **next** discovery, with little time for or interest in even the recent past. One of the sights that greeted me every day for the first few years was a set of bins above a common printer in my building—three output bins, labeled “Today” “Yesterday” and “Old.” These served as a constant reminder to me that my interest in history as the lab’s archivist was, as one physicist kindly put it to me, “orthogonal” to the lab’s interests.

In such an environment, I have found that the ongoing advocacy and interest of historians has been crucial. Historians of science interest in SLAC’s past has, by its very existence, advocated incrementally for the ongoing importance of the SLAC Archives and History Office program in ways not available to me as the lab’s archivist. From Doctoral Candidates to Full Professors, visitors to the archives use the collections and also interview key senior staff. Scientific and engineering staff members are initially taken

aback that a “historian” wants interact with to **them**, but as interviews and discussions occur – either in person or by way of electronic technology—historians demonstrate to technical staff the truth of what I and my predecessors at the lab had been emphasizing: that SLAC’s research and researchers are historically significant and need to be documented.

Because the SLAC Archivist is an onsite colleague / co-worker, her voice tends to become “white noise” to most of the scientific and technical staff, and it is of great help to the program to occasionally have an outside specialist confirm – and demonstrate by their research interest and publication – the true historical significance of the work that the lab pursues.

For much the same reasons and in much the same manner, the SLAC Archives and History Office Program Review Committee has served as an advocate for the importance of the lab’s archival collections and program. At SLAC, a program review committee is “the coin of the realm.” The process is an established feature of SLAC’s culture—in fact, it is an integral part of the culture of many scientific disciplines, as well as of US government agencies and of some archival repositories. External review methods, requirements, and goals are well known and well respected. Program review committees in science are typically composed of experts in relevant disciplines, as well as funding agency representatives and a sampling of other stakeholders. All proposed new science projects or experiments at SLAC go through extensive review by such committees: the committees meet at regular intervals and their reports and recommendations guide the project’s planning, funding, and actions over the long term.

Because the archives, in particular, was a relatively new and definitely novel undertaking at SLAC, the thinking was that the best way for it to establish and maintain its credentials and credibility within the scientific community of the laboratory, and to place it on a more equal footing with other projects and endeavors, would be to have it regularly go through the same kind of rigorous review and report process that each proposed and ongoing science project regularly undergoes.

First convened in 1999, and meeting at regular intervals thereafter, our Program Review Committee is comprised of internal and external stakeholders in the SLAC Archives and History Office program. It has, from the beginning, always included a historian of science, as well as an ex officio representative of the American Institute of Physics Center for the History of Physics. Other members have included managers from each of the lab’s scientific areas, and a representative of the US National Archives and Records Administration. The Program Review process has assisted the archives in stabilizing both funding and staffing levels, and in periodically obtaining special project funding for specific archival processing projects proposed or endorsed by the Committee in their reports. Historians of Science who have served on the Committee to date are Professors Jessica Wang (UBC), Peter Westwick (UCSB/USC) and Zuoyue Wang (CSU/Pomona).

In addition to their impact on program policy and direction, historians of science have also impacted the day-to-day workings of the Archives and History Office. SLAC's digitally centered culture, and the increasing digital savvy of researchers, coupled with our minimal staffing profile (originally 1.5, now 2 FTE), led me to determine that making as many of our services as possible virtual and digital was the right way to proceed. Consequently, we maintain a robust web presence, and have striven to make as many of our finding aids as possible web-accessible 24 hours a day, 7 days a week, and 365 days a year. This effort has improved the lives of historians by allowing them to do much more of their work remotely and at their own pace. For those historians who do come on site and use our analog collections, based on their feedback on our services, we have recently installed a multi-function scanner printer work-center, which allows the creation of digital copies of materials which can be emailed or copied onto micro-storage devices, which are much easier to ship or carry than paper copies.

Another way that we leverage our small staff and limited resources is through participation in the AIP's Center for the History of Physics International Catalog of Sources (ICOS). To date we have reported 20 archival accessions to ICOS, enabling historians to use AIP's online union catalog to locate materials in our repository relevant to their research.

Conclusions

Although much work has been accomplished, financial and organizational uncertainties loom over the SLAC Archives and History Office program and over similar programs at other institutions. Fluctuations in funding and staffing; changing institutional and political priorities; lack of insight into the importance of preserving the historical record, and of the necessity of taking action to that end; all conspire to make for a challenging future. The digital environment offers many benefits in terms of improving access to and making available historical records, but it also poses new challenges to the preservation and longevity of those same historical documents.

There is a tendency among many practitioners of science to assume that the digital environment curates itself, and that history, therefore, resides on a server somewhere and can be simply downloaded when needed. A vital function that historians can serve is to disabuse the scientists of this notion by practicing their art and craft in full view of and in partnership with the practicing scientists. Historians, scientists and archivists all need to actively engage with the issues of preservation and dissemination of history, so that mutually beneficial solutions can be identified and implemented, and genuine history can be conveyed to future generations.

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NOTES:

¹ Neal (1968).

² SLAC occupies 426 acres of the Stanford University campus near the intersection of Sand Hill Road and US Highway 280 in northern California. In fiscal year 2011, its budget, excluding Recovery Act Funds, was \$352.4 million: it employed a staff of 1684 full-time equivalents and 22 joint SLAC-Stanford faculty; and hosted 3,411 facility and 31 visiting scientist users from a variety of institutions, including universities, industry, government laboratories, and foreign countries.

³ 1976: Burton Richter (shared with Sam C.C. Ting) (Physics) for the discovery of the J/Psi particle. 1990: Jerome Friedman, Henry Kendall and Richard Taylor (Physics) "for their pioneering work in the discovery of a heavy elementary particle of a new kind." 1995: Martin Perl (shared with Frederick Reines) (Physics) for discovery of the Tau Lepton. 2006: Roger Kornberg (Chemistry) "for his studies of the molecular basis of eukaryotic transcription" (determining how DNA's genetic blueprint is read and used to direct the process of protein manufacture).

⁴ At SLAC, scientists utilize the SPEAR3 synchrotron light source facility and the world's first free-electron laser, the Linac Coherent Light Source, or LCLS, to probe the structure of matter at the atomic and molecular scale. The SPEAR facility is an electron storage ring that makes use of the intense, highly polarized x-rays emitted when electrons are forced to travel in a circular path. LCLS produces pulses of X-rays more than a billion times brighter than the most powerful synchrotron light sources. Its ultrafast X-ray pulses are used much like flashes from a high-speed strobe light, enabling scientists to take stop-motion pictures of atoms and molecules in motion, shedding light on the fundamental processes of chemistry, technology, and life itself. The capabilities of both SSRL and LCLS are highly prized by researchers in biology, chemistry, environmental and materials science, and related fields.

⁵ Guidelines for Records Appraisal... (1982); Warnow, et al. (1982); Wolff (1982).

⁶ Nilan was co-founder, along with Henry Lowood, of the Stanford University Libraries' "Stanford and the Silicon Valley Project," documenting the rise of microelectronics and personal computing in Northern California as well as the evolution of academic science and technology on the campus.

⁷ Meanwhile, Fermi National Accelerator Laboratory (Fermilab) in Illinois was sponsoring a series of international symposia on the history of particle physics. The first two, *The Birth of Particle Physics* (1980) and *Pions to Quarks* (1985), had been held at Fermilab; the third was co-sponsored by SLAC and Fermilab, and held at SLAC on June 24-27, 1992. Participants in the third symposium, *The Rise of the Standard Model: Particle physics in the 1960's and 1970's* included five SLAC staff members.

⁸ Addis and Kirk (1987) and "Historical Chronology" section of Chandler (1995). Date and volume data are from SPIRES database SLACHIST (21 March 2003).

⁹ Per email communication, L. Addis to J. Deken, 4 April 2003.

¹⁰ R. Nilan, undated essay, 02-026, box 1; Chandler (1995); Stanford Historical Society *Sandstone & Tile*, Summer 1990 p. 12.

¹¹ Roxanne Nilan was with the AHO from 1989–1991 (full-time 1989-1990). Robin Chandler was on the AHO staff from 1990-1995 (full-time, 1990-1993).

¹² Chandler (1995) and (1991).

¹³ Galison and Hevly (1992)