



Sources and methods for cryptologic history: the William and Elizebeth Smith Friedman collections

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ABSTRACT

This article, the third in a series of columns devoted to sources and methods for cryptologic history, profiles the William and Elizebeth Smith Friedman Collections at the George C. Marshall Research Library. After providing an overview of how the Friedmans assembled their collections, the article details their scope and organization and notes the inventories, guides, and finding aids that they and others have compiled over the years. A number of digitized documents are identified, as are other notable items in each collection. A final section offers brief description of other sources of information about the Friedmans.

KEYWORDS

Cryptologic outreach;
Elizebeth Friedman;
William Friedman

Introduction

Taken together, the William and Elizebeth Smith Friedman Collections form one of the largest – possibly *the* largest – privately held set of materials on cryptology in the world. Housed at the research library of the George C. Marshall Foundation in Lexington, Virginia, the Friedman Collections are a major source for both the specialist and the general researcher on code-breaking, codemaking, and their historical significance. While not so vast as to cover all topics in cryptology, the Collections contain extensive holdings on its history, theory, and practice from the Renaissance through the first half of the Twentieth Century. Time spent with them not only deepens one's understanding of the field but also yields new insights on a regular basis. At times, these can be unexpected and surprising.

How the Friedmans created their collections

William and Elizebeth Friedman each came to cryptology by happenstance, under the auspices of the wealthy Chicago businessman George Fabyan. William, having been recruited from his graduate studies in agriculture at Cornell University, joined Fabyan's Riverbank Laboratories in 1915 and established its genetics program. Elizebeth came to Riverbank a year later

following a chance meeting at a Chicago library with Fabyan, who offered her a job on the spot. She was assigned to a Riverbank effort that aimed to find enciphered messages thought (wrongly) to have been embedded in the texts of William Shakespeare's plays. Elizebeth soon became disillusioned with her work. William, however, was drawn into it through his talent with a camera, which allowed him to photograph for Fabyan those pages in early editions of Shakespeare's works that were deemed (again, wrongly) to contain examples of encrypted text. He and Elizebeth also drew closer together. The two married in May 1917.

Through their work at Riverbank, the Friedmans had access to Fabyan's library, which contained his personal collection of rare European texts on cryptology, some dating to the Renaissance. More than anything the Friedmans learned from Riverbank's Shakespeare effort, these works, combined with the formidable talents each possessed for rigorous analysis, supported their development of a course in cryptology after America's April 1917 entry into World War I, an event that prompted Fabyan to offer Riverbank to the U.S. Army as a training facility. The Friedmans and others at Riverbank also broke encrypted messages forwarded by the War Department until the latter's own codebreaking effort under former State Department code clerk Herbert Yardley became operational in late 1917. William also wrote eight studies on cryptology that collectively became known as the Riverbank Publications, completing seven of them – including one coauthored by Elizebeth and another by Lenox Lohr, an Army officer who studied under the couple – before leaving in June 1918 for service with the American forces in France. He completed the eighth, *The Index of Coincidence* (Friedman 1922), arguably the most famous of the set, after returning to Riverbank in 1919.

Whether in conscious imitation of Fabyan or not, the Friedmans and especially William began collecting materials on cryptology after leaving Riverbank in December 1920, when the couple moved to Washington and William joined the War Department as a civilian cryptographer in the Signal Corps. Some of the earliest items in William's collection at the Marshall Library date to this period, including his personal copies of the Riverbank essays, government publications that he acquired in the course of his official duties, and documents that Fabyan and other acquaintances sent him occasionally.

During the 1920s and 1930s, while continuing to augment his collection by adding materials from his government work, William began acquiring documents related to his personal research interests. These included items that supported his studies of cryptography in literary works by such authors as Edgar Allen Poe and Jules Verne, as well as ones dealing with such historically significant coded messages such as the Zimmermann

Telegram. In the latter efforts, William was assisted by professional contacts at the State Department, who copied materials for him from its otherwise closed archives.

William also began adding books, particularly ones published in France and Germany before and after the First World War that he probably acquired during business trips to Europe. While written in languages William could read, their expense added to his ongoing worries about his family's ability to climb out of debt, despite the fact that both he and Elizebeth were earning reasonably good government salaries during this period. These concerns led him to pass by several opportunities to acquire some particularly hard-to-find volumes on cryptology due to the prices rare book dealers were seeking for them.

William hinted at an interest in acquiring Fabyan's collection but, after Fabyan's widow Nelle passed away in 1939, learned that Fabyan had bequeathed it to the Library of Congress. William was able, however, to obtain Fabyan's excess copies of the Riverbank Publications. Most went to the War Department, but William retained several sets for his collection. Over the years, he also acquired other individual sets of the Publications, presumably from colleagues from World War I who no longer needed them, and donated these to the Library of Congress, the U.S. Naval Academy, and the University of Pennsylvania.

William seems to have added little to his collection during World War II. The pace at which he acquired new items accelerated significantly thereafter, and beginning in the late 1940s the collection expanded rapidly. The most significant additions were made in support of William and Elizebeth's renewed work on whether encrypted messages could be found in the works of William Shakespeare, a question which they definitively resolved in the negative in *The Shakespearean Ciphers Examined*, published in 1957 (Friedman and Friedman 1957). Two other noteworthy groups of materials added during this period were a large number of books and articles related to Pearl Harbor, a study of which Friedman authored under contract to NSA after his retirement in 1955, and a similarly impressive set of items on Mayan hieroglyphics, which at the time were largely indecipherable and attracted William and Elizebeth's interests while vacationing in the Yucatan.

William frequently asked authors of individual items in his collection to sign their work. Some added a personal note to their inscription. One can find examples throughout his collection. At some point, he also realized the historical value of his personal correspondence – which regularly dealt with cryptologic matters – and began to retain it. While there are some letters from the 1910s and the 1920s, the bulk date from around 1930 to the early 1960s, decreasing in volume thereafter. Only a few letters remain from the five years before Friedman's death in 1969. One of his last acts

was to revise his will so that his collection was bequeathed to the Marshall Library rather than the Library of Congress.

Elizebeth's collection, while containing items from as early as 1913, probably was first created in the early 1950s from professional and personal materials she had saved over the previous four decades. She then added to it over the next thirty years. The dates of what appear to be the final items she included suggest that she donated it to the Marshall Library either just before her death in 1980 or that shortly thereafter it was sent there under the terms of her will.

Unlike her husband, Elizebeth was not a purposeful collector of books and articles on cryptology, presumably seeing the collection he was assembling as more than sufficient to that end. Instead, her collection documents her professional career as a cryptologist, the family environment that formed the backdrop for the couple's work, and, significantly, William's personality and private life, for which his own collection offers only occasional and limited insights. Her collection thus preserves Elizebeth's singular codebreaking achievements in a greater depth than that which the otherwise somewhat sparse historical record presents, while also allowing for a more well-rounded understanding of William, one encompassing his brilliance, his charm, and his various all-too-human weaknesses.

Scope and organization

William Friedman collection

Of the two, the William Friedman Collection is the larger. The bulk consists of approximately 2,000 individually numbered items. Many are books and other bound materials. There also are a sizeable number of folders and envelopes. These often contain pamphlets, monographs, or other published items. However, some folders and envelopes also contain varying quantities of loose individual sheets, ranging from a few to several hundred pages. Photographs occasionally can be found among mixed in among the items. One also can come across sheets indicating some material has been removed from a folder or envelope by the National Security Agency (NSA), the last government agency in which William served. Usually, there is no indication on a sheet how much material is missing or, aside from the topic of the folder or envelope more generally, the specific nature of the documents involved. The researcher therefore should show appropriate prudence when characterizing any missing content.

Some artifacts from William's collection – to include cryptographic devices as well as memorabilia from his government career – are preserved separately in the George C. Marshall Museum, located in the same building as

the research library (VMI Parade, Lexington, Virginia 24450). These can be examined on request.

In addition to the numbered items, there also are nine boxes of William's correspondence. These are arranged by correspondent, in alphabetical order. The earliest correspondence dates to 1915, the year William left Cornell for Riverbank. The last letters are from just before his death in December 1969. Some folders involve multiple correspondents and contain only a few letters to or from each individual. In other cases – for example, those associated with David Kahn – multiple folders are required to cover more voluminous sets of letters written over many years. Of particular note is the fact that William often retained copies of his outgoing correspondence; hence, the researcher can benefit from a fuller exchange than is often available in a single archival collection. Care must be taken when handling these materials, particularly the earlier ones, as Friedman's copies generally were made on thin carbon paper and thus are quite fragile.

Some of William's most significant and extensive exchanges are not held in the correspondence boxes but in folders and envelopes that are among the numbered items of the collection. Examples of these include William's letters with George Fabyan and Herbert Yardley. The bulk of William's correspondence with fellow World War I cryptologist Charles Mendelsohn is located in the collection's folders dealing with the Zimmermann Telegram. Further complicating matters is the fact that William's letters with some correspondents can be found in the relevant folder in the correspondence boxes, several different numbered folders or envelopes, and even the Elizebeth Smith Friedman collection. Accordingly, the researcher should exercise the necessary discipline to examine several possibilities before concluding that all relevant materials have been found.

Finally, in addition to the numbered items and the correspondence files, there are three boxes of materials related to William's government service as an Army officer and a civilian and one containing items associated with patents that he sought for several cryptographic inventions.

Elizebeth Smith Friedman collection

Unlike the William Friedman Collection, which due to its size is housed in a separate room at the Marshall Library, Elizebeth's is stored in its vault alongside numerous other collections. Her collection also differs from her husband's in that it is arranged exclusively in twenty-two archival boxes – varying in size from 14 to 55 folders – and contains only a single bound volume, a collection of Tennyson's poems from her undergraduate studies.

The researcher should not be misled by the relatively smaller size of Elizebeth's collection. Her career as a cryptologist was just as distinguished

as her husband's. Indeed, a persuasive argument can be made that, as a working codebreaker, her talents and accomplishments surpassed his. Much of what we know about her work for the Coast Guard against a series of smuggling operations during the 1920s, for example, is contained in her collection's folders on individual cases. Collectively, these folders comprise, in whole or in part, four of the collection's boxes.

The collection's correspondence files are equally voluminous. Two boxes contain letters exchanged by Elizebeth and William when one or the other was traveling between 1918 and 1963. While often dealing with family matters or providing descriptions of the locales visited for the one remaining at home, this correspondence also offers insights – many oblique, but some direct – into their professional lives. A third box consists of correspondence with other family members, particularly the Friedmans' children Barbara and John. A final one covers Elizebeth's letters to various individuals, mostly family and friends. A set of Elizebeth's personal appointment books from 1952 through 1969 provides some information on the couple's activities in retirement.

Elizebeth's collection also contains her personal memoirs as well as several oral histories, including ones with historian Forest Pogue and with author Ronald Clark, who wrote a biography of William published in 1977 (Clark 1977). Although there are no equivalent items in William's collection, a set of materials dealing with her husband that Elizebeth provided to Clark and also preserved in her collection is illuminating in certain respects.

Finally, Elizebeth's collection contains a considerable volume of material covering miscellaneous topics in cryptology with which she was professionally or personally concerned from the 1930s through the 1960s. While these items occasionally duplicate William's, the bulk are unique – particularly on matters in which she alone was involved. The collections also complement each other in several instances where Elizebeth maintained separate exchanges with William's correspondents.

Finding aids

Dr. Rose Mary Sheldon, a historian and former professor at the Virginia Military Institute, has performed an invaluable service for all students of cryptology by creating a 600-page guide to the numbered items in the William Friedman Collection. Extensively annotated and including descriptions of the nature of contents of individual entries, Professor Sheldon's guide is an essential companion for anyone interested in this collection.

The original card catalog that the Friedmans created for William's collection during the 1950s and 1960s also is available at the Marshall Library, as is a typescript inventory compiled by William's assistant in 1956.

The Marshall Library also has produced a finding aid at the box and folder level for the Elizebeth Friedman Collection. While not as detailed as Professor Sheldon's guide to William's, the aid's description of each folder generally is sufficiently specific to direct researchers to individual items relevant to their needs.

The guide to William's collection and the finding aid for Elizebeth's are available from the Marshall Library (https://www.marshallfoundation.org/library/wp-content/uploads/sites/16/2020/01/Friedman_Collection_Guide_September_2014.pdf and <https://www.marshallfoundation.org/library/wp-content/uploads/sites/16/2020/01/ESF-collection-summary-sheet.pdf>).

Digital collection

One of the most valuable services that the Marshall Library provides, with the support of a generous donor, is to offer through its website digital versions of some of the most significant items in the Friedman Collections. These provide the researcher lacking the opportunity to make an onsite visit with an ability to access a number of texts that are critical for the cryptologic historian.

Of the items that the Marshall Library has digitized, arguably the most notable are the Riverbank Publications. Written between 1917 and 1920, these monographs make up a large part of the foundational canon of American cryptology that formed during the early 1900s. The digitized version of the Riverbank Publications is at https://www.marshallfoundation.org/library/wp-content/uploads/sites/16/2014/06/Methods_II_watermark.pdf.

Another noteworthy item in the digitized holdings of the Friedman Collections is William's annotated copy of Herbert Yardley's *The American Black Chamber* (Yardley 1931). Published after the closure of Yardley's Cipher Bureau, his sensationalized account of American codebreaking both during World War I and in the years immediately thereafter became a best-seller. It also attracted the government's wrath but did not result in his prosecution. William wrote an extensive commentary in the margins of his copy, typically to dispute Yardley's more outlandish claims of having been personally responsible for American cryptologic successes during World War I or to disparage, caustically, the numerous outright falsehoods. He also invited four of Yardley's World War I colleagues – A.J. McGrail, Charles Mendelsohn, Frederick Livesey, and Frank Moorman – to do the same. Each did so, initialing each comment, and while their criticisms often are as pointed as William's, they generally have a less acerbic tone. The digitized version of *The American Black Chamber* can be found at https://www.marshallfoundation.org/library/wp-content/uploads/sites/16/2014/06/American-Black-Chamber_II_watermark.pdf.

Two other digitized publications from William's collection also are essential for the study of American cryptology during the World War I era. These are his copies of Joseph Mauborgne's *An Advanced Problem in Cryptography and Its Solution* (Mauborgne 1914), acquired by William in 1926 and inscribed by Mauborgne in 1940, and Parker Hitt's *Manual for the Solution of Military Ciphers* (Hitt 1916), signed by Hitt in August 1943 with his appreciation to William for "preserving this ancient curiosity." Mauborgne and Hitt's works were the only official publications before America's entry into World War I that were available for the training of Army codebreakers. The digital version of Mauborgne's *Advanced Problem* is available at <https://www.marshallfoundation.org/library/wp-content/uploads/sites/16/2014/09/WFFvol07watermark.pdf>. That for Hitt's *Manual* can be found at <https://www.marshallfoundation.org/library/wp-content/uploads/sites/16/2014/09/WFFvol06watermark.pdf>.

The Marshall Library also has digitized several hundred photographs of William and Elizebeth, their family and friends, and a number of sites associated with their careers. These provide a visual history of the couple during various stages of their lives and include some of the family's residences and travels. The photographs are located on the Elizebeth Friedman Collection webpage at <https://www.marshallfoundation.org/library/collection/elizabeth-smith-friedman-collection/#!/collection=84>.

There are also a number of useful videos on William and Elizebeth posted to the YouTube Channel of the Marshall Library's parent organization, the Marshall Foundation. Narrated by historians Rose Mary Sheldon, Bill Sherman, and Betsy Rohaly Smoot, these videos can be accessed easily via the YouTube icon on the Marshall Foundation's webpage (<https://www.marshallfoundation.org/>), then scrolling to the section "William & Elizebeth Friedman & Cryptology."

Other noteworthy items

While the number of non-digitized hard copy items in the William and Elizebeth Friedman Collections with major significance for the history of cryptology are too numerous to mention in this brief article, some of the most valuable are the following.

- *William's Correspondence with Prominent Cryptologists*. The correspondence files and numbered items in William's collection contain extensive holdings of letters to and from many of the Twentieth Century's leading figures in cryptology. Some of the most extensive holdings are of exchanges with Alastair Denniston, Boris Hagelin, David Kahn, Charles Mendelson, and Herbert Yardley. Others represented by less voluminous

holdings include Yves Glyden, Parker Hitt, and a number of leading figures in British codebreaking, with whom Friedman became acquainted during visits to Bletchley Park in 1943 and 1945. Also worthy of note is the extensive correspondence between William and George Fabyan, beginning in 1915 and continuing with some interruptions until shortly before Fabyan's death in the 1930s.

- *Elizebeth's Memoirs and Oral Histories.* As noted above William never wrote personal memoirs, nor were any oral history interviews ever conducted with him by NSA, the Army, or any other organization or individual. It is fortunate that in Elizebeth's case we have both, and that they are preserved in both textual and – in the case of the oral histories – audio form in her collection at the Marshall Library. Generally covering the period from the Friedmans' tenure at Riverbank through the outbreak of World War II, Elizebeth's personal histories and interviews offer both a breadth and depth of detail rarely encountered elsewhere and are for some topics our only source of information. Her collection contains several versions of her memoirs. That which she dictated onto a series of cassette tapes has been digitized in both audio and written form and can be found at <https://www.marshallfoundation.org/library/collection/elizabeth-smith-friedman-collection/elizabeth-smith-friedman-memoirs/#!/collection=853>, with audio located at the link for each individual tape. The digitized audio from a series of oral history interviews with Elizebeth that Forest Pogue conducted in 1973 and 1975 can be found at <https://www.marshallfoundation.org/library/collection/elizabeth-smith-friedman-collection/elizabeth-smith-friedman-interviews/#!/collection=854>. A hard-copy transcript of the Pogue interviews is in Elizebeth's collection, as is that for one conducted separately by Ronald Clark
- *William's World War I Letters to Elizebeth.* Elizebeth's letters to William while the latter was serving in France during 1918 and 1919 have not survived. However, the set of William's to Elizebeth from the same period is almost completely intact. These provide insights into the couple's personalities and worldviews. Perhaps even more significantly for the cryptologic historian, they also offer otherwise rare glimpses into the day-to-day workings of American cryptologists in France during the war.
- *Elizebeth's Case Files.* In retirement, partly to support the writing of her memoirs, Elizebeth organized the materials she had retained from her 1930s work for the Coast Guard on a series of smuggling cases and augmented these with newspaper accounts and court filings. These items, combined with the reminiscences contained in the memoirs themselves and in the Pogue and Clark interviews noted above, allow for a robust accounting of her cryptologic accomplishments and their impact. While

information on her cases is available in other sources, it can lack much of the depth available in Elizebeth's record.

- *John Manly Collection*. William acquired a small set of writings by John Manly, a Professor of English who served in Yardley's Cipher Bureau during World War I. Not to be confused with the far larger collection of Manly's papers at the University of Chicago, those held at the Marshall Library include a series of essays that Manly drafted in the 1920s on his wartime experiences as a cryptanalyst. These offer one of the few accounts available, other than that of Yardley himself, of the work that took place at the Cipher Bureau. Manly's essays also have been edited and published by Professor John Dooley of Knox College (Dooley 2016).
- *Zimmermann Telegram Files*. During the 1930s, William Friedman and Charles Mendelsohn conducted extensive research on the German diplomatic message that played a significant role in the Wilson Administration's April 1917 decision to enter the war against Germany. The materials that Friedman and Mendelsohn collected while conducting their research include items related to German diplomatic and military cryptography, coded and decrypted messages, and British books and articles related to the telegram and codebreaking. Published in classified form in 1938 and not released publicly for thirty years, Friedman and Mendelsohn's article refuted claims by the British that the telegram's plaintext had been acquired surreptitiously in Mexico and demonstrated that in fact they had broken it through cryptanalysis.
- *Pearl Harbor Research Collection*. Similarly extensive is the collection of materials that William gathered in the 1950s while conducting research into the December 1941 Japanese attack on American military installations in Hawaii. As is the case with the Zimmermann Telegram materials that William assembled with Charles Mendelsohn, his items on Pearl Harbor include a number of the first books published by senior participants. His collection also is notable for the number of early books and articles by "revisionist" historians who variously argued that American intelligence provided warnings of the attack that were ignored by American commanders or that President Roosevelt left Pearl Harbor open to a Japanese strike. (The items on the attack contained in William's collection at the Marshall Library are complemented by other materials he assembled that are available as part of NSA's compilation of his official papers (see below).)
- *Cryptologic Mysteries: The Beale Cipher and the Voynich Manuscript*. Two other sets in William's collection that are worthy of note due to their size are those dealing with the so-called Beale Cipher, purported to lead to a treasure buried in southwestern Virginia, and the 15th century Voynich Manuscript, named after the rare book collector Wilfrid Voynich, who

acquired it in 1912. William's Beale Cipher papers, held in a single box in his collection, led him to conclude that it was a hoax. Those on the Voynich Manuscript, far more extensive and located throughout William's collection, ultimately convinced him that the work probably was written in an artificial language for which the equivalents of individual symbols and symbol groups had yet to be found for any known language.

What is not in the collections

The National Security Agency removed a number of items from William's collection, first in 1958 and then during the late 1970s.

On the former occasion, concerned about an upcoming extended vacation by the Friedmans in Mexico, NSA officers visited their Washington home to retrieve classified documents William had been allowed to retain while working under contract with the agency. William also provided them with a number of other items written prior to World War II that he thought had since been declassified but still retained their original classification markings. Many of these had been cited in cards from the catalog for William's collection which the Friedmans had created prior to the NSA visit that were never removed from it. These discrepancies were noted by Professor Sheldon while creating her guide when she came across cards for which there were no corresponding items in the collection itself. Through her efforts and several Freedom of Information Act requests to NSA, a number were declassified and returned. Some remain missing.

NSA also made multiple visits to the Marshall Foundation after William's collection was transferred there in the early 1970s to remove materials it considered classified that had been consulted by Bamford while writing his history of the agency, *The Puzzle Palace* (Bamford 1982). During these visits, NSA discovered more items that it deemed sensitive and removed them as well. In both instances, NSA left individual sheets indicating that materials had been taken from a particular folder or envelope.

Beyond the Friedman collections

There are a number of important sources of information about William and Elizebeth other than their collections at the Marshall Library. These include the following:

- *William Friedman's Official Papers*. The most extensive digital collection related to the Friedmans and specifically to William consists of 50,000 pages of his official papers released by NSA in 2015. The bulk of this

collection extends from World War I through William's death in 1969, although a handful date to before and after this period. Many were authored by William himself. There also is a considerable amount of material, including a large number of government documents, pertaining to his career or to cryptology more generally. Some documents may be those removed by NSA from the Marshall Library collection in the 1970s. NSA's digital Friedman collection can be found on its website at <https://www.nsa.gov/news-features/declassified-documents/friedman-documents/>.

- *Other National Security Agency Documents.* NSA's website contains a number of digitized official histories and declassified documents that pertain to William and Elizebeth's careers. Most can be found at two locations on the NSA website. These are:
 - The Center for Cryptologic History's Historical Publications page, which offers a wide range of carefully researched histories on cryptology and cryptologists (<https://www.nsa.gov/about/cryptologic-heritage/historical-figures-publications/publications/>).
 - NSA's Declassified Documents webpage, which is indexed to collections of materials on specific individuals, events, and topics and also includes a large number of previously classified internal agency publications (<https://www.nsa.gov/news-features/declassified-documents/>).
General searches on the NSA website, using keywords chosen with a sufficient amount of care, can yield other materials of interest. A future column in this series will provide a more detailed review of the site and William's official papers.
- *National Cryptologic Museum Library.* The National Cryptologic Museum, located on a section of NSA's campus in Fort Meade, Maryland, that is open to the public, contains the largest U.S. government collection of materials on cryptology outside the National Archives. The Museum's library houses an extensive collection of books, manuscripts, and other materials on cryptology, many of which otherwise can only be found on the shelves of libraries at large research universities. Researchers interested in William and Elizebeth should pay particular attention to an extensive collection of personal papers donated by David Kahn in 2010. The library's searchable catalog can be found at <https://www.nsa.gov/Portals/70/documents/about/cryptologic-heritage/museum/national-cryptologic-museum-library-catalog.pdf>. The Museum is located at 8290 Colony Seven Road, Annapolis Junction, MD 20701.
- *The National Archives of the United States* also contains items on William and Elizebeth scattered through its collections. Scholars interested in accessing these materials may wish to submit a research inquiry to the Archives after visiting its website (www.archives.gov).

Closing remarks

The Marshall Library's William and Elizebeth Friedman Collections, both individually and in combination, offer some of the most important raw materials anywhere on the theory, practice, and history of cryptology. Matched in size and scope by few collections elsewhere, they provide the researcher with an extraordinary resource for delving into a wide variety of topics related not just to the lives and careers of the Friedmans themselves but also to the role that cryptology has played in a wide range of historical events. The time required to understand the organization and extent of the collections is modest compared to the wealth of information that they offer, and while the diligent efforts of a number of scholars have surfaced some of their riches, more lie waiting to be found.

Notes on contributor

David Sherman retired from the Federal Government's Senior Executive Service in 2017. He served for 32 years at NSA, where he held a variety of managerial, analytic, and staff positions. He also held positions on the staffs of the National Security Council and National Economic Council and represented NSA to the Office of the Secretary of Defense and the Joint Chiefs of Staff. He was Dean of Academic Programs and Visiting Professor at the National War College from 2007 to 2010. Prior to joining government, he was Adjunct Faculty at Cornell University, where he taught for four years.

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