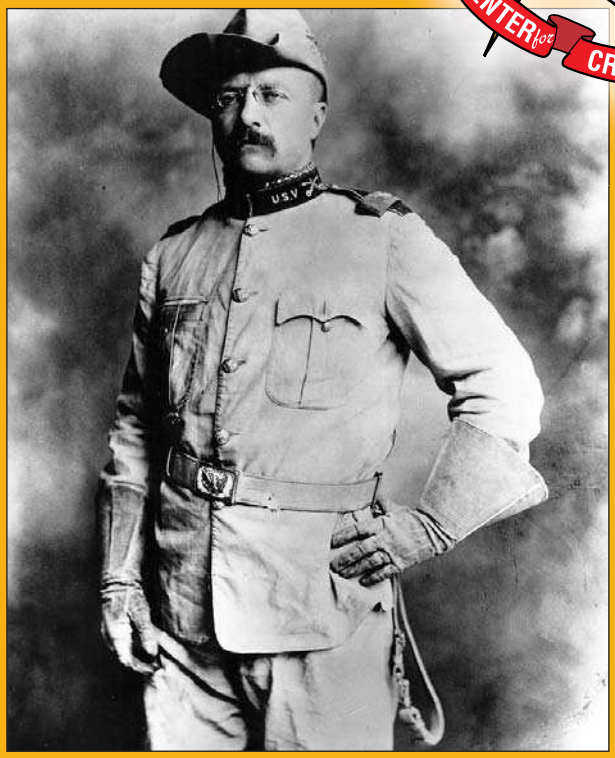
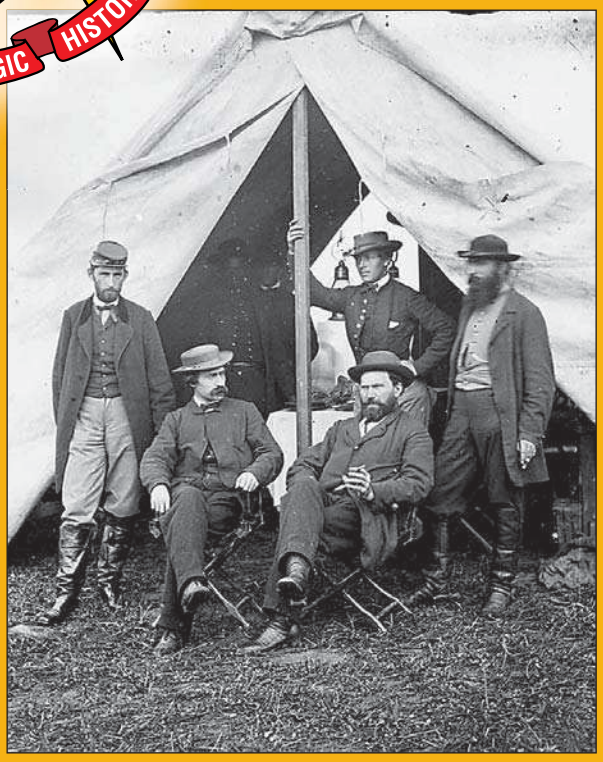
Cryptologic Quarterly





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Cover: *center,* the seal of the Center for Cryptologic History. The lightning bolts represent electronics; the key, locking and unlocking information; the quill, writing history; and the torch, knowledge/illumination. *Clockwise from upper left:* Li Hongzhang, Viceroy of Zhili, story on page 9; Ann Caracristi, who broke Japanese codes during World War II, page 41; the Antietam battlefield, 1862, page 1; and Col. Teddy Roosevelt in his "Rough Rider" 1st US Volunteer Cavalry uniform, page 21

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What CCH Can Do for You: Make History Relevant!

John A. Tokar

Change is never easy, but as history shows, it is inevitable. Last October marked the first time in 14 years that NSA's Center for Cryptologic History (CCH) has seen a change in leadership. Under the sound tutelage of Dr. William "Bill" Williams, CCH has taken massive strides as a federal agency history program. Before joining NSA, Bill was a career US Air Force intelligence officer, a professional historian, and the acting head of the United States Air Force Academy's History Department. NSA could not have chosen a better person to move CCH into its current position as one of the premier history centers in the Intelligence Community (IC), the Department of Defense, and the federal government. It is my distinct honor to have been chosen to replace him.

One of Bill's core beliefs was that history must be "value added" to NSA's leadership, its workforce, and the American public, and that our choices regarding the preservation and presentation of cryptologic history must be relevant and applicable to today's mission. As Bill pointed out after he took the reins of CCH, many of these concepts were introduced by CIA historian Dr. Sherman Kent. My own experience at the US Army's Center for Military History (CMH) instilled in me many of the same ideas, even before I knew they had been formalized by Kent and others decades earlier.

Sherman Kent was a Yale history professor who left academia to undertake a pivotal role in the development of the Central Intelligence Agency. In 1952 he stated, "In my view, the only reason for reconstructing the history of a government agency is to further the operational efficiency of that agency. This cannot be history for history's sake. It must be history for the improvement of today's and tomorrow's operations." This has become a core tenet of CCH's mission today. At the same time, we have to admit that Dr. Kent, though a historian himself, could not (in 1952) envision a time when American intelligence would be scrutinized as thoroughly as it is today. Official history exists to further the mission of its agency, to be sure, but part of that mission is to account to our fellow citizens for what we did in their service. Any government history office bears a responsibility to preserve *and interpret* its agency's past so that the American people can one day understand what was accomplished and why. Thus, a vital part of our mission is to help ensure that an accurate record of NSA's past can

The Pentagon after September 11, 2001. The years following those attacks would provide ample opportunity to connect relevant history to current and future operations. DoD photo by Tech. Sgt. Cedric H. Rudisill

be made available to scholars and the public at the appropriate time.

Like the entire staff at CCH, I have a passion for history, but I never expected to have the opportunity to return to it as a profession. Midway through my career, though, I attended the US Army's Command and General Staff College at Fort Leavenworth, Kansas, and then was selected to continue my Army education at the US Army School of Advanced Military Studies (SAMS). SAMS was the first service school to provide a "graduate-level" focus on the concepts of operational art and advanced military planning. The school was responsible for producing the "Jedi Knights," a small planning cell on the staff of General Norman Schwarzkopf in the lead-up to the first Gulf War. These officers developed the ultimately successful plan for Operation DESERT STORM and established SAMS as the model for senior operational planning that the other services have since adopted.

While at SAMS, students are required to digest hundreds of books over the course of the year, with topics covering history, strategy, philosophy, theory, planning, and policy. Clausewitz's *On War* remains the SAMS bible, but one of the contemporary studies we tackled was from an Israeli retired army general and PhD historian, Shimon Naveh. It was Naveh who introduced the planning methodology of "Operational Design" to SAMS and the US military, based upon his own experiences in the Israeli Army. This planning paradigm stresses the importance of "knowing where you've been" as an organization in order to properly define the complex problems facing it and to develop appropriate strategies to solve those problems. This methodology that we first explored in 1998 at SAMS was later formally codified in US Army and Joint Doctrine for the services. Without overtly stating it, the SAMS curriculum was (and remains) designed with the intent to *apply history*, as Kent said, for the "improvement of today's and tomorrow's operations."

While at Fort Leavenworth I began to consider whether I might have a future as a professional historian. The US Army's history program is perhaps the most robust of all the military services', but there are precious few assignments for uniformed personnel, particularly officers. I applied for, and received, the US Army's "historian" designator, 5X. After a SAMS follow-on tour with the 3rd Infantry Division, I was asked to be the strategic planner for the US Army Center for Military History (CMH) in the summer of 2001.

Most of us remember vividly where we were on September 11, 2001. That day I watched smoke rising at the Pentagon from across the Potomac River at CMH headquarters at Fort McNair. And it was in the months and years following that I saw how history could be truly relevant to today's and tomorrow's operations. The chief of CMH at the time was an active-duty general officer, Brigadier General John S. Brown, a PhD historian

Tracking Bin Laden, painting by SFC Elzie Ray Golden, 2002, US Army Art Collection. Preparing for the emerging war in Afghanistan and, later, Iraq were examples of historical support applied to operations.

and former associate professor of history at the United States Military Academy. BG Brown was a remarkable leader who commanded an armor battalion in DESERT STORM and later a mechanized infantry brigade. After September 11, BG Brown quickly coordinated CMH support to the Army Operations Center (AOC) daily briefings as the army and the nation moved to war footing. The chief of staff of the army permitted CMH to present short historical vignettes at the end of each evening's AOC Update Brief. BG Brown directed CMH to coordinate information papers and briefing slides on topics that were relevant to the emerging war in Afghanistan and, later, Iraq. Topics were wide ranging, but perhaps the most poignant example of applied historical support to future operations was our study entitled "Numerical Considerations in Military Occupations," developed during the planning for the invasion of Iraq. There was intense debate throughout the Department of Defense about the size of the force that would be required in Phase IV, or Stability Operations, in order to secure the predicted success of combat operations. CMH prepared a

detailed analysis of twentieth-century examples where the US Army had been tasked to do similar things. We began with Lieutenant General Arthur MacArthur, Jr.'s, constabulary experience in the Philippines after the Spanish-American War. We continued with numerous other examples to include the Rhineland after World War I; Germany, Italy, and Japan after World War II; Korea, of course; and less extensive efforts like Bosnia and Kosovo. In each instance, we examined the size of the civilian population, its demographic makeup, and the types of collateral missions our armed forces were tasked to provide. General Eric Shinseki used this analysis as part of his prewar forecast that our stability operations in Iraq might require "several hundred thousand" soldiers.

In the presentation of each of these vignettes, BG Brown was able to capture the attention of officers and senior enlisted personnel in the AOC (and other venues) by telling a relevant story in a concise way that might then take residence in the listeners' minds as they planned operations and attempted to solve complex problems. He instructed me to build his briefings largely using images (versus text) so that people might better pay attention to his message. I would often field phone calls from frantic executive officers asking me for the "notes pages" for the slides BG Brown had presented the previous night, as their generals wanted them for reference. Each vignette was usually accompanied by an information paper prepared by CMH historians (and sometimes BG Brown himself), which provided much of that desired context. These papers were brief, well organized, and easily read. They always included a list of references for further study.

There is an aspect of "telling stories" that is definitely more art than science. BG Brown was able to thoughtfully deliver an anecdote that was not only relevant but compelling. With few exceptions, those in the balcony and on the AOC operations floor listened intently. For five minutes or so each night, CMH provided a useful, and needed, diversion from the heightened ops tempo of the Pentagon preparing for (and later at) war. During his tenure at CCH, Bill Williams repeatedly stressed that good historians are also good storytellers. BG Brown was certainly both.

Another influential piece of my CMH journey occurred in 2003, when US Special Operations Command (USSOCOM) contacted CMH to inquire as to whether we could assist with historical collection in Afghanistan. Operation ENDURING FREEDOM was well under way by then and had employed thousands of Special Operations Forces from all branches of service. The USSOCOM history office, under the tutelage of Dr. John Partin, recognized the need to capture the stories of these brave men and women before their experiences were lost to time. The rapid pace of deployments and extensive use of reserve components compounded the urgency of this effort as personnel quickly entered and left the theater. While I did not have previous oral history experience, I did have a background in special operations. BG Brown wanted CMH to help in whatever way we could. Dr. Richard Stewart, then chief of CMH's Histories Division, provided me a crash course in oral history collection, and after a short stop in Tampa to coordinate with the USSOCOM history office, I made my way into theater. Over the course of the next five months, I conducted more than 160 oral history interviews, in addition to taking photographs and collecting documents, hard drives, and servers for the historical record. These interviews included all types of Special Operations forces: Green Berets, Rangers, SEALs, aviators from all services, combat controllers, pararescue personnel, AC-130 gunship crews, members of the IC, and medical personnel. I even took the opportunity to inter-

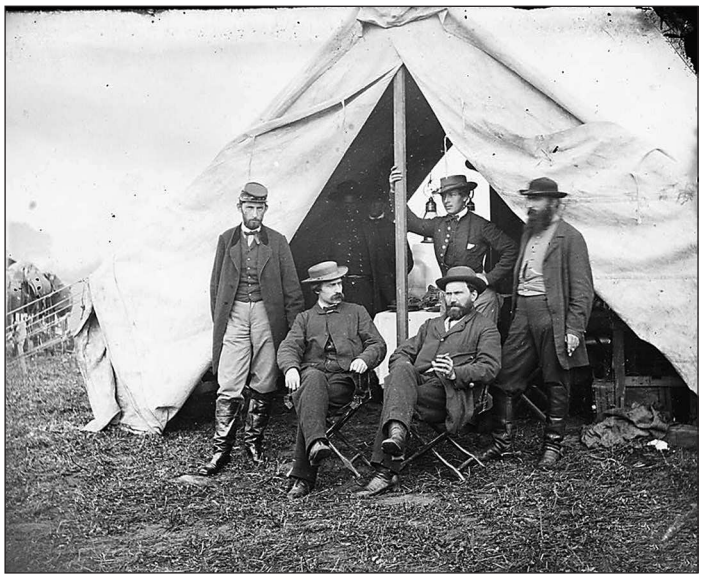
view native Afghans serving as interpreters for our forces.

One memorable day I flew into Gardez on a Blackhawk helicopter to capture some interviews with our forces at a forward operating base. I was introduced to an army major named Al Rascon, who was assigned to the Combat Support Hospital in Bagram. I was shocked to discover that this was the same Al Rascon who was awarded the Medal of Honor for his service nearly 40 years earlier as a medic in Vietnam! I was equally surprised to discover that Al had never been interviewed by an army historian, a situation I quickly rectified. This experience further etched in my mind the value of oral history to any federal history program.

What does all this have to do with NSA and its history center? The Center for Cryptologic History has become a powerful resource for NSA and its workforce. We are fortunate to have a staff of dedicated civilians, contractors, and volunteers. Each of them brings a particular expertise that is then applied to our core functions. Our two-part mission statement reads as follows:

> Provide objective, meaningful historical support to the National Security Agency/ Central Security Service leadership and workforce to enhance decision making, cryptologic knowledge, and esprit de corps.
>
> Preserve and advance an understanding of cryptologic history for the United States Intelligence Community, the Department of Defense, other government agencies, academia, and the general public.

Our historians write daily internal history feature articles for our workforce. These are sometimes fun and whimsical, but more often they are designed to be easily digested nuggets on serious topics that in some way relate to cryptology. The popularity of this feature among the workforce continues to be astounding. Many employees tell us that it is the first thing they read every morning. We receive comments and questions nearly every day from employees who either personally relate to a particular topic or want to know more about it. Our annual cryptologic history calendar is another very popular offering, and we distribute thousands every year. The daily articles and our annual calendar remain important tools for increasing the visibility of cryptologic history and nurturing a significant interest in history amongst our workforce.



CCH offers NCS courses in Civil War history, incorporating "staff rides" to local battlefields and stressing the role of intelligence in them. Photo taken October 1862 at Antietam; seated: R. William Moore and Allan Pinkerton; standing: George H. Bangs, John C. Babcock, and Augustus K. Littlefield. Courtesy Library of Congress

Another way that CCH continues to raise the visibility of the history program and enhance the culture of history at NSA is through new employee orientation programs. Almost every orientation class begins at the National Cryptologic Museum, where new employees are given the oath of office and then a guided tour of the museum by a CCH historian. When they see how

CCH hosts the biennial Symposium on Cryptologic History with the National Cryptologic Museum Foundation. Historians (and fans of history) learn about topics from the cryptologic past. *Above:* former NSA Deputy Director Chris Inglis addresses a 2015 symposium session.

their predecessors were able to change the course of world events through code making and code breaking, they are better able to appreciate the importance of the work they are about to begin. (Many are surprised to learn that the museum does not fall under CCH's purview, although we work together very closely and share a passion for educating the workforce and the general public about cryptologic history.)

The publication program that CCH maintains is extensive. Our more formal publications range from short articles and brochures to monographs and book-length treatments of a wide variety of subjects. Many of these are written by our staff historians and stable of volunteers. Others are authored by NSA employees working full time at their "day jobs" who also have a burning desire to capture a topic of import. All of these publications are subjected to a rigorous and formal process of editing and peer review. Our historians are thorough in their research, critical in their thinking, able to defend their conclusions, and not shy about acknowledging gaps or inconsistencies in the historical record where they exist.

CCH also has a historical outreach program that is both formal and informal. In conjunction with NSA's National Cryptologic School, we offer courses in general cryptologic history and special interest topics, including a Civil War "staff ride" to Antietam. Staff rides are open to all employees and emphasize the role of intelligence in past battles. We conduct IC-wide leadership and training seminars with a historical bent, examining topics such as NSA's involvement in the Gulf of Tonkin resolution, which are both revealing and relevant. We also present a variety of informational briefings on NSA and general cryptologic history as requested for groups large and small throughout the Agency. Another major aspect of our cryptologic outreach is our biennial Symposium on Cryptologic History (the next one is scheduled

for October 19-20, 2017) that we host with the National Cryptologic Museum Foundation. Conducted at the Johns Hopkins University Applied Physics Laboratory, it is an occasion for historians (and fans of history) to gather for reflection and debate on relevant and important topics from the cryptologic past. This year's theme is "Milestones, Memories, and Momentum." The symposium agenda will offer a World War I-specific track to mark the centennial of American participation in that war and the birth of modern signals intelligence. Other relevant milestones this year include the 75th anniversary of the Battle of Midway in June, NSA's 65th anniversary in November, and the upcoming 50th anniversary of the Tet Offensive. The symposium normally draws over 200 attendees from NSA, the IC, academia, the general public, and also an international audience. Additional information about the symposium is available on www.nsa.gov.

CCH is well postured to continue making history relevant and contributing to the maintenance of a culture of history at NSA. The challenge for me (and other new staff members) is to live up to the reputation established by our predecessors. Measuring the value of any federal history program is not an easy task; it is perhaps even more challenging at an agency that is highly technical. As Sherman Kent, John Brown, and Bill Williams have all said in one form or another, though, our worth as a history program can be measured by how well our agency performs its mission, and whether the experiences of the past help it to do so. Our goal remains the same: make history relevant!

John A. Tokar is the chief of NSA's Center for Cryptologic History (CCH). Prior to joining CCH, he served in a variety of cyberspace planning and operational assignments at NSA, US Cyber Command, and its predecessor organizations. He is a retired active-duty US Army officer with an extensive background in strategic and operational planning, logistics, and special operations, to include two command assignments. He holds degrees from Virginia Tech, Syracuse University, and the US Army School of Advanced Military Studies (SAMS). On September 11, 2001, he was the strategic planner for the US Army's Center for Military History (CMH), where he served the CMH chief in providing support to the US Army staff to include official histories, field programs, publications, the US Army museum system, and Civil War staff rides. Additionally, he deployed to Afghanistan as US Special Operations Command's field historian in 2004, where he conducted more than 160 oral history interviews of special operations and intelligence community personnel.

Decryption in Progress: The Sino-Japanese War of 1894-1895

Gregory J. Nedved

If the "Sino-Japanese War of 1894-1895" were ever a category topic on *Jeopardy*, contestants on the popular US game show likely would leave it for last. Even those extremely erudite contestants would be hard pressed to describe much about this obscure war—except that Japan defeated China.

The scarcity of information makes it a challenge to summarize what is known cryptologically about this war. As I learned through my research, the Japanese practiced deception to validate a Chinese codebook. With this codebook as its model, the Japanese were able to solve different versions of Chinese codes, allowing them to read secret messages before, during, and after the war. Japan's greatest cryptologic success was reading some Chinese leadership communications prior to the war. Excluding one instance, codebreaking did not help the Japanese tactically during the actual war. Despite claims to the contrary, codebreaking also does not appear to have helped the Japanese very much during negotiations to end the war.[1]

Background

The Sino-Japanese War of 1894-1895 was largely fought over control of Korea. Essentially, Japan sought to end China's centuries-old suzerainty there as well as gain access to valuable resources it needed. China (the Qing Dynasty, 1644-1911) unsurprisingly tried to maintain its historical advantage in Korea. A number of incidents in the 1880s heightened tensions between China and Japan.

The precipitating crisis, though, was Chinese and Japanese armed intervention in the June 1894 Tonghak Rebellion in Korea. The Chinese intervened at the request of the Korean government while the Japanese intervened on their own, citing as their rationale a Chinese violation of a mutual agreement about dispatching troops to Korea. Within weeks, the Japanese would occupy Seoul, where they installed a pro-Japan Korean king. Shortly thereafter, fighting broke out between China and Japan.

Although war officially had begun on August 1, 1894, with formal declarations, the first great land battle was fought September 15-16 with the successful Japanese assault on Pyongyang. The Japanese then pursued the Chinese, who had withdrawn from Korea for tactical and strategic reasons into China itself. Japan first crossed into Chinese territory (Manchuria) on October 24.

A map of present-day East Asia. Wikimedia Commons

In a series of successful battles over the next few months, and despite wintery weather, the Japanese were able to advance to within striking distance of Beijing, the Qing capital, by March 1895. The last land battle, a Japanese victory, was fought on March 5, 1895, at Yinkou in Manchuria.

At sea, the Japanese Navy defeated the Chinese in the Battle of the Yellow Sea (September 17, 1894), right as the Japanese Army was winning at Pyongyang. Of note is that Japan defeated the feared Beiyang (北 洋) Navy. The Beiyang Navy had been arguably the most powerful fleet in Asia, in numbers alone equaling Japan's entire fleet! The victory was so complete that the remaining Beiyang fleet retreated to Weihaiwei in Shandong Peninsula farther south rather than risk total destruction at the hands of the Japanese. This would be wishful thinking, though. Between January 20 and February 23, 1895, the Japanese laid siege to Weihaiwei by both land and sea. Victorious again, the Japanese had succeeded in destroying the fleet once and for all in the last major battle of the war. The Japanese victory was complete, with success on the ground and at sea against the Qing Dynasty's forces.

Shortly after formal peace talks began in late March, Japan seized the Pescadores, an island chain in the East China Sea near Formosa (Taiwan). The resulting April 1895 Treaty of Shimonoseki rewarded Japan with Chinese war reparations, granted Japan trading concessions in China, ended Chinese domination in Korea (it became independent), and transferred to Japan control over the Pescadores and Formosa. Japan consequently landed its occupation forces in For-

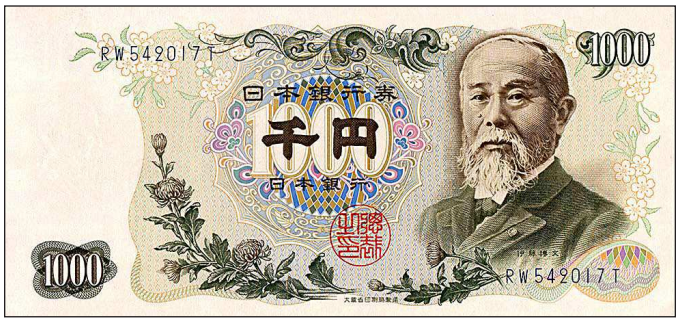
mosa in May and would largely subdue the island by 1896. However, it could not keep its other primary territorial gain. Due to an intervention by France, Germany, and Russia, Japan was forced to return the Liaodong Peninsula in Manchuria to China.[2]

Early Japanese Codebreaking Successes

The accepted view of scholars who have studied this war is that codebreaking facilitated the Japanese victory over the Chinese. They argue that Japanese codebreaking acumen came in handy in particular during diplomatic negotiations leading to the Treaty of Shimonoseki, which ended the war.[3]

But is this actually the case? The purpose of this article is not to dispute Japanese codebreaking success against the Chinese at the time. The Japanese clearly benefitted from codebreaking in the events leading up to the conflict. Indeed, prewar codebreaking might have been Japan's greatest cryptologic success against China. Still, codebreaking did not benefit the Japanese as much as is believed, both during the actual war and during the negotiations to end it. The evidence uncovered so far simply does not warrant this claim.

While it is uncertain when Meiji Japan first began gleaning intelligence from broken Chinese codes, a signature moment in Japanese cryptologic history took place in mid-August 1886: the Nagasaki Incident. Mostly a footnote in East Asian history, the incident was a scuffle between visiting sailors from the Beiyang fleet and civilians and police in Nagasaki, Japan.[4] During the scuffle, one of the Qing sailors lost something valuable, a small dictionary. It was eventually passed on to Japanese intelligence officials, who suspected they had a Qing codebook in their hands.

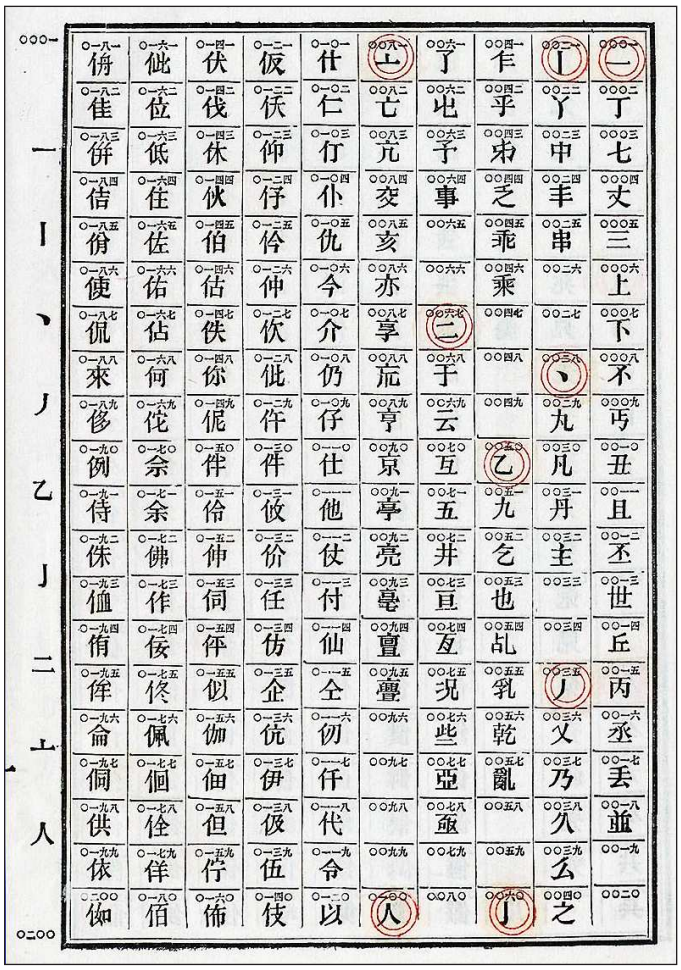


One-thousand-yen Bank of Japan note with portrait of Prime Minister Itō Hirobumi, who was involved in the 1894 plan to trick the Chinese. Wikimedia Commons

The Japanese needed to know more. Who used the book? How valuable was it? They also realized that they could not read it in its entirety. They decided to trick the Chinese into providing more information about this codebook. Suspecting that it was used by the Zongli Yamen (总理衙门), the Chinese department that handled foreign relations, the Japanese transmitted a medium-length diplomatic message to the Chinese envoy to Japan, Wang Fengzao, expecting him to send it encoded to the Zongli Yamen.[5]

In fact, it now appears to have been an important message, explaining further why the Chinese were likely to send it encoded. The message, dated June 22, 1894, declared for the first time that the Japanese government would start acting unilaterally in Korea rather than in coordination with China, as had been the case in recent years. Essentially it was a rejection of a June 21 Chinese note, which had explained recent Chinese actions in Korea.[6]

Japanese codebreakers were delighted when their trick succeeded and Wang encoded the message before transmission. This encoded message allowed Japanese intelligence to fill in some missing gaps and gain a more complete understanding of how the code worked. Only a handful of people knew about the Chinese codebook and the plan to trick the Chinese:[7] Prime Minister Itō



Chinese telegraph code, part of Septime Auguste Viguier's *New Book for the Telegraph* published in Shanghai, 1872. Wikimedia Commons

Hirobumi, Foreign Minister Mutsu Munemitsu (who envisioned the spoofed message), and Sato Aimoro, chief of the Telegraphic Section within Japan's Foreign Ministry. With prior codebreaking experience and some understanding already of Qing codemaking procedures, Sato may have been the actual codebreaker.

In fact, Japanese possession of the code was only revealed when "The Secret War between Japan and the Qing Dynasty" (Jimi Riqing Zhanzheng 机密 日清 战争), a work penned by Japanese Prime Minister Itō himself, was released 30 years after his 1909 assassination.[8] This cryptologic feat might have remained a secret since there is no known English translation of this work and most Western scholars know little about it to this day.

Chinese Codebooks

During this time period, the telegraph was an effective vehicle for sending long-distance messages. The first Chinese telegraphic codes date to the 1870s. At left is a sample from the now obsolete Viguier Code from 1872. According to this code, a Chinese character or word is represented by four Chinese numbers above it. These numbers would be sent by telegraph instead of the character or word.[9]

It is not known what the captured codebook actually looked like. (If any copies still exist, they are not readily available.) Regrettably, there are only two vague descriptions of it that lead us to supposition. The first one says that it was a small dictionary, with the numbers 0-9 written both horizontally and vertically (on every page, as a grid matrix perhaps?). The second one also says that it was a small dictionary. Based on the first description, the captured codebook somewhat resembles the Viguier Code since it used four numbers per Chinese character.

Both descriptions suggest that the codebook utilized numbers. Presumably, the Qing code clerks would send out Chinese characters or words in numbers. Another possibility though was that they sent out Romanized letters instead to represent Chinese characters, a system that might have offered more security, provided that Chinese code clerks felt comfortable enough using Chinese language Romanization systems.[10]

The compromised Chinese codebook that was captured back in 1886 used a code with the unimaginative name of Xinfa (New Method 新

法). It remained in use as late as November 1895, after the war had already ended, in part because it was so easy for the Chinese to understand. Its replacement, the Xin Xinfa (New New Method 新 新 法), introduced as early as 1888, had also been broken by the Japanese. Mihong (Code Red 密 红), a replacement for Xin Xinfa and the primary diplomatic code for the Chinese delegation at Shimonoseki, may have been in use as early as 1893. The Japanese were eventually able to read 90 percent of it.[11]

Prewar Codebreaking

Japanese Foreign Minister Mutsu's access to Chinese communications just prior to the Sino-Japanese War of 1894-1895 was "virtually complete," thanks to codebreaking. He was able to summarize messages between and among high-level Chinese leadership including General Ye Zhichao, who led the Chinese forces then in Korea (he would eventually be defeated in the Battle of Pyongyang); Yuan Shikai, the "de facto" Qing ambassador to Korea; Wang Fengzao, the previously mentioned ambassador to Japan; and Li Hongzhang, Viceroy (Governor-General) of Zhili (the area around the Qing capital of Beijing).[12]

The most important of these four was Li Hongzhang. Among the most elite of China's politicians, generals, and diplomats, Viceroy Li was probably China's main strategist for Korean policy. Essentially, he determined which Chinese forces did the fighting in the war, even deploying his own Beiyang Army against the Japanese. Viceroy Li was the primary sponsor of the Beiyang fleet that would engage the Japanese. It may have been his codebook that was inadvertently relinquished by this fleet during the Nagasaki Incident.[13]

Decrypts show that there was concern over a Japanese reaction to any Chinese action. General

Li Hongzhang, Viceroy of Zhili, 1896. Wikimedia Commons

Ye, for example, did not believe that the Korean government wanted any help from China in putting down the Tonghak Rebellion because it feared that the Japanese government would intervene. When General Ye sent in troops, he complained that the Korean government interfered at every opportunity. The Chinese had in fact informed the Japanese that the rebellion was over but apparently believed otherwise. Ambassador Yuan tried to apply leverage on Korea, which did not seem to want Chinese aid lest it would invite trouble with Japan. Japan also learned from decrypts that Ambassador Wang wanted Viceroy Li to pressure

Korea into adopting internal reforms, fearing that Japan would otherwise intervene to stabilize the situation there.[14]

Not as Successful as Believed?

Based on their early codebreaking successes that provided access to leadership communications, the Japanese understood the strategic intent behind Qing troop deployments to Korea.[15] But what about tactical communications? Interestingly, one can make the case that the captured codebook—and codebreaking—did not help Japan as much on the battlefield when the war actually erupted. The main reason for this was immature Chinese wartime communications. It was mostly messengers and occasionally telegraphic reports to the rear. Seldom, if ever, did the Chinese employ on the battlefield the more elaborate codes used in overseas communications.

They had no systematic network of communications installed in the war zones or between the front and rear. Viceroy Li's command post at Tianjin was probably vulnerable to intercept, but reports from the front and orders issued routinely took several days to transmit, mostly because telegraphic lines did not reach key points. There was a temporary telegraphic terminal installed at Jinzhou on the Liao River in Manchuria, but it was not installed in time to provide any real secrecy.

Moreover, Japanese exploitation of Chinese communications, specifically from the front to Beijing, probably suffered when Viceroy Li was eventually replaced as military commander by Prince Kong and later Liu Kunyi. This meant the loss as well of experienced personnel, e.g., Sheng Xuanhuai, who had been Li's communications chief. Sheng was the longtime director of the Chinese Telegraphic Service.[16]

Another important reason was the nature of the compromised codes themselves. The Japanese were reading encoded messages used by Chinese diplomats, government and military seniors, and probably the navy as well (remember the codebook was taken from a sailor in Nagasaki).[17] This would not necessarily equate to tactical battlefield use. It is likely that the Chinese troops fighting inland would not have used the same codes, if they were used at all.

Not surprisingly then, there are few specific examples of how this codebook—or Japanese codebreaking—assisted the Japanese during the war itself. Chinese researcher Han Pu argues that the Japanese did have knowledge of Chinese wartime troop deployments via codebreaking. He provides one example, which, not surprisingly, is naval (although with ground war ramifications). Aided by codebreaking, the Japanese ambushed the Beiyang Navy at Dadonggou (大东沟) on September 15, 1894, while it was performing troop transport duties. This event occurred on the eve of the Battle of the Yellow Sea, the first great sea battle of the war. Moreover, the Battle of Pyongyang, the first great land battle, began that day as well.[18]

There may be few specific examples to come from Japanese codebreaking. But intelligence is not restricted to cryptology alone. People tend to forget that this war was considered by some to be an "upset victory" by Japan over China. The German General Staff, for example, had predicted a Chinese victory. The historian Ernest Chu called it "uncanny" the way the Japanese responded to Chinese diplomatic and military initiatives. He is convinced that they had the abovementioned "inside information."

For example, it is conventional wisdom that Japan had long prepared for conflict with the Chinese in Korea, dispatching secret agents in

large numbers to China and Korea to collect intelligence and draw detailed maps. The Japanese appear to have had "inside information" about the British-owned, Chinese-chartered troop transport "Gao Sheng" (高升), which they sunk in one of the first engagements in the war. Japan had at least one man (he may have been Viceroy Li's nephew!), who forwarded the ship's schedule to his Japanese employers.

According to historian Ernest Chu, it is widely believed that the Japanese had indeed infiltrated the unlucky Li's headquarters in Tianjin. Researcher Han Pu goes further, stating that Kamio Mitsuomi ran the Japanese espionage operation from Tianjin, a city near Beijing. Kamio had been a Japanese military attaché in Beijing, where he reportedly bribed officials of the Imperial Military Council (军机处) for information. Just prior to the war, he was assigned to Tianjin, where he would know every move that Viceroy Li would make.[19]

Codebreaking and the Impact on Negotiations

Uncovering specific examples of how codebreaking helped the Japanese at the negotiating table, in particular the Treaty of Shimonoseki, is an ongoing area of research. As indicated earlier, it was a good treaty for Japan. The oft-mentioned Viceroy Li was the main Chinese diplomat during these treaty talks. Historian Chu has reasoned that the Japanese held an "enormous advantage" from codebreaking, especially during the negotiation period. Researcher Pu argues that Japan knew the Chinese "bottom line" regarding territorial cessation and reparations.[20]

Clarifying the codebreaking role may take some time. One problem is that at least some of the Chinese negotiators at Shimonoseki were forbidden by the Japanese from using codes in their messages—a restriction created by the host Japanese, who were presumably in a position to enforce it. While this was not an unusual practice for a host country, nonetheless it is curious behavior since the Japanese were already competent with Chinese codes—perhaps they were practicing deception, not letting on that they could read these messages when encoded. At least two Chinese diplomats, Zhang Yinhuan and Shao Youlian, tried to circumvent these restrictions by having Americans send encoded messages to China on their behalf.[21]

Diplomatic messages do not automatically have to be encoded—a concept that those in the cryptologic business must keep in mind. As a case in point, the Chinese negotiators sent the contents of the Treaty of Shimonoseki in plaintext to Beijing. Unless Viceroy Li and his fellow diplomats sought to deliberately deceive the Chinese court about what the treaty terms actually said—a highly unlikely action on their part—there was no reason to utilize codes. Certainly the Japanese, as victors, knew the contents of the treaty.

In fact, it was difficult to always know which messages were encoded. There were more than 100 messages between Viceroy Li and China. At least half of these were broken by the Japanese. Presumably some of the remaining ones, for example the treaty contents, were sent plaintext. If the messages did not need to be encoded, then there was no need for codebreaking.

Interestingly, Viceroy Li authorized the use of a certain codebook—Luodao Hanzi Miben (Luodao Chinese Character Codebook 罗道汉字 密本)—between the Imperial Court and a subordinate, De Cuilin, located in Tianjin at the time. This probably would have caught the attention of the Japanese but would not have

necessarily meant tangible intelligence information. Luodao Hanzi Miben, as it turns out, was a code that the Japanese apparently could not read.

In addition to Luodao Hanzi Miben, the Japanese also were unable to break Xiangshi Donghai Miben (Xiangshi East China Sea Codebook 香师 东海 密本), which was used by Viceroy Li and his communications chief Sheng Xuanhuai. Neither Luodao nor Xiangshi, unlike Mihong, appeared to be a primary diplomatic code, though.[22]

At this point, it should be asked, "What kinds of decrypted information would have brought intelligence value to the Japanese negotiators?" The Japanese likely would have coveted the following types of "secret information:" (1) Chinese counter proposals made during the treaty talks; (2) Chinese strategies used to circumvent or undermine the treaty; (3) Chinese plans to resume hostilities—and any information related to them; (4) senior Chinese leadership thoughts and concerns; (5) Chinese perceptions of their Japanese negotiators, the Japanese government, and the Japanese in general; (6) Chinese attempts to deceive the Japanese, e.g., using unauthorized codes; (7) Chinese attempts to win foreign allies; (8) Chinese attempts to undermine the Japanese government in Korea, Japan, and elsewhere; (9) information about regime change or political instability in China; and (10) information forecasting Chinese ability (or inability) to honor treaty requirements, e.g., paying indemnities.

This is not a complete list. In all cases, the more specific the information, the more useful it was. In almost all cases, nothing gleaned from the Chinese Shimonoseki messages fell into these categories. Access to leadership communications is only beneficial, however, when those leaders say or do something the collector considers useful. Of course, what is useful is a matter of opinion—one man's trash can be another man's treasure. The evidence so far does not show much tangible gain from codebreaking for Japan, which was already in a strong tactical and strategic position based on its military successes.[23]

For the record, there were a few Chinese messages that could fall under this list. The Japanese, for example, probably knew of Chinese attempts to send coded messages by intermediaries—this would fall into the deception category stated above. In fact, they could usually read Mihong, the code employed by the previously mentioned diplomats Zhang Yinhuan and Shao Youlian who sent messages via the Americans. Yet, it is unclear how Japanese knowledge of Chinese deception attempts here would have provided the Japanese with any tangible intelligence value during the peace talks. Presumably, the Japanese controlled the use of Chinese codes as best they could as the host nation.

The Chinese might have tried another type of deception, although it likely would not have succeeded. Some messages were sent by or on behalf of "Li Fuxiang." Although Li Fuxiang may have been an entirely different person, he most likely was none other than Viceroy Li himself. Li Fuxiang referred to his honorary appointment by the Qing Court as the Crown Prince's Grand Mentor (太子太傅). One suspects that the Japanese would have been aware of the Viceroy's dual identity.

If there was any doubt, it should have been erased right away. Li Fuxiang, shortly after his arrival in Shimonoseki, sent out a message that began with "ceasefire not allowed." Certainly, the Japanese would have wondered who was sending such an important message.

While important, was this valuable intelligence gleaned by codebreaking? Unfortunately, the remaining text is not clear enough to confirm this conclusion. Li Fuxiang might have been merely confirming a situation already known to the Japanese. Besides, the item might have been sent in plaintext, meaning it was not encoded at all.[24]

One topic that could have produced useful intelligence was the failed assassination attempt on Viceroy Li. A Japanese nationalist, attempting to prolong the war, shot Li in the left cheek on March 24, 1895. One message, sent by Li himself, reflected the attitude of Japanese Emperor Mutsuhito, about the unfortunate event. The incident truly embarrassed Japan as the host nation. It would have been useful indeed for Japan to learn if, when, and how the Chinese planned to take advantage of this unexpected diplomatic opportunity.

Ironically, this incident did what the Chinese could not achieve otherwise—force concessions from the Japanese. Li wanted the Japanese to soften their demands and to agree to a ceasefire—he got them to agree to both. It is not clear how codebreaking could have helped the Japanese overcome this sudden reversal of fortune.

These messages show the personal side of Viceroy Li, who was aided in his negotiations by his adopted son, Li Jingfang, formerly China's ambassador to Japan. Because the negotiations were not going well for China, Viceroy Li was going to send his family home from Japan as soon as possible. But after he got hurt, Japan became less recalcitrant, making their departure unnecessary. Another son in China, Li Jingshu, had planned on travelling to Shimonoseki after his father was wounded. He did not because the treaty was signed shortly thereafter, meaning that his father was coming home.[25]

Remaining Research Challenges

Did the Japanese benefit at all from codebreaking at Shimonoseki? The jury is still out. There remain decrypts to identify and analysis to perform. Are there any decrypts out there that directly helped the Japanese win a battle? Given the importance of Viceroy Li to the war effort and planning, this seems likely. More research is required on Japanese codebreaking. We know even less about Japanese codemaking. There is still work to do.

In particular, Western historians need to learn about the Chinese effort. Indeed, no coverage is complete without knowing more about their cryptologic policies and methods of the time. As stated, there are at least two codes that the Japanese may not have broken. At a minimum, this suggests that the Chinese might have been more cryptologically savvy than believed. Perhaps these more secure codes (or others not yet identified) were employed more often than known, e.g., during the peace talks.

The Qing, according to researcher Han Pu, had the most advanced and sophisticated equipment at that time and understood that communications security was important. The Chinese certainly realized that their codes were vulnerable—one message revealed that Beijing itself had compromised a code. The replacement code was Mihong, which was not safe at all.

Examples of poor communications security practices, such as linking a code (or codebook) with a specific user, did exist. Even novice cryptologists would soon recognize the folly of such an arrangement. The previously mentioned Luodao Hanzi Miben and Xiangshi Donghai Miben codebooks are cases in point. The Chinese appear to have been rather lucky as neither code was apparently broken by the Japanese.

The Luo of Luodao refers to Luo Fenglu, the designer or controller of the code who was with Viceroy Li in Japan. Xiangshi refers to Zhang Zhidong while Donghai refers to Sheng Xunhuai, Viceroy Li's communications chief. Interestingly, Zhang was a major rival of Li and was not directly involved in the war. Although Viceroy Li used this codebook to secure communications with Sheng, its name suggests that it was mainly intended for use between Sheng and Zhang, perhaps to provide the latter with updates on the war and the peace talks.

Even the Chinese practice whereby one person uses other names to send out messages (i.e., the Li Hongzhang-Li Fuxiang connection) would not be a good security practice. Once Japan discovered that the two names were one and the same person, it would have presumably paid more attention to messages mentioning the two.[26]

Clearly, the Chinese had some communication security breakdowns. What is known about Chinese cryptanalysis? Did the Chinese have any codebreaking successes against the Japanese during this war? So far, the evidence says, "no." With so much more out there to learn, this is an unsatisfactory answer. Here too additional research is needed.

Making things difficult (and the reason why more is not known) is a paucity of sources. There is very little written in the English language concerning cryptology during this war. There is presumably more in the affected languages—Chinese, Japanese, and Korean. However, unless one knows these languages, one is entirely dependent upon translations. Worse, cryptology-related text can be challenging for even professional translators since they are usually unfamiliar with the topic. Finding more information about cryptology's role in the Sino-Japanese War of 1894-1895 will require more effort, including related translation work. But it would be well worth it since there are discoveries to be made.

Final Observations

During the late 1800s, China, long the dominant power in the region, was undergoing a historic decline—a decline it did not fully appreciate until it was humiliated militarily by an upstart Japan, which had only started its modernization in 1868 when it launched its internal Meiji Restoration. Within 20 years of its defeat, China would undergo revolution, ridding itself of its centuries-long imperial system and embracing republicanism, albeit superficially, with the establishment of the Republic of China in 1911. With its victory, Japan would begin its rise as a major power in Asia, even more conspicuously after defeating Russia in the Russo-Japanese War of 1904-1905.[27]

Notes

1. Jin Dianqiang, "Jiawu Zhan Qian Zhongguo Chaoye Ceng Guchui Dongzheng: Hao Haoer Jiaoxun Yixia Riben," *Huanqiu Shibao* [Global Times], trans. Gregory J. Nedved (July 29, 2014); Lyu Denglai, *Jiawu Zhanzhengde Gushi* [The Story of the Sino-Japanese War (of 1894-1895)], trans. Gregory J. Nedved (China: Shanghai People's Publishing, 1977), 9; "Sino-Japanese War of 1894-1895," accessed July 19, 2017, https://www.britannica.com/event/sino-japanese-war-1894-1895; Han Pu, "Cong Zhan Qian Gaosheng Hao Yunbingchuande Xingzong, Dao Dalu Zhongde…," trans. Gregory J. Nedved, accessed July 28, 2015, http://epaper.syd.com.cn/sywb/html/2014-06/03/content_1001266.htm; Samuel C. Chu, "The Sino-Japanese War of 1894: A Preliminary Assessment from U.S.A.," *Academia Sinica, Collected Papers*, no. 14 (Taipei, Taiwan: Institute of Modern History, 1985-1986), 353-56; Lyu Wanhe, "Jiawu Zhanzheng Zhong Qing Zhengfu De Midianma Shi Zenyang Bei Poyide," trans. Gregory J. Nedved, accessed July 28, 2015, http://www.historychina.net/qsyj/ztyj/ztyjzz/2009-11-13/15116.shtml; Mutsu Munemitsu, *Kenkenroku: A Diplomatic Record of the Sino-Japanese War,*

1894-1895, ed. and trans. with historical notes by Gordon Mark Berger (Princeton, NJ: The Japan Foundation, Princeton University Press; Japan: University of Tokyo Press, 1982), 24-26, 32-33, 264, 266; Ji Chen, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu," *Shandong Social Sciences, Jinan*, issue 6, trans. Gregory J. Nedved (November 20, 2014), accessed July 28, 2015, http://www.iqh.net.cn/info.asp?column_id=9842.

2. It is sometimes also called the Battle of the Yalu River. "Battle of the Yalu River," accessed July 12, 2017, https://www.britannica.com/event/battle-of-the-yalu-river-1894; "Sino-Japanese War of 1894-1895"; "Pingrang Zhi Zhan," trans. Gregory J. Nedved, accessed July 19, 2017, www.5011.net/zt/pingrangzhizhan/; "Weihaiwei Zhi Zhan," trans. Gregory J. Nedved, accessed July 19, 2017, www.pmume.com/hjbk/nncr3.shtml; "Japanese History in Taiwan," accessed July 19, 2017, www.formosaguide.com/p/japanese-history-in-taiwan.html; Richard N. J. Wright, *The Chinese Steam Navy, 1862-1945* (London: Chatham Publishing, 2001), 43-46.
3. Chu, "The Sino-Japanese War of 1894," 353-56; Jin, "Jiawu Zhan Qian"; Han, "Cong Zhan Qian."
4. Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Han, "Cong Zhan Qian."
5. For reasons not entirely clear, the message used three languages. It was first drafted in English, then translated into Japanese, and finally translated into Chinese. See the following for additional information: Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Han, "Cong Zhan Qian."
6. Mutsu, *Kenkenroku*; Jin, "Jiawu Zhan Qian"; Han, "Cong Zhan Qian."
7. Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Han, "Cong Zhan Qian."
8. Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Mutsu, *Kenkenroku*, 266; Han, "Cong Zhan Qian."
9. Septime Auguste Viguier, *New Book for the Telegraph* (Shanghai, 1872), sheet 13; Benjamin A. Elman and Jing Tsu, eds., *Science and Technology in Modern China, 1880s-1940s*, (Princeton, NJ: Princeton University, 2014), 159-63.
10. Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Viguier, *New Book for the Telegraph*, Sheet 13; Elman and Jing, *Science and Technology in Modern China*, 159-63; Han, "Cong Zhan Qian."
11. Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu"; Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Han, "Cong Zhan Qian."
12. Mutsu, *Kenkenroku*, 32-33, 266; Han, "Cong Zhan Qian"; Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; "Sino-Japanese War of 1894-1895"; "Pingrang Zhi Zhan"; "Yuan Shikai," accessed July 12, 2017, https://www.britannica.com/biography/Yuan-Shikai; "Li Hongzhang," acces-sed July 19, 2017, https://www.britannica.com/biography/Li-Hongzhang; "Li Hongzhang," accessed July 19, 2017, www.neworldencyclopedia.org.entry/Li_Hongzhang.
13. One Chinese language article, acknowledging the importance of the lost codebook to the war outcome, dared to suggest that the Chinese lost the war because the Qing sailors frequented a Nagasaki brothel! "Jiawu Qingjun Baiyu Piaochang? Changqi Piaochange Do'ou Xielu Dianbao Mima," trans. Gregory J. Nedved, accessed July 1, 2015, http://guoqing.china.com.cn/2015-06/26/content_35912688.htm; Mutsu, *Kenkenroku*, 32-33, 266; "Yuan Shikai"; "Li Hongzhang," https://www.britannica.com/biography/Li-Hongzhang; "Li Hongzhang," www.newworldencyclopedia.org.entry/Li_Hongzhang; Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; "Pingrang Zhi Zhan"; Wright, *The Chinese Steam Navy*, 43-46; First Sino-Japanese War," accessed July 12, 2017, www.newworldencyclopedia.org/entry/First_Sino-Japanese/War; Han, "Cong Zhan Qian."
14. Mutsu, *Kenkenroku*, 32-33, 266.
15. Ibid.
16. Chu, "The Sino-Japanese War of 1894: A Preliminary Assessment from U.S.A.," 353-56.
17. Mutsu, *Kenkenroku*, 32-33, 266; Jin, "Jiawu Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Han, "Cong Zhan Qian."
18. Jin, "Jiawu Zhan Qian"; Mutsu, *Kenkenroku*, 290; "Pingrang Zhi Zhan"; "Battle of the Yalu River," accessed July 12, 2017, https://www.britannica.

com/event/battle-of-the-yalu-river-1894; Han, "Cong Zhan Qian."

19. The sinking of a British ship caused a temporary crisis in British-Japanese relations. "The Sino-Japanese War Begins," Sino-Japanese War Research Society, accessed July 12, 2017, http://sinojapanesewar.com/pungdo.htm; Jin, "Jiawu Zhan Qian"; Han, "Cong Zhan Qian"; Lyu Denglai, *Jiawu Zhanzhengde Gushi* [The Story of the Sino-Japanese War (of 1894-1895)], 9; "Sino-Japanese War of 1894-1895"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Chu, "The Sino-Japanese War of 1894: A Preliminary Assessment from U.S.A.," 353-56; "Who's Who–Mitsuomi Kamio," accessed July 12, 2017, www.firstworldwar.com/bio/kamio.htm.
20. "Sino-Japanese War of 1894-1895"; Jin, "Jiawu Zhan Qian"; Chu, "The Sino-Japanese War of 1894: A Preliminary Assessment from U.S.A.," 353-56; "Li Hongzhang," https://www.britannica.com/biography/Li-Hongzhang; "Li Hongzhang," www.newworldencyclopedia.org.entry/Li_Hongzhang; Han, "Cong Zhan Qian."
21. Both diplomats were supposed to represent China in the peace talks but were rejected by the Japanese, who agreed to Viceroy Li Hongzhang instead. One may speculate that the attempts of both to circumvent Japanese communications controls might have contributed to the Japanese decision to reject them as the primary Chinese diplomats. "Li Hongzhang," https://www.britannica.com/biography/Li-Hongzhang; "Li Hongzhang," www.newworldencyclopedia.org.entry/Li_Hongzhang; Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu."
22. Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu."
23. Ibid.
24. Since there were legitimate cultural reasons for Viceroy Li to be called another name, it is not certain how much deception on the part of the Chinese was actually intended. Any deception might have been accidental. "Li Hongzhang," trans. Gregory J. Nedved, accessed July 12, 2017, www.mingrenzhuan.com/mingrenzhuanji/15.html; Jiang Yongjing, *Zhongguo Lidai Sixuejia: Sun Zhongshan, Cai Yuanpei*, vol. 20, trans. Gregory J. Nedved (Taiwan: Shangwu Yinshuguan, 1999); "Hong Jinglve Zoudui Biji," trans. Gregory J. Nedved, accessed July 13, 2017, www.chinaknowledge.de/literature/historiography/hongjinglvezouduibiji.html; Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu."
25. "Li Hongzhang," https://www.britannica.com/biography/Li-Hongzhang; "Li Hongzhang," www.newworldencyclopedia.org.entry/Li_Hongzhang; Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu"; James Z. Gao, *Historical Dictionary of Modern China [1800-1949]* (Lanham, MD: Scarecrow Press, 2009), 192; Edward J. M. Rhoads, *Manchus and Han: Ethnic Relations and Political Power in Late Qing and Early Republican China, 1861-1928* (Seattle: University of Washington Press, 2000), 76-77.
26. Jin, "Jiawu Zhan Qian"; Han, "Cong Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu"; "Li Hongzhang," https://www.britannica.com/biography/Li-Hongzhang; "Li Hongzhang," www.newworldencyclopedia.org.entry/Li_Hongzhang; "Zhang Zhidong," accessed July 13, 2017, https://www.britannica.com/biography/Zhang-Zhidong.
27. Jin, "Jiawu Zhan Qian"; Han, "Cong Zhan Qian"; Lyu Wanhe, "Jiawu Zhanzheng Zhong"; Ji, "Maguan Yihe Qing Zhengfu Midian Wenti Kaozhengbu"; "Qing Dynasty," accessed July 13, 2017, https://www.britannica.com/event/Qing-Dynasty; "Meiji Restoration," accessed July 13, 2017, https://www.britannica.com/event/Meiji-Restoration; "Russo-Japanese War," accessed July 13, 2017, https://www.britannica.com/event/Russo-Japanese-War.

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A Nineteenth-Century SIGINT Success

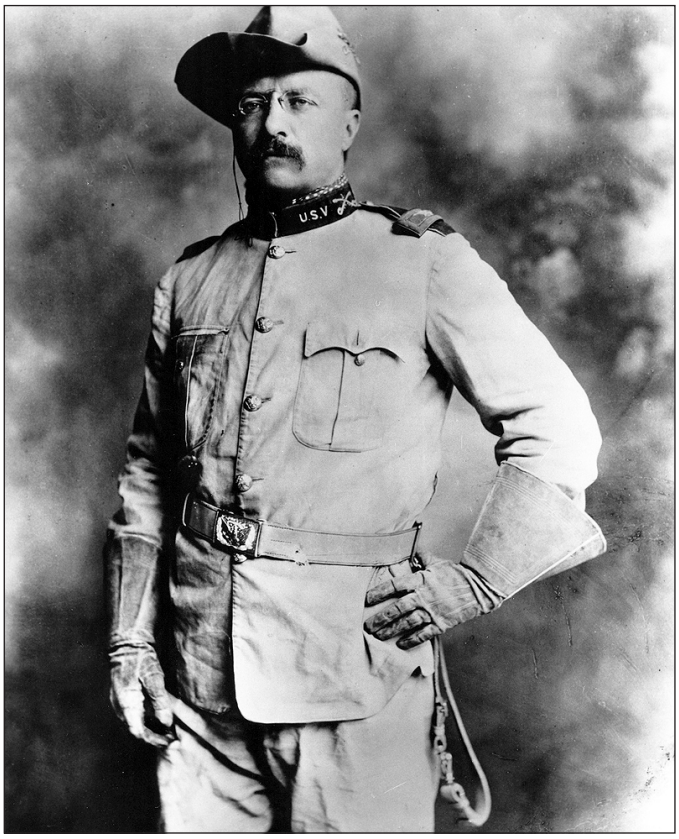
Richard S. Greeley, Jr.

SIGINT and Mount Rushmore?

Did you know that without signals intelligence (SIGINT), one of the faces on Mount Rushmore would probably be very different, or possibly not even there at all?

Did you know that without SIGINT, the United States would probably not have a naval base at Guantanamo Bay today? Did you know that without SIGINT, the course of the Spanish-American War, which lasted a mere four months in 1898, probably would have gone in a completely different direction? Are you skeptical about all these statements?

Well, I hope this story about SIGINT in the Spanish-American War will provide the evidence to convince you that these statements are at least reasonable. The story revolves around two very different individuals: Theodore Roosevelt and Brigadier General Adolphus Washington Greely.



Colonel Theodore Roosevelt in his Rough Rider 1st United States Volunteer Cavalry uniform. United States Army Heritage and Education Center

Theodore Roosevelt

In the years before the Spanish-American War, Teddy Roosevelt had been a hard-charging, anticorruption, Republican politician in the state of New York, and he was vigorously in favor of extending American power, influence, and territory beyond the continental United States. In 1897 President William McKinley appointed

Brigadier General Adolphus Washington Greely, chief signal officer, US Army. Wikimedia Commons

him assistant secretary of the navy, and because the existing secretary of the navy had little inclination to be active in the department, Roosevelt effectively ran the navy in the run-up to the war.[1] Within the McKinley administration, Roosevelt added his voice to the faction pushing for war against the residual Spanish Empire.

When war was finally declared in late April 1898, Roosevelt resigned his post and returned to New York to raise a small regiment of cavalry to participate in the invasion of Cuba. At that time, in a pattern left over from the Civil War, it was not unusual for private individuals to raise local volunteer military units to join the relatively small standing forces of the US Army. This cavalry unit eventually became known as the "Rough Riders." Since Roosevelt recognized that he did not have any military experience himself, he arranged for an experienced army officer, Colonel Leonard Wood, to take overall command, while he placed himself as second-in-command with the rank of lieutenant colonel.[2] Once the invasion force reached Cuba, Wood was promoted to take the place of a general who had fallen ill, and Roosevelt assumed command of the cavalry unit in the actual combat portion of the campaign.[3]

Adolphus Washington Greely

Adolphus Greely was a veteran of the Civil War who was already slightly infamous as the leader of an ill-fated Arctic expedition in the early 1880s. (But that is a story for another day.) At the time of the Spanish-American War, Greely was the chief signal officer of the US Army with a rank of brigadier general, and he was in charge of the army's small and woefully underappreciated Signal Corps.

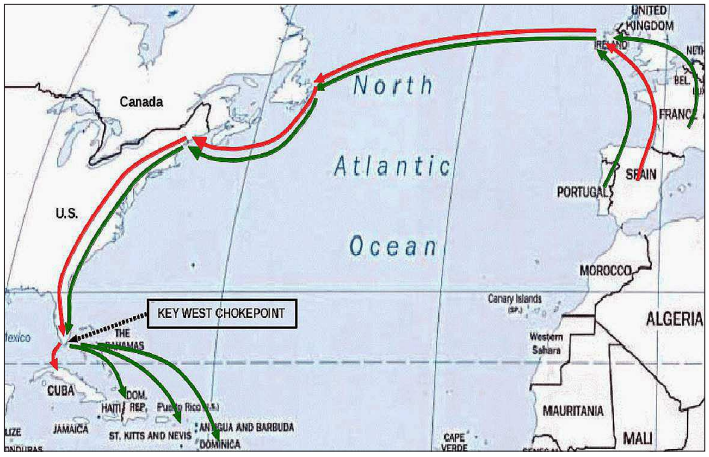
Prior to the war, there had even been some talk within the army of disbanding the Signal Corps altogether and relying on couriers for battlefield communications. Fortunately for the country (and our story), Greely made adroit use of his previous contacts with congressional leaders and managed to convince Congress to continue appropriating at least minimal funds for his command.[4]

At the beginning of the war, Brigadier General Greely was quickly able to put together, despite a paucity of appropriated funds, sufficient mobile telegraph equipment to supply the army's needs for the impending invasion.[5] But Greely made his most significant contribution not in the area of logistics or battlefield telegraphy, but in a matter of strategic intelligence that came about as an unexpected side effect of a collateral responsibility he was given by the president.

Blocking the Cables

Although many of the old-line army officers had little appreciation for the value of the telegraph as a *tactical* communications asset on the battlefield, policymakers in Washington had a clear understanding that telegraph communications between Spain and its remaining colonies in the Western Hemisphere had value as a *strategic* asset for Spain. In other words, the president and others in his cabinet recognized that Spanish communications with Cuba needed to be blocked somehow in order to hinder their wartime operations. Notice that there was a surprising blindspot here—despite the fact that a mere generation earlier both sides in the Civil War had tapped telegraph lines to intercept messages, no one at this time was thinking about using Spanish telegraph communications to gain intelligence on Spanish plans.

Nonetheless, as the expert on "signals," Greely was called in to participate in high-level discussions about the best way to deny international communications to the enemy. President McKinley specifically asked what cable-cutting actions were acceptable in wartime under current international law. At first, Greely deferred to the attorney general as the resident legal expert. But it soon became apparent that the attorney general had no particular expertise in this area of international law. So Greely stated that there were two acceptable actions: (1) to cut those undersea cables belonging to Spain wherever they were found, and (2) to cut any cables, Spanish or neutral, that lay in waters within the 12-mile territorial limit of Spain itself or its territories. Since Spain did not own any international undersea cables itself, any cable-cutting would have to be done close to Spanish territory and potentially within range of Spanish gunfire.[6]



Map 1. Cable chokepoint at Key West. Green lines indicate allowed cables from Europe to the Caribbean; red lines indicate censored cables from Spain.

Geography Meets Strategy

Then Greely made a suggestion based on a geographical peculiarity of international telegraph communications at the time. Most if not all of the undersea cables between Europe and the Western Hemisphere passed through the North Atlantic and made landfall in Canada or the northern United States. This meant that most communications from Europe to the Caribbean went through North Atlantic underwater cables, transferred to landline telegraph down the US eastern seaboard, and then transferred again to further underwater cables to specific Caribbean islands. In other words, virtually all Spanish communications with Cuba passed through a chokepoint at Key West (Map 1)!

The Censorship Office

Greely suggested that, rather than simply cut the cables, the United States should instead establish an army unit in the telegraph office in Key West that would review all international cable traffic passing through that point. This "censorship" unit would block any official messages to and from the Spanish government while still

allowing commercial and neutral messages to go through. This would effectively deprive the Spanish government of the strategic benefit of its communications while still adhering to international law. In effect, this was extending the concept of "blockade," which was allowable in wartime, to the arena of communications.[7]

President McKinley was so taken with the idea that he immediately gave his approval and put Greely in charge of the operation. Greely quickly established a "Censorship Office" in Key West under one of his Signal Corps subordinates, Colonel James Allen. Notice that there was still no mention of reading the Spanish messages for their intelligence value. However, there was an interesting side-effect of this operation. Since much of the communication with other islands in the Caribbean also passed through Key West, Colonel Allen had to make contact with many of the telegraph offices in the region to explain the US rationale and the procedures to be followed.[8] In addition, Colonel Allen established friendly relations with a number of Scottish telegraph operators[9] who worked for Spanish telegraph companies in Havana. In doing so, he unwittingly developed what was essentially a communications intelligence (COMINT) operation supplied by third-party agents! No one called it SIGINT, but that is what it was.

The Initial US War Plan

Although there were many reasons, both good and bad, for the United States to go to war with Spain, at least part of the official reason was to support Cuban revolutionaries in their attempt to free themselves from Spanish rule. To do this, the initial US plan for the Caribbean theater was to have the navy transport a portion of the army to Havana to attack the colonial capital in concert with indigenous Cuban forces. However, since the standing army in the United States was relatively small at the time, the invasion force was correspondingly limited and somewhat vulnerable. Therefore, one of the key areas of concern for American planners was the location of the Atlantic squadron of the Spanish fleet, which was seen as a potential threat to the invasion force.[10]

Where Is the Spanish Fleet?

On paper at least, the Spanish fleet was slightly more modern and powerful than the equivalent American flotilla in the Atlantic, and it was viewed as a real threat. Shortly after war was declared, the Spanish fleet, under the command of Admiral Pascual Cervera, left the Cape Verde Islands, a Spanish possession off the coast of West Africa, and headed to parts unknown. The question before the US Navy was three-fold: Did the Spanish intend to (1) attack cities on the east coast of the United States, (2) attack the US Navy or US shipping on the high seas, or (3) deploy to Cuba to break the US blockade and threaten the impending invasion force? The question was acute because cities along the east coast were woefully unprepared to repel any kind of attack. The few coastal forts that the United States had at the time were left over from the Civil War era.[11]

Logically, it was the navy's responsibility to gain intelligence somehow about its enemy counterparts and learn the location and intended target of the Spanish squadron. Unfortunately, the navy was totally unprepared for this mission. There were no scouting ships shadowing the Spanish fleet, nor did the navy have any network of agents in the Caribbean to report any sightings of Spanish ships. So it was particularly galling to navy officials that the most significant piece of strategic intelligence at this point ended up coming from the chief signal officer of the *army*.

Map 2. Route of Admiral Cervera's fleet to Santiago de Cuba

Intelligence Analysis

All steam-powered ships at the time were fueled by coal. (The general move to oil-fired boilers in naval vessels was still many years in the future. So Greely knew that the Spanish fleet would not have enough coal to reach Cuban waters without refueling somewhere in the eastern islands of the Caribbean. With that fueling restriction in mind, he used Allen's telegraph office contacts in these ports to alert US authorities if the Spanish fleet appeared. Sure enough, Greely soon learned that the fleet had arrived at Martinique, and a few days later he received reports that the fleet had re-coaled in Curacao off the coast of Venezuela. More importantly, a short while later, Greely received important information from Allen in Key West: The Scottish telegraph operators in Havana (remember them?) were reporting the arrival of Admiral Cervera and his ships in the southern Cuban port of Santiago de Cuba—a port which the US Navy had neglected to blockade[12] (Map 2).

Now at this point in our story, a careful student of intelligence nomenclature might reasonably argue that none of the information really came from SIGINT. It might be more accurate to say that the information came from human intelligence (HUMINT) assets on the scene, amateur and unofficial though they might have been. The only connection with "signals" is that Colonel Allen's unofficial network of observers happened to be telegraph operators. At best, this might come under the heading of "chatter." But this is not the end of our story.

The SIGINT Contribution

Colonel Allen also reported that, in addition to the reports from the telegraph operators, the

Map 3. Change in US strategic plan from Havana to Santiago harbor

censorship office had just intercepted (and presumably blocked) a message from Admiral Cervera to Spain reporting his safe arrival at Santiago de Cuba.[13] Here was actual communications intelligence! Greely's memoirs make no mention of whether the message was enciphered or not, but even if the United States was not actually able to read the message, the act of recognizing that the message was signed by Cervera and dispatched by the telegraph office in Santiago de Cuba certainly comes under the heading of "traffic analysis," which is definitely a part of SIGINT.

Navy officials were understandably peeved that this key piece of intelligence came from an army officer, and the admirals in Washington sharply questioned its validity. But Greely held firm to his conviction and patiently explained his reasoning to President McKinley and other decision makers. McKinley was reassured, and he realized that this information changed the whole strategic picture.[14]

A New Strategic Plan

McKinley recognized that the Spanish fleet was clearly a more important strategic target than any residual Spanish forces in Havana, so he changed the whole US strategic plan on the basis of this new information (Map 3). The US Navy was ordered to redeploy and trap the Spanish fleet in Santiago harbor. A subsequent Marine

Map 4. Final Cuban campaign, 1898

landing at nearby Guantanamo Bay was designed to secure a protected anchorage for the blockading American ships during the impending hurricane season. At the same time, the invasion force was redirected to land in southern Cuba in order to attack Santiago de Cuba from the landward direction.

Final Events of the Cuban Campaign

After disembarking at the small coastal town of Daiquiri, the US Army made steady progress in a left hook toward the port city, skirmishing and fighting along the way. And what was the last obstacle before reaching Santiago de Cuba? San Juan Hill—made famous by the charge of the "Rough Riders" in the final attack, which made Teddy Roosevelt a hero (Map 4).

Realizing that the port was about to fall to American forces, Admiral Cervera sortied his squadron and made a last-ditch effort to break through the blockade. Unfortunately for him, the Spanish fleet was not as strong as it appeared, and the Spanish battleships and cruisers proved to be no match for the US Navy. Most of his ships were destroyed in a short battle, and Admiral Cervera decided to scuttle his flagship to prevent its capture.[15]

Mount Rushmore in South Dakota. Gazing out, *left to right*, are US presidents George Washington, Thomas Jefferson, Theodore Roosevelt, and Abraham Lincoln. National Park Service photo

End of the War and the Aftermath

This destruction of the Spanish Atlantic squadron, coupled with the equally decisive defeat of the Spanish Pacific squadron in the Philippines by Admiral George Dewey, quickly forced Spain to sue for peace. The war was officially over by August. John Hay, the US ambassador to the United Kingdom, later called it a "splendid little war" in a letter to his friend, Teddy Roosevelt.[16]

So What About Mount Rushmore?

Well, Roosevelt returned home to New York and ran for governor in November 1898. It was a close race,[17] but he won at least in part because of his recent wartime reputation as a hero. However, to the consternation of many New York politicians and the Republican political machine in Albany, Roosevelt proved to be a little too good at cleaning up corruption. Which is why New York Republicans quietly urged President McKinley to get Roosevelt out of the way by putting him on the ticket as the Republican vice-presidential candidate in the election of 1900.[18]

When McKinley was assassinated in 1901, Teddy Roosevelt became our 26th president and the youngest person to assume the presidency.[19] Roosevelt was later elected in his own right in 1904 and gained a reputation for being one of our better chief executives. When sculptor Gutzon Borglum was planning his monument for Mount Rushmore in the late 1920s, he chose Roosevelt as one of the four faces largely because of his renown as president.

Logical Progression

So let's see if I can demonstrate a logical progression here. Without the "Censorship

Office" and Greely's clever analysis of the available information, the United States would never have learned the location of the Spanish fleet (confirmed by SIGINT derived from Admiral Cervera's message). Without this intelligence, three things would not have happened: (1) The US Navy would not have blockaded and ultimately destroyed the Spanish Atlantic squadron, an action which significantly shortened the war; (2) the Marines would not have landed at Guantanamo, and the navy would probably not have thought to include a permanent base there as part of the peace treaty; and (3) the US Army would not have landed in southern Cuba.

If the army had not fought in southern Cuba, there would have been no battle for San Juan Hill and no charge of the Rough Riders. Without the hard-fought action on San Juan Hill, Teddy Roosevelt would not have returned from the war as a hero. Without his status as a hero, he probably would not have won his narrow victory for governor of New York. If he had never had the chance to be a reformist governor, there would have been no reason to include him on the presidential ticket in the 1900 election.

If he had not become vice-president in 1900, he would not have been in a position to assume the presidency when McKinley was assassinated. And ultimately, if Teddy Roosevelt had not become president, he probably would not have been one of the four faces on Mount Rushmore. Q.E.D.

Acknowledgment

I would like to give special acknowledgment to my father, Richard S. Greeley, Sr., who first clued me in to this little-known "signals intelligence" episode and who deserves the chief credit for "rediscovering" this early SIGINT success story. The seed for this article really came about because of my father's casual interest in genealogy. During the course of his research into the Greeley family, he became aware that General Adolphus Greely (despite the different spelling of his name) was a distant and tangential ancestor to our branch of the family, and because of this family connection, my father began researching Greely's life and collecting books by and about him, including the two books about Greely cited here—General Mitchell's biography and Greely's own memoir. It was my father who came across this particular obscure episode of the Spanish-American War (cited in both books) and who, more importantly, recognized that Greely and Mitchell were both describing what we now call "SIGINT."

Note About Maps

The maps in this article were derived from maps on the website of the Perry-Castañeda Library Map Collection in the University of Texas Libraries; the site notes that "The following maps were produced by the U.S. Central Intelligence Agency, unless otherwise indicated." Map 1 was adapted from a portion of "World Map (Political) February 1995." Map 2 was built from "Central American and the Caribbean (Political) 1997." Maps 3 and 4 were built from "Cuba (Political) 1994." The annotations about the routing of Caribbean telegraph traffic through Key West, the route of Admiral Cervera's fleet, the change in U.S. strategy, and the course of the Cuban campaign are my own.

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Notes

1. Edmund Morris, *The Rise of Theodore Roosevelt* (New York: Random House Modern Library Paperback Edition, 2009), 586-614.
2. H. Paul Jeffers, *Colonel Roosevelt: Theodore Roosevelt Goes to War, 1897-1898* (New York: John Wiley, 1996), 137; Morris, *The Rise of Theodore Roosevelt*, 642.
3. Jeffers, *Colonel Roosevelt*, 226; Morris, *The Rise of Theodore Roosevelt*, 680; Ivan Musicant, *Empire by Default: The Spanish American War and the Dawn of the American Century* (New York: Henry Holt, 1998), 410.
4. Major-General Adolphus W. Greely, *Reminiscences of Adventure and Service: A Record of Sixty-Five Years* (New York: Charles Scribner's Sons, 1927), 158; General William Mitchell, *General Greely: The Story of a Great American* (New York: G. P. Putnam's Sons, 1936), 176.
5. Greely, *Reminiscences*, 185-192.
6. Ibid., 178-179; Mitchell, *General Greely*, 181-183.
7. Greely, *Reminiscences*, 179-181; Mitchell, *General Greely*, 181-183.
8. Greely, *Reminiscences*, 181.
9. Mitchell, *General Greely*, 182. General Mitchell does not explain why Scottish telegraph operators would be working for Spanish telegraph companies, but he does mention that they chatted freely with Colonel Allen and his men in the Key West censorship office about the information they learned in the course of their telegraphy work.
10. Musicant, *Empire by Default*, 262-263.
11. Ibid., 297-299.
12. Greely, *Reminiscences*, 181-185; Mitchell, *General Greely*, 183-186.
13. Allen also reported this information directly to US naval authorities in Key West. Musicant, *Empire by Default*, 316; Greely, *Reminiscences*, 184.
14. Greely, *Reminiscences*, 182-185; Mitchell, *General Greely*, 184-186.
15. Musicant, *Empire by Default*, 432-466.
16. Jeffers, *Colonel Roosevelt*, 278.
17. Roosevelt won by the relatively small margin of 17,794 votes out of 1,305,636. Michael L. Cooper, *Up Close: Theodore Roosevelt, A Twentieth-Century Life* (New York: Penguin Young Readers Group/ Viking, 2009), 109.
18. Morris, *The Rise of Theodore Roosevelt*, 747-767.
19. John F. Kennedy was the youngest person *elected* president.

Richard S. Greeley, Jr., graduated from Cornell University in 1977 with a bachelor's degree in history and a minor in Japanese. He joined NSA in 1978 as a linguist and spent six years as a translator. He worked for many years as an analyst and earned a master's degree in strategic intelligence at the Joint Military Intelligence College (now the National Intelligence University). He retired from NSA in 2012.

The Cryptologist's War[1]: How World War I Helped Weave the "Cloak" of Cryptologic Secrecy

Betsy Rohaly Smoot

This paper has been adapted from a talk presented at the 2016 joint meeting of the National Council on Public History and the Society for History in the Federal Government.

Introduction

In early 1931 the small US government cryptologic community was horrified by the publication of *The American Black Chamber* (which was also excerpted in the *Saturday Evening Post*, reaching a wide audience), a book by one of their own, Herbert O. Yardley.[2] Not only did the book purport to reveal untold World War I (WWI) cryptologic stories, but it went into some detail about the work of Yardley's own secret cryptologic organization, the Cipher Bureau, in the 1920s.

William Friedman, the true father of American cryptology, wrote "*Omnis Homa Mendex*" or "All men lie" on the fly leaf of his copy of Yardley's book. The men, once friendly on a collegial level but near opposites in personality and habits, had grown apart over the years. Friedman's career was on the rise as the head of the Signal Intelligence Service; Yardley's was on the decline with the elimination of his organization. Friedman was so incensed by Yardley's betrayal of cryptologic secrets that he carefully annotated his copy of the book and solicited the opinions of other WWI-era figures whose work was misrepresented within. Next to part of Yardley's discussion of American cryptologic work during the war, Friedman carefully wrote, "All this is a most amazing piece of misstatement, inaccuracy, and downright falsehood."[3]

Because cryptology was a poorly understood intelligence function at the time that the Espionage Act was passed in June 1917, the act contained no provisions that covered Yardley's revelations, and he effectively could not be prosecuted.[4] As a result of Yardley's book, the act was amended in 1933 to prohibit disclosure of foreign codes or anything put into code.[5]

Between the entry of the United States into World War I in 1917 and the 1933 changes to the Espionage Act, the world learned quite a bit about US government cryptologic activity, including advances made during the war. Looking at the period, we see military intelligence personnel grapple with the concept of secrecy—what should be protected, what is a secret, why it is a secret, and how to handle or protect this material. While this was likely the first time the US military

Who Was Herbert O. Yardley?

Born in 1889 in Indiana, Herbert O. Yardley began his career as a code clerk in the US Department of State. He accepted a Signal Corps Reserve commission and served as a cryptologic officer with the American Expeditionary Forces in France during World War I. In the 1920s he was chief of MI-8 (known as the Cipher Bureau), the first US peacetime cryptanalytic organization, jointly funded by the US Army and the Department of State. In that capacity, he and a team of cryptanalysts exploited nearly two dozen foreign diplomatic cipher systems, including Japanese communications. MI-8 was disbanded in 1929 when the Department of State withdrew its share of the funding.

Out of work and in need of money, Yardley caused a sensation in 1931 with the publication of his tell-all memoir about MI-8, *The American Black Chamber*. In this book Yardley revealed the extent of US cryptanalytic work in the 1920s. Surprisingly, the wording of the espionage laws at that time did not permit prosecution of Yardley. (See the full article for more details.) US lawmakers changed this situation in 1933 by passing a new law that imposed stiff penalties for unauthorized revelations of cryptologic secrets.

In October 1937 Yardley was hired by one of the Republic of China's intelligence agencies to solve Japanese military messages and teach cryptologic skills to Chinese analysts. He returned to the United States in 1939. Some two years later, Yardley was called upon to help establish a Canadian cryptanalytic unit as World War II churned. Known as the Examination Unit, the fledging operation was almost immediately hamstrung; US and British counterparts were unwilling to cooperate with Yardley after his damaging revelations. The Examination Unit would go on to serve as the foundation for Communications Security Establishment (CSE) Canada.

Herbert O. Yardley, one of the pioneers of modern American cryptology, passed away on August 7, 1958. He was inducted into NSA's Cryptologic Hall of Honor in 1999.

—*CQ* Editorial Staff

establishment struggled with the issue of protecting cryptologic material through classification, it would not be the last.[6]

Wartime Secrets

Why was cryptology so obscure that the Espionage Act had neglected to protect this vital work? There was no formal cryptologic service prior to World War I, although there had been a rudimentary start at radio interception and codebreaking in 1916—so rudimentary that the US mail was used to send "secret" intercepts to those who might be able to break the codes and ciphers within. One of the most detailed US publications on the subject, *Manual for the Solution of Military Ciphers*[7] by Captain Parker Hitt, was not classified upon its release in 1915 and was never retroactively controlled. When war on Germany was declared in April 1917, there was a rush to establish code and cipher sections in the army and navy. Cryptologic organizations were also established within the American Expeditionary Forces (AEF) in France.

Concepts of secrecy and classification differed on the home front and Western Front. On the home front, a large private organization—Riverbank Laboratories, owned and operated by George Fabyan—had been lending cryptologic assistance to the government for several years. Riverbank's chief cryptologist, William Friedman, produced groundbreaking publications on the science of ciphers that Fabyan had freely distributed. In contrast to Fabyan's approach, Colonel Ralph Van Deman, the head of the Military Intelligence Division (MID) for the War Department, desired to protect cipher information, and contemplated having some Riverbank publications withdrawn from the Library of Congress for reasons of secrecy. While Fabyan appreciated the military's need for secrecy, he had the competing urge to publicize his organization's work. Still, in May 1917 he told Van Deman, "your work at the present time is all being handled by the men, Miss Jensen, Miss Ford, and Miss Smith, and they all understand that if one word pertaining to it leaks out there will be trouble."[8]

George Fabyan at his Riverbank Laboratories in Illinois, which produced publications on ciphers. Courtesy of the George C. Marshall Foundation, Lexington, VA

The struggle over the Riverbank publications went on between Fabyan and the MID through much of 1918. Fabyan often noted to Van Deman and his staff that military personnel had inadvertently disclosed information more important than Fabyan's work, but this tried the patience of the MID. The division was indeed frustrated that there were "many officers who do not appreciate the need for secrecy in regard to [cipher] information,"[9] but that did not give Fabyan the right to disclose secrets. Despite Fabyan's considerable generosity and patriotism in allowing Riverbank to do War Department work at his personal expense, just days before the Armistice in November 1918 General Marlborough Churchill, Van Deman's replacement at the MID, determined that it was unwise for the department to exchange further information with Fabyan. The tipping point? Fabyan wanted to send copies of his publications on cryptanalysis to Japan. While Japan was an ally of the United States during World War I, the military was aware that they might someday be an adversary, and this was just a step too far.[10]

On the Western Front, the standard for work in France was to classify <u>in order to keep operations secret from the adversary</u> rather than to classify because of the nature of the work. Codebooks were classified SECRET and marked "Must not fall into hands of enemy"—with the code group to report loss of the book designated "DAM." Details of signals interception were sometimes marked CONFIDENTIAL or SECRET but most often not marked at all. Examination of Ameri-

can Expeditionary Forces records reveals a similar situation; some ciphered or coded messages were stamped SECRET while others were not marked at all. Select material was withdrawn from the files in 1917 and 1918 because it was determined too sensitive to be kept with general paperwork. There seems to have been no consistent standard applied to protecting the work.[11] Postwar wrap-up reports were sometimes classified and sometimes not; many of these were reprinted in the 1930s as CONFIDENTIAL and eventually declassified in the 1970s and 1980s.

Postwar Free-for-All?

After the war, men were actually permitted to take some of their work home. One example of this is a British War Office *Manual of Cryptography*, published in 1911 and used in World War I. Despite being marked "For Official Use Only" with the caution, "The information given in this book is not to be communicated, either directly or indirectly, to the Press, or to any person not holding an official position in His Majesty's Service," it found its way into the possession of First Lieutenant W. F. Friedman in the Radio Intelligence Section (G2-A6) in 1918 and can be found in Friedman's papers at the George C. Marshall Foundation's Research Library![12] The many journalists accredited to follow the war in France were censored and rarely mentioned intelligence matters. An early exception was the wide publication in September 1917 of the United States' ability to read German messages, although the information was unspecific.[13]

After the war, some correspondents wrote more about the secret side of the war with no apparent repercussion. Participants in signal collection and codebreaking wrote about their work in army professional journals and radio magazines. In 1920 Colonel Frank Moorman, who had headed the G2-A6 in France, asked for permission to publish an article on the "Use of Code and Cipher in France" in the Army's *Infantry Journal*. Permission was sought, and granted, for Moorman to do this despite dissent on the matter. The dissenter? None other than Herbert Yardley, who said, 11 years before his own book was published, "Since the creation of the Cipher Bureau, I have steadily maintained a position of secrecy and non-publication of any information dealing with codes and ciphers."[14] Lectures on the subject by those who were there were given to junior officers with no apparent caution for sensitivity. The war was over; we were successful; the stories were known.

Between 1919 and 1922, quite a lot of information was available in one way or another. An August 1919 article in a San Antonio, Texas, paper about the Radio Intelligence unit at McAllen being recognized as the most efficient in the service, was deemed "regrettable" by the MID. A memo to Washington from the unit's commander notes, "[T]he men of these units have been informed time and again that under no circumstances were they to divulge or discuss the work of the units in any way on the outside." While the men denied giving out information, they did admit to discussing the prize money they had received for this recognition amongst themselves at the local Community Service Club, where a reporter likely overheard them. The commander subsequently warned the editors of the local papers that "under no circumstances" were they to print anything concerning these units.[15]

In September 1919 *The Wireless Age* published the first of what would be four articles titled "Wireless in the A.E.F." Written by Lieutenant Colonel L. R. Krumm, the officer in charge of the AEF's Radio Division, and his subordinate officer, Captain Willis H. Taylor, Jr., these articles comprehensively covered the work of the Radio Division, including its radio collection, direction

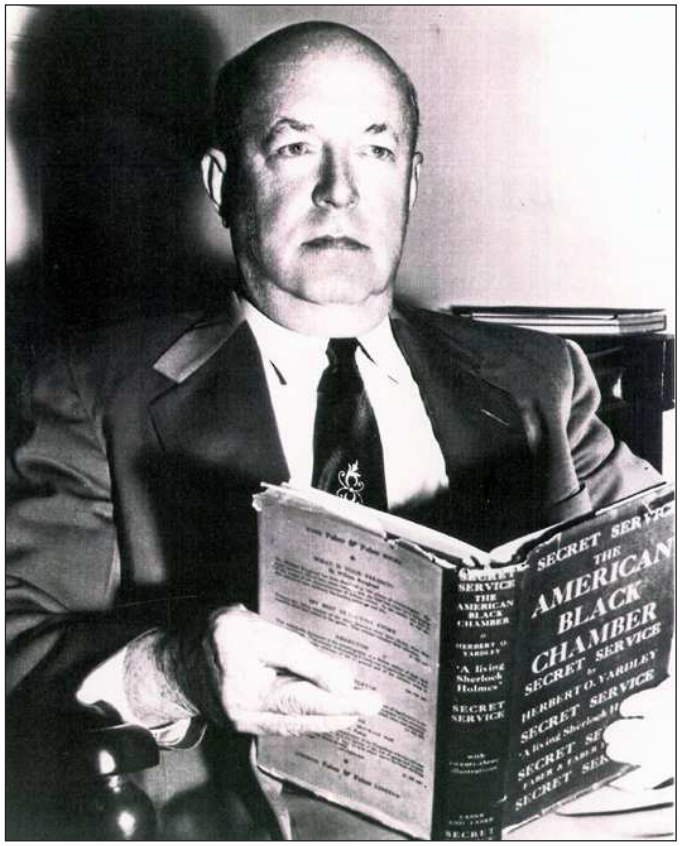
finding, and ground intercept ("listening in") efforts.[16]

The 1919 War Department *Annual Report*, published in 1920,[17] contained an extensive chapter on the AEF's Radio Section—entirely unclassified. It discussed intercept equipment, locations, the difficulties of code and cipher work, and examples of how this work supported the war. While this information was likely not in public circulation, it undoubtedly was available to those looking for it.

In 1921 the head of the Military Intelligence Division, General Marlborough Churchill, published an article in the *Journal of the United States Artillery* that only glossed over the existence of a home front code and cipher section and implied it was not needed in peacetime.[18] That same year, a book detailing the work of the 406th Telegraph Battalion in the war talked extensively about sources and methods for communications intelligence, with no apparent repercussion.[19]

August 1922 saw *Radio* magazine print a talk that Major Robert Loghry, head of the Radio Section during the war, gave several times that year on the subject of military radio communications, as well as the intercept work of the Signal Corps.[20] That same autumn the *American Legion Weekly* published a detailed article by a journalist explaining how the AEF code and cipher section broke a crucial German code in March 1918—with diagrams showing how they did it![21]

However, there are indications someone in government recognized that WWI secrets needed to be protected after the war. One of the most confusing cases involved the 1920 AEF publication *The History and Principles of German Military Ciphers 1914-1918*.[22] This document, written in December 1918 by a junior officer in the AEF's radio intelligence section named J. Rives Childs,[23] might have been among the resources officers



Herbert Yardley with his book, *The American Black Chamber*

were allowed to take home with them from the war. In 1935 William Friedman, while in charge of the Signal Intelligence Service, reprinted many of the post-war AEF writings on cryptology; at that time this information was marked CONFIDENTIAL. In 1946 the book was downgraded to restricted, and Friedman kept a copy at home (as was allowed). In 1957 the classification was upgraded to CONFIDENTIAL by the National Security Agency (NSA); the Agency likely did not realize that their sister organization, the Army Security Agency, had declassified the book in late 1955. Despite these efforts to control the document, there were copies out there—in paper and on microfilm. In 1958 the American Cryptogram Association (ACA) notified some of its members about the availability of this work from Univer-

sity Microfilms of Ann Arbor, Michigan. David Kahn, author of *The Codebreakers*, obtained a copy in this manner. When the ACA asked NSA if they had objections to their magazine publishing a review of the book, they were told that it was CONFIDENTIAL and a review could not be authorized by NSA. At that time, it was also determined there was a copy of the document in the catalog of the Library of Congress, but it was missing (it was later located).[24]

The story of this one WWI document does not end there. In 1970 a copy of the document was found in the records of the AEF in the National Archives, and NSA had the copy withdrawn as it contained "Security Classified information." Finally, in November 1973 NSA officially declassified the book. The Agency released it as Special Research History 310 more than 50 years after it was written and many years after the techniques and technologies were completely outmoded![25]

The Impact of Yardley

Yardley's book came out in 1931, and in the aftermath it is clear that writers "in the know" became more cautious. General Peyton March's 1932 book *The Nation at War* [26] had only a brief mention of radio intelligence work. General Dennis Nolan's lecture on Military Intelligence in the AEF for the Army War College in 1933 was classified CONFIDENTIAL.[27]

In 1932 J. Rives Childs, whose wartime work had been misrepresented by Yardley in *The American Black Chamber*, anonymously wrote a memoir of sorts, *Before the Curtain Falls*,[28] which discussed his WWI service. Many years later, in 1983, it was published under his name in a revised form as *Let the Credit Go*.[29] Although most names of people, including Childs himself, are anonymized in the first book, he used Yardley's true name; it is possible that all the anonymization was due to the concerns about Yardley's book. Childs, under the guise of Anonymous, does give some detail of code breaking operations and the US relationship with British and French cryptologic personnel. He also talks about the March 1918 breakthrough against a German code, which had already been revealed in the *American Legion Weekly* article in 1922.

In Fletcher Pratt's book *Secret and Urgent*,[30] released in 1939, we can see that Pratt chose to steer away from the core of US cryptologic work in World War I—he mentions the British work on German codebooks in their Room 40 and he discusses the discovery of codebooks in the papers from a downed German Zeppelin. He says, "The story of ciphers and codes in the World War is still locked in the secret record of the World's Black Chambers." He even directly references Yardley, noting that when part of the story gets out "there are wigs on the green"—effectively, heads will roll!

Conclusions

World War I was the first time the US military had to grapple with cryptologic secrecy on a large scale. While the Military Intelligence Division showed signs of understanding the need to protect concepts and techniques, and resisted George Fabyan's desire to share these with allies far and wide, the AEF was more concerned with protecting current information from the adversary. Once the fighting ended, the AEF allowed material to be kept as reference material or souvenirs and did not stop journalists from writing about the wartime success of the cryptologists.

The 1917 Espionage Act did not properly cover the then little-known discipline of cryptology, but the stunning revelations in Yardley's *The American Black Chamber* forced change in the law. The release of so much material about World War I was considered a serious security leak as late as 1948, long after the material revealed had any rel-

evance to modern cryptologic practices.[31] However, Yardley's unexpected revelations did force the cryptologic community to come to grips with protecting information; the reaction to his work meant that material written about World War I, during or just after, was often reclassified or hidden away. Books and magazine articles couldn't be hidden or confiscated, but in that pre-Internet era and in the normal course of life the material fell out of easy access to most. The reaction to the book had an immediate chilling effect on others who wanted to write about the cryptologic work of the Great War. Some of this effect lasted well into the 1970s and early 1980s.

Looking back, these WWI revelations are, while not laughable, quite minor in proportion to later security lapses. But the damage Yardley did by publicizing his success in the 1920s against Japanese code cannot be discounted as the information potentially changed Japanese cryptologic efforts to the detriment of US interests.[32] By the time the United States entered the Second World War, the dangers of revealing cryptologic capabilities were much better understood, partly because of the angst caused by Yardley's work. Well thought out standards for classification and control of material began to be used to protect cryptologic material.[33] In June 1945, at the end of the European portion of the Second World War, Preston Corderman, commander of the Signal Security Agency, issued a memo reiterating that secrecy about signals intelligence operations needed to be maintained "during the remainder of the war and in peace as closely as it has been maintained in the past" for the future safety of the United States.[34] And with a few notable exceptions,[35] the cryptologic secrets of the Second World War were kept for three decades or more after the war's conclusion, unlike the secrets of the First World War.

Notes

1. Fletcher Pratt, *Secret and Urgent* (Indianapolis: Bobbs-Merrill, 1939). Pratt calls World War I "The Cryptographers' War"; in our modern understanding this is more properly "The Cryptologists' War."
2. Herbert O. Yardley, *The American Black Chamber* (New York: Bobbs-Merrill, 1931).
3. Friedman's annotated copy can be found in the collection of his papers at the George C. Marshall Foundation's Research Library and Archive in Lexington, Virginia. The Foundation has digitized this item. Accessed March 1, 2017, http://marshallfoundation.org/library/wp-content/uploads/sites/16/2014/06/American-Black-Chamber_II_watermark.pdf. The citations can be found on the flyleaf and page 43 of the book.
4. The Espionage Act of 1917 was preceded by the Defense Secrets Act of 1911; prior to that act federal statutes applicable to espionage were those addressing treason, unlawful entry into military bases, and theft of government property. Interesting background on this subject is in Harold Edgar and Benno C. Schmidt, "The Espionage Statues and Publication of Defense Information," *Columbia Law Review* 73, no. 5 (May 1973), 929-1087.
5. Friedman himself wrote a memo in July 1943 calling for more care about security and better legislation, noting that a Yardley book had to be suppressed "which led to the enactment of a perfectly futile and silly law." Memo on Security from William F. Friedman to Colonel Corderman, head of the Signal Security Agency, July 23, 1943, accessed March 8, 2017, https://www.nsa.gov/news-features/declassified-documents/friedman-documents/assets/files/reports-research/FOLDER_045/41712519075182.pdf.
6. The struggle was not unique to the United States; in the summer of 1914 the reports that French diplomatic codebreakers could read German, Italian, Spanish, and perhaps other nation's communications led to these codes being changed. "Thus it was on the very eve of the First World War, when communications intelligence was of the highest importance, the codebreakers were rendered powerless to provide it by the government's inability to impose even minimum standards of discretion."

Christopher Andrew in 'Dechiffrement et diplomatie,' 53-8, quoted in his own "Governments and Secret Services: A Historical Perspective," *International Journal* 34, no. 2, Knowledge and Power (Spring 1979), 167-86.

7. Parker Hitt, *Manual for the Solution of Military Ciphers* (Fort Leavenworth, KS: The Press of the Army Service Schools, 1916).
8. George Fabyan to Ralph Van Deman, May 31, 1917. National Archives and Records Administration (NARA)/College Park, MD, records of the Military Intelligence Division, Record Group (RG) 165, Entry 65, Box 2241.
9. General Marlborough Churchill to George Fabyan, June 22, 1918. NARA, records of the Military Intelligence Division, RG 165, Entry 65, Box 2243.
10. General Marlborough Churchill to the Army Chief of Staff, November 13, 1918. NARA, records of the Military Intelligence Division, RG 165, Entry 65, Box 2243.
11. NARA, records of the American Expeditionary Forces, RG 120, Entry 105. See the material amassed by the American Expeditionary Forces' Radio Intelligence Section (G2A6).
12. General Staff, British War Office, *Manual of Cryptography* (London: War Office, 1911), in William Friedman Papers, George C. Marshall Foundation Library, Lexington, VA, Item 90.
13. Basil M. Manly, "Possible For U.S. To Read Secret Codes: No Message Received That Uncle Sam Cannot Make Out." September 17, 1917. Published in many newspapers under different headlines, the article was published under this headline in what can be assumed to be a Chicago newspaper and sent by George Fabyan to Colonel Ralph Van Deman in late September 1917. Van Deman's reply, dated September 29, notes that Manly was "a very rabid labor agitator, of anarchistic views" and claims that "the better class of newspaper men are afraid of him." Van Deman agreed with Fabyan's assessment that the publication "of matter of this kind" was a "great mistake." NARA, RG 165, Entry 65, Box 2241. An interesting discussion of censorship of journalists during wartime can be found in Daniel Smyth's "Avoiding Bloodshed? US Journalists and Censorship in Wartime," *War & Society* 31, no. 1 (March 2013): 64-94.
14. Frank Moorman, "Code and Cipher in France," *The Infantry Journal* 26, no. 12 (June 1920): 1039-44. For Moorman's request for permission, General Denis Nolan's granting of permission, and Yardley's dissent see NARA, records of the Military Intelligence Division, RG 165, Entry 65, Box 1876.
15. The McAllen fiasco is detailed in NARA's records of the Military Intelligence Division, RG 165, Entry 65, Box 84. The newspaper article that started it all was headlined "McAllen Radio Station is Most Efficient," which appeared in the *San Antonio Express* on August 21, 1919.
16. L. R. Krumm and W. H. Taylor, "Wireless in the A.E.F.," *The Wireless Age* 6, no. 12 (September 1919); 7, no. 1 (October 1919); 7, no. 4 (January 1920); 7, no. 7 (April 1920).
17. *War Department Annual Report for 1919*, vol. 1, Chief Signal Officer, chap. 13, Radio Service, American Expeditionary Forces (Washington, DC: Government Printing Office, 1920), 1183-1217.
18. Marlborough Churchill, "The Military Intelligence Division, General Staff," *Journal of the United States Artillery* 52, no. 4 (April 1920): 293-315.
19. Peter Lambert Schauble, *The First Battalion: The Story of the 406th Telegraph Battalion Signal Crops, U.S. Army* (Philadelphia: The Bell Telephone Company of Pennsylvania, 1921). The 406th was a "Bell Battalion" largely staffed by volunteers from the phone company.
20. "Military Radio," *Radio* (August 1922): 10-12, accessed March 1, 2017, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiJqJnFqbXSAhVm6IMKHS8SDgIQFggaMAA&url=http%3A%2F%2Fwww.americanradiohistory.com%2FArchive-Radio%2F20s%2FRadio-1922-08.pdf&usg=AFQjCNFjOzxtUjIYeFAvLN-KykuKF7JFYw.
21. William E. Moore, "The Jerry Who Spoiled the War," *The American Legion Weekly* 4, no. 35 (September 1, 1922): 7-8, 26-28.
22. J. Rives Childs, *The History and Principles of German Military Ciphers 1914-1918* (unpublished manuscript, National Cryptologic Museum library, Annapolis Junction, MD).

23. Childs went on to be a diplomat and international expert on Casanova, as well as the author of several books.
24. David Sherman, "The National Security Agency and the William F. Friedman Collection," *Cryptologia,* 2016: 13-14, accessed March 1, 2017, doi:10.1080/01611194.2016.1169458.
25. Withdrawal Notice for file 4131-60 dated 20 October 1974 found in NARA's records of the Military Intelligence Division, RG 165, Entry 65, Box 1876.
26. Peyton Conway March, *The Nation at War* (New York: Doubleday, Doran & Company, 1932), 225-27.
27. But has since, of course, been declassified. Major General D. E. Nolan, "Military Intelligence in the A.E.F. Lecture" delivered March 20, 1933, as part of G-2 Course No 19 (1932-1933) at the Army War College. In the collection of the US Army Military History Institute (now AHEC) Lectures, Army War College, 1932-33 (no. 19).
28. J. Rives Childs, *Before the Curtain Falls* (New York: Bobbs-Merrill, 1932).
29. [J. Rives Childs], *Let the Credit Go*. Published as *Let the Credit Go: The Autobiography of J. Rives Childs* (New York: K. S. Giniger Co.); distributed by Frederick Fell Publishers, December 1983.
30. Fletcher Pratt, *Secret and Urgent* (New York: Bobbs-Merrill, 1939).
31. Army Security Agency, *History of the Signal Security Agency*, vol. I, part I (1948): 150i, accessed March 15, 2017, https://www.nsa.gov/news-features/declassified-documents/cryptologic-histories/assets/files/history_of_the_signal_security_agency_vol_ISRH364.pdf.
32. "The Black Chamber: The man who made Edward Snowden inevitable," *The Economist*, December 19, 2015, accessed March 1, 2017, https://www.economist.com/news/christmas-specials/21683975-man-who-made-edward-snowden-inevitable-black-chamber. See also Roger P. Alford, "Government Leaks in the Internet Age," in *Proceedings of the Annual Meeting* (American Society of International Law), vol. 105, *Harmony and Dissonance in International Law* (2011): 147-50.
33. Memo from the Commander-in-Chief, United States Fleet and Chief of Naval Operations, "Control and Dissemination of Radio Intelligence," June 20, 1942, accessed March 8, 2017, https://www.nsa.gov/news-features/declassified-documents/friedman-documents/assets/files/reports-research/FOLDER_356/41750589078977.pdf. Reiterated more emphatically in a memo of March 25, 1943 (accessed March 8, 2017, https://www.nsa.gov/news-features/declassified-documents/friedman-documents/assets/files/reports-research/FOLDER_356/41750569078975.pdf). The second memo seems to mark the Navy's transition from the term "radio intelligence" to the more modern "communications intelligence."
34. Corderman memo, "Maintenance of Security Standards After the End of the European War," June 1, 1945, accessed March 15, 2017,https://www.nsa.gov/news-features/declassified-documents/friedman-documents/assets/files/reports-research/FOLDER_045/41717919075721.pdf.
35. Allied work against Japanese codes and ciphers was well-known before the success of similar work against Germany.

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Ann's War: One Woman's Journey to the Codebreaking Victory over Japan

David J. Sherman

Introduction

Ann Caracristi is one of the most prominent individuals in the history of modern American cryptology, and her personal story coincides with American cryptology's increasing global dominance during World War II and the Cold War that followed. Born in a suburb of New York City in 1921 and educated at a small college in upstate New York, Caracristi intended to pursue a career in journalism but upon graduating in 1942 decided to accept an opportunity with the War Department in Washington. Her position turned out to be with the Signal Intelligence Service, a predecessor of today's NSA. She spent much of the war leading teams that attacked Japanese military codes and ciphers. Returning to Washington after the war and a brief—and apparently unsatisfying—stint with the New York *Daily News*, she began a career that spanned five decades. Caracristi would be decorated by two presidents, achieve the distinction of being one of the first women in the Department of Defense to enter the Senior Executive Service, and ultimately become NSA's first female deputy director. After her retirement in 1982, she was named to a series of blue-ribbon panels studying ways to improve America's security and, in 1993, was appointed by President Clinton to his Foreign Intelligence Advisory Board.

In this excerpt from David Sherman's *Ann's War: One Woman's Journey to the Codebreaking Victory over Japan*, to be published by the Center for Cryptologic History, we follow Caracristi's transition from a very successful four years in college to a new life where she is thrown into America's first attempts to break the codes of Imperial Japan in the dark months after Pearl Harbor. Recommended by the dean of her school for a position so secret that she has no idea what she would be doing, she travels with a fellow graduate to a Washington struggling to cope with the needs of the tens of thousands of Americans flowing into the city to support the war effort. She is placed in a crash training course in cryptanalysis led by an instructor as new as the students and barely able to stay even one lesson ahead of them. This rudimentary training is cut short after a few weeks, however, due to the Army's need to have its novice codebreakers start work on encrypted Japanese communications. Moving into a former women's college in Arlington, Virginia, Caracristi and her mostly female colleagues resort to sorting traffic in the school's bathtubs and storing it in the closets

of what had been the students' rooms. Conditions are chaotic, and it is left to Caracristi and her coworkers to figure how to organize what seems an overwhelming task.

The Washington Years

> It seemed like an opportunity of doing something that might be useful. I didn't particularly want to join the WACs or the WAVES, but I obviously, as I think we all did, wanted to do something to contribute to this effort. So it suited me just fine.
>
> Ann Caracristi, 1982[1]

In the latter part of March 1942, the month President James Russell Meader left Russell Sage College, another member of the college's administration, Dr. Bernice Smith, attended a two-day conference in Washington sponsored by the Institute of Women's Professional Relations. The Institute was based at Connecticut College, which like Russell Sage was dedicated to the education of young women. Its director, future Democratic Congresswoman Chase Going Woodhouse, served as conference chair. Smith and representatives from other colleges and universities heard presentations on the government's need for additional personnel to support the war effort. At some point, Smith and about 20 of her fellow conference attendees met with officers from the Signal Corps, the parent organization of the clandestine Signal Intelligence Service; the officers offered positions that could be filled by a few graduating seniors of each institution's choosing. "But these are 'secret orders,'" an article in the Russell Sage *Quill* about the event stated, "and Miss Smith failed to divulge their nature."[2] It is hard to say how much the Signal Corps told Smith about what these Russell Sage seniors actually would be doing, but it seems likely that she would not have learned anything about the SIS or its codebreaking effort.

Some weeks thereafter, the dean at Russell Sage, Doris Crockett, received a letter from the War Department formally requesting her nominees for government service. As Caracristi later recalled, Dean Crockett "nominated me and two other people, who were friends of mine," one of whom was Florence "Kitty" Woolsey.[3] The Signal Corps accepted Russell Sage's nominations without interviewing Caracristi or Woolsey. One can only speculate why Dean Crockett approached Caracristi in particular. Caracristi had done well academically, graduating near the top of her class. She had demonstrated her leadership talents by editing the *Quill*, the *Review*, and her senior yearbook, and by participating in the life of the college more generally. She also may have had no firm commitment on what to do after graduation, other than heading to New York to look for a job in journalism.

The caption that accompanied Caracristi's photo in her senior yearbook described some of the personal characteristics that those around her, including Dean Crockett, might have perceived at the time.

> Witty repartee . . . every job completely done . . . *Quill's* editor . . . bull sessions and midnight studying . . . sophisticated poise . . . sense of humor of *The New Yorker* . . . drugstore interludes . . . clever originality of idea and expression.[4]

The photo itself shows a confident, serious, intense, yet seemingly detached young woman looking almost directly at the camera, but with her eyes averted slightly to its right as if she were thinking about something other than being photographed. Whoever wrote the accompanying description of Caracristi, whether a fellow student or a faculty member, may have captured some of the traits Dean Crockett thought would enable Caracristi to succeed in Washington.

Perhaps significant for Dean Crockett was the fact that to fulfill Russell Sage's foreign language requirement, Caracristi had studied German, the language of the country that was now America's powerful enemy. During her sophomore year, Caracristi may have lived at the college's German House, a residence that sought to create a language-immersive environment. She wrote an essay on that dormitory's history for an English seminar her senior year. Most likely, Dean Crockett considered many or even all of the above factors when recommending to Caracristi that she consider joining the War Department. This may have been true with regard to Kitty Woolsey as well, as her experiences at Russell Sage were similar to Caracristi's.

As for the training materials on codebreaking the Department sent for Caracristi to review prior to reporting to Washington, she later said that "being rather busy trying to graduate, I'm not sure I paid much attention to these."[5] She later discovered that they had been written by William Friedman, the preeminent American codebreaker of his day, who in the 1930s had used them to train the first recruits for the SIS. At that time each of those recruits had as little idea as Caracristi regarding what something called "cryptanalysis" was all about. Having met Friedman, Caracristi described him as "sort of the genius of the outfit," someone who even after an extended hospitalization in early 1941 due to a nervous breakdown, remained "a great hero figure . . . the father of cryptanalysis." "He was an extremely sociable person," she added, "a very interesting man."[6]

Caracristi departed for Washington a week after Russell Sage's commencement exercises on June 8, 1942. When she arrived, she went to the offices of the SIS, which were in the Munitions Building on Constitution Avenue. This facility housed the War Department before its move across the Potomac River to the Pentagon and remained a government office building for the duration of World War II.[7] One of the first things Caracristi did was to sign not just the standard oath taken by all new Civil Service employees affirming her support for the Constitution but also a second form swearing her to secrecy about her new duties—"I will not now nor at any future time discuss my activities or any details of the organization, activities or operations performed by this Agency"—which advised that she could be prosecuted under the Espionage Act if she broke her word.[8] Years after the war ended, Caracristi told an interviewer

Ann Caracristi

Witty repartee . . . every job completely done . . . Quill's editor . . . bull sessions and midnight studying . . . sophisticated poise . . . sense of humor of *The New Yorker* . . . drugstore interludes . . . clever originality of idea and expression.

Caracristi's senior yearbook page, 1942. Photo courtesy of the Sage College Archives and Special Collections

that like each of her fellow recruits she took this oath very seriously.[9]

At first, she and Woolsey shared a room in a boarding house on Wyoming Avenue in Washington's Kalorama neighborhood, a structure that had been the embassy of the Republic of Armenia during that nation's brief period of independence after World War I. Although she and Woolsey were to spend only a week at this address, they ended up staying for a few months. This suited Caracristi just fine, as it was only a short walk to Connecticut Avenue and the trolley line leading downtown. Sometime during the latter half of 1942, she moved across the Potomac to a small apartment in Arlington, Virginia, and at some point thereafter took up residence for the duration of the war in a larger one nearby.[10]

A Codebreaker in Training

> It was becoming evident that no particular background or training could be concretely indicative of an individual's potential as a cryptanalyst. There were cases of high school graduates who showed a surprising aptitude for difficult cryptanalytic assignments; likewise, there were the cases of individuals with five and six years of specialized university training who were strangely limited in aptitude for this particular type of work.
>
> *Administrative History of the Military Cryptanalysis Branch*, 1944[11]

Regardless of how much time she had been able to spend before graduation studying the training materials the War Department had sent to Russell Sage, upon arriving at SIS headquarters in June 1942 Caracristi would not have been able to sit down and start breaking encrypted messages being sent by German and Japanese military units. An SIS memorandum from early 1942 estimated that it would take 12 months of training before a new recruit could perform elementary duties, and up to two years or even longer before he or she could do more advanced work.[12] The reasons for the extended training period were simple, according to the memo's author. "Qualified personnel," he wrote, "cannot be obtained from civil life because there are few or no civilian pursuits which qualify individuals for cryptanalytic duties. . . . It is necessary, therefore, to employ individuals having the basic educational qualifications and train them for each of the highly specialized duties they are to perform."[13]

Consequently, after her first day at the Munitions Building, Caracristi was placed in a training course in cryptanalysis at George Washington University, a few blocks west of the White House. Several identical classes were being conducted there simultaneously to train the increasing number of SIS recruits arriving every day. Caracristi had about 20 classmates in hers. It was led by Evelyn Ackley, a former professor of mathematics from Skidmore College who remained with the SIS for the duration of the war.[14] Caracristi and her classmates soon realized just how much "everyone was playing it by ear" in the War Department's crash program to expand its codebreaking capabilities. "We all learned," she recalled, "that she [Ackley] was exactly one lesson ahead of the rest of us. So we were all in it together."[15]

Like the materials that had been sent to Russell Sage, the course had been designed by the SIS's most senior cryptanalyst, William Friedman, and used a multivolume textbook on how to break foreign codes and ciphers that he had written in the 1930s. Caracristi later described Friedman's text as "just sort of like puzzles." "But they were explaining the basis of the way you encrypt material and the way you go about attacking an unknown system," she continued. "You make counts of letters or numbers and try

to find patterns. . . . And they started quite simple and progressed to being fairly tricky."[16]

The pressure on the SIS to put its new recruits to work and start cracking enemy codes meant that Caracristi had completed only the first half of her training course before she was assigned to an operational position involving Japanese communications. There was only one problem: she did not know a word of Japanese. "I was assigned to the Japanese problem," she told an interviewer in 1982, "and I remember being astounded that anyone could assume that it was possible to work against these communications, if you didn't know anything about Japanese. . . ."[17] The few weeks Caracristi had spent in Evelyn Ackley's class, however, had allowed Army security officers to visit some of her friends and family members in order to assess her background and determine whether she could be trusted in her new, secret position.[18]

In this way, with just over a month of training before being assigned to a job where she would be working on encrypted messages in a language she did not know, Caracristi's career as a codebreaker began.

Getting Down to Work

> We may have been on the top floor of the building—but we were on the lowest rung of the organization (such as it was). Actually, we who worked in the bowels of the organization were constantly asking ourselves, "Where is the real work being done?". . . As we looked around at what we thought to be incredibly inept management and direction, we thought it couldn't possibly be being done here.
>
> Ann Caracristi, 1980s[19]

In a 1982 interview, the woman who was Caracristi's supervisor for much of the war, Wilma Berryman, described her a few months after she arrived in Washington. "She was very blond, blue-eyed, sort of pudgy little girl," Berryman recalled. "A big girl, she was . . . She had on bobby socks, and flat shoes, and a swinging skirt. She wore a pullover a lot of the time. Her hair, which is naturally curly, was all over her head." However, Berryman immediately noticed something else about this "bobby soxer": "She was an English major, but when she sat down and started to work, it was just obvious that she had an engineer's mind. . . . It was the most fascinating thing."[20]

The end of Caracristi's training period in mid-July 1942 coincided with the SIS moving out of the Munitions Building. The organization's leadership had realized early in the year that it would be impossible to stay in its already cramped Washington offices—in late spring, the group Caracristi would be assigned to had only 12 desks for its 26 people[21]—and that the space crunch would grow worse as more and more new recruits finished their George Washington University training courses and needed to be put to work.

Accordingly, a search for a new facility began. The main requirement was that the SIS remain close to its main East Coast intercept station near Warrenton, Virginia. Initially, the campus of Hood College in Frederick, Maryland, seemed best suited for meeting its needs, but the Board of Trustees of that institution objected that a War Department takeover would permanently close it, as it would be financially impossible to reopen after the war's end. Ultimately, the SIS leadership settled on Arlington Hall, a women's junior college in northern Virginia that had struggled financially and in early 1942 went into receivership. The Army purchased the property in mid-June for $650,000 under a court-ordered settlement. The expanding SIS was renamed the Signal Security Agency (SSA) and moved in a month later,

Caracristi, far right, at work in Arlington Hall, n.d.

despite the fact that renovations to the property were still taking place.[22]

Arlington Hall featured a large building with administrative offices and classrooms on its lower two floors and a dormitory on the upper two. Its campus was big enough to allow the SSA to build additional facilities to house its burgeoning numbers of people and machines. Caracristi's section moved to Arlington Hall in July and was placed on its top floor. It got so hot that summer that employees were issued salt tablets to avoid dehydration. (Caracristi tried one and called doing so "a terrible mistake."[23]) As there was no cafeteria when the SSA moved in, Caracristi and her coworkers had to bring their food from home, order a box lunch the day before, or walk across the street to a drugstore with a small lunch counter.[24]

Despite the move to a larger facility, space remained at such a premium that the ever-increasing amounts of paper with intercepted Japanese communications were stored in closets and in the bathtubs between the former student rooms on the upper floors, the latter being possible because the water had been shut off during reconstruction.[25] An SSA history published after the war's end described the conditions faced by another organization in the Japanese branch after it moved to Arlington Hall: "A unit known as B-II-a-3 was crowded into two former bedrooms with their connecting bathrooms. In addition to the desks of the 13 persons, this unit possessed heavy filing cabinets and some other very bulky equipment, which filled all available space and made operations very difficult."[26]

In addition to the ongoing overcrowding, the amount of heavy machinery that the SSA brought to Arlington Hall when it moved out of the Munitions Building was so large that it raised concerns about the facility's structural integrity. The IBM tabulating machines used on the first floor, for example, "were a constant threat to the building because of the unusually heavy strain placed on the flooring."[27] It thus would not have surprised Caracristi and her coworkers that just a few weeks after they arrived in mid-July 1942, bulldozers began excavating a site for the first of two buildings to house the SSA's operational offices. It also would not have surprised them that, notwithstanding a small fire during construction, the building was ready in less than two months for the first cryptanalytic organizations to move in, or that ground was broken for the second building just two weeks later. Sometime in the winter of 1942-43, Caracristi moved into the first building, known as Temporary Building A, even though it remained standing through the war and for years after. At some later date, she moved to the second newly constructed building. Not surprisingly, it was called Temporary Building B.[28]

Asked years later by historian David Kahn what a camera would have seen if it had recorded Caracristi at work during a typical day at Arlington Hall, she replied, "me, a cup of coffee, pencil and paper, and stacks of IBM runs, and [my] pen-

cil going across the paper."[29] She considered herself lucky when she eventually got her own desk, as most of her coworkers sat at long tables with filing cabinets separating one team from another.[30] At first, like virtually everyone else, she worked in one of three round-the-clock shifts, although supervisors attempted to be fair by rotating her and the other staff between the day and night watches so that no one constantly worked one or the other. Later, Caracristi's routine settled down into a daily shift from 8:00 or 8:30 in the morning to 6:00 in the evening. Despite the working conditions and long hours, Caracristi claimed that her colleagues loved their jobs. As for Caracristi herself, "I found the work exhilarating. . . . it was like doing crossword puzzles every day and getting most of the answers."[31]

Caracristi's positive assessment notwithstanding, there were morale problems at Arlington Hall. In her first months there, these often stemmed from the generally chaotic atmosphere of the institution and managers who were perceived as unable to bring order to it. As rumors began to circulate about decrypted messages having a positive impact on the war effort, a joke made the rounds that someone must be doing something right somewhere, and since it wasn't being done at Arlington Hall it must be happening somewhere like Nebraska. Later, when the SSA's codebreaking efforts became more organized, their resemblance to a production line created other morale issues. Many personnel performed the same tasks day after day, including ones that they felt were mostly clerical and hence beneath them. An early 1944 SSA assessment put this problem in the following way:

> Personnel have been trained to a high degree of specialization sometimes to the detriment of their overall cryptographic knowledge. Personnel have been required to do the same job day in and day out. Personnel have been required to do the same job for weeks on end. Certain personnel have felt that their capacity is greater than the position they are now in.[32]

Caracristi working in the PROD organization, n.d.

Arlington Hall's management took steps to address these issues. Solomon Kullback, who would hold senior positions in the SSA throughout the war, organized softball games, and another member of Arlington Hall's top brass—Frank Lewis—led a chorale. Kullback and Lewis also regularly visited those working the night shift, showing that they were willing to share its inconvenience.

Not surprisingly for someone who had been in Russell Sage's theater company, Caracristi joined a group that went to performances at the National Theater near the White House. One production she saw there was the Rodgers and Hammerstein musical *Oklahoma!*, which was touring the country following its 1943 Broadway opening.[33] Occasionally, she, Wilma Berryman, and a friend saved up their ration coupons for enough gasoline to take Berryman's car out for a day or even a weekend in the Blue Ridge Mountains of western Virginia.[34] Years later, she bought a house there as a retreat; her in-town residence

Caracristi receiving the National Security Medal from President Reagan, December 1982. Photo courtesy of the Ronald Reagan Presidential Library & Museum

was a small 18th-century house in Washington's Georgetown neighborhood.

Life at Arlington Hall had its humorous moments. Berryman recalled one that involved Caracristi coming down with an illness that seemed unusual given the average age of the workers.

> I don't know how long, she [Caracristi] may have been there a year, maybe it was a year, maybe it was two. I got a call one morning and this little voice said, "I won't be in today, I've got the chicken pox." And I just laughed. I couldn't help it. I thought, well, gee, there are times when we don't have anybody with the chicken pox.[35]

One summer, Caracristi, Berryman, and several others bought a sailboat that they kept at a dock on a narrow channel off the Potomac River near the Jefferson Memorial. "We used to sail, if you will, down off Maine Avenue," Caracristi told an interviewer years later. "And there isn't much wind, I tell you, in that little channel. But we didn't know much about sailing either, so we didn't really suffer much, I guess." One evening, the combination of low wind and their lack of experience left Caracristi and Berryman becalmed in the middle of the channel and blocking the departure of a boat that made a nightly run from Washington to Norfolk. "That caused," Caracristi noted drily, "a certain amount of excitement at all ends."[36]

Even with these lighter moments, Caracristi and what would come to be her thousands of Arlington Hall coworkers were fully aware that there was a war on and that they were supporting American troops on the front lines of Europe and the Pacific. Caracristi typically stayed until she had finished whatever she was working on, not wanting to leave it to someone on the night shift to complete. She claimed to have experienced no real hardship during the war, the only uncomfortable part being the crowded trains she took to New York to see her mother.[37] For Wilma Berryman, one day epitomized the determination everyone in the codebreaking effort brought to the job. "I remember the day that we had a very heavy snow and the buses didn't run and nothing else ran. Everyone came to work. They walked."[38]

Acknowledgments

For their assistance in locating material relevant to the preparation of this paper, the author expresses his appreciation to Kelly Grant of the Sage Colleges Archives and Special Collections; Eloise Morgan, Village Historian, Bronxville, New York; Rene Stein, Librarian, National Cryptologic Museum (NCM); and Sarah Parsons and Betsy Rohaly Smoot of NSA's Center for Cryptologic History. Photos are from the NCM archives.

Notes

1. Ann Zeilinger Caracristi, interview by Robert D. Farley, July 16, 1982, NSA-OH-15-82, Center for Cryptologic History, National Security Agency, 2-3. Available at https://www.nsa.gov/news-features/declassified-documents/oral-history-interviews/assets/files/NSA-OH-15-82-caracristi.pdf (hereafter, AZC-OH/NSA).
2. *Russell Sage Quill*, April 2, 1942, 3. Archives and Special Collection, The Sage Colleges. Troy, New York (hereafter, TSC/A&SC).
3. Ann Caracristi, interview by Leslie Sewell, undated, Library of Congress, Veterans History Project. Available at http://memory.loc.gov/diglib/vhp/story/loc.natlib.afc2001001.30844/transcript?ID=mv0001 (hereafter, AZC-OH/LOC).
4. *Sage Leaves*, 1942. TSC/A&SC.
5. AZC-OH/LOC.
6. AZC-OH/NSA, 17.
7. The SSA's first recruits were processed at the Personnel Office of the Signal Corps. A group of 34 arrived in mid-July, reported to an office at George Washington University, the site of their initial training office, and were inducted there. *History of the Signal Security Agency*, vol. 1, *Organization* (Washington, DC: Army Security Agency, 1948), 169. Available at https://www.nsa.gov/news-features/declassified-documents/cryptologic-histories/assets/files/history_of_the_signal_security_agency_vol_ISRH364.pdf (hereafter, *SSA History*, vol. 1).
8. Ibid., document appended after page 150.
9. David Kahn, Notes of Interview with Ann Caracristi, December 12, 2002. David Kahn Papers, National Cryptologic Museum, Fort George G. Meade, Maryland, Box 150, Folder 6 (hereafter, Caracristi Interview Notes/DKP/NCM).
10. AZC-OH/NSA, 5. AZC-OH/LOC. Caracristi Interview Notes/DKP/NCM.
11. *Administrative History of the Military Cryptanalytic Branch (to June 30, 1944)*, undated. Part II, Section IIA, 5-6. National Archives and Records Administration (NARA), Records Group (RG) 457, Historical Cryptologic Collection, Box 938.
12. Memorandum from Brigadier General Frank Stoner to the Assistant Chief of Staff for Intelligence (G-2), "Signal Intelligence Service, February 26, 1942." *SSA History*, vol. 1. Document appended after page 290.
13. Ibid.
14. AZC-OH/NSA, 4. David Alvarez, *Secret Messages: Codebreaking and American Diplomacy, 1930-1945* (Lawrence: University of Kansas Press, 2000), 115.
15. AZC-OH/NSA, 4.
16. AZC-OH/LOC.
17. AZC-OH/NSA, 6.
18. Caracristi Interview Notes/DKP/NCM.
19. Ann Caracristi, Remarks to CY-500 Leadership Course, National Security Agency, undated. Ann Zeilinger Caracristi Papers, National Cryptologic Museum, Folder 168 (hereafter, AZCP/NCM).
20. Wilma Davis, interview by Robert D. Farley, December 3, 1982, NSA-OH-25-82, Center for

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Cryptologic History, National Security Agency, 39. Available at https://www.nsa.gov/news-features/declassified-documents/oral-history-interviews/assets/files/nsa-oh-25-82-davis.pdf (hereafter, Davis OH).

21. *History of the Signal Security Agency,* vol. 3, *The Japanese Army Problems: Cryptanalysis, 1942-1945* (Washington, DC: Army Security Agency, 1947), 20-21.
22. *SSA History*, vol. 1, 121-7.
23. AZC-OH/NSA, 26.
24. Caracristi Interview Notes/DKP/NCM.
25. Ibid.
26. *SSA History*, vol. 1, 127.
27. Ibid., 128.
28. Ibid. A timeline of construction at Arlington Hall can be found in a document appended after page 150.
29. Caracristi Interview Notes/DKP/NCM.
30. Ibid.
31. Ibid.
32. "Report on the General Progress in Production and Operational Improvements in Section B-2 For the Past Year." Undated Signal Security Agency report. NARA, RG 457, Historical Cryptologic Collection, Box 991, 14.
33. Ann Caracristi, "Women in Cryptology," Remarks delivered at the dedication of late 1990s exhibit on Women in American Cryptology, National Cryptologic Museum. AZCP/NCM, Folder 164.
34. Davis OH, 43.
35. Ibid., 39.
36. AZC-OH/LOC.
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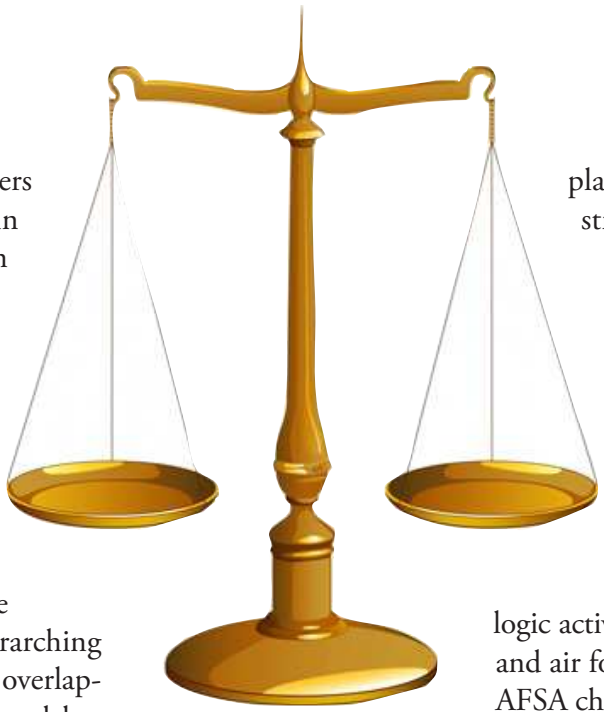
Best-Laid Plans: Establishing the Armed Forces Security Agency Legal Counsel

Edward A. Scott



Ever wonder why lawyers play such a prominent role in the way NSA does business? In today's litigious world, it isn't difficult to see the important role they have in our daily work lives. Think what a wonderful stew we would have if each organizational activity within the Agency developed its own legal structure to handle its problems without any overarching authority. The cacophony of overlapping and conflicting policies and law would be deafening.

In this article, I describe the often convoluted deliberations that resulted in a strange decision that is counter to the corporate legal view we have today. The leadership of the Armed Forces Security Agency (AFSA), NSA's predecessor, pondered the need for an office of consolidated legal counsel. Should all legal matters, such as oversight of procurement and foreign relations operations, be pulled into a single office? Then, if the function could be justified, where would that office be placed within the management structure?

Assessing the Absence of Legal Counsel

AFSA had little real authority over military service branch cryptologic activities. The agency was considered by many to be the fourth service cryptologic activity, along with the army, navy, and air force. In the spring of 1952, the AFSA chief of staff commissioned a survey to address the absence of legal counsel at the staff level. The lack of counsel had led AFSA elements to proceed totally without legal assistance; refer unrelated actions to the specialized legal contract group in Research and Development (R&D); and resort to legal assistance outside of AFSA, primarily within the services. This final point prevented the services from heartily endorsing the concept of an AFSA Office of Legal Counsel, because they expected that much of the task would fall to their respective general counsels.

The results of individual interviews with AFSA organizational heads were consolidated in a report to the chief of staff in June 1952[1] that addressed many of the deficiencies cited above. The report concluded that AFSA had a requirement for an activity at the staff level to furnish legal advice across all agency elements. This unified legal construct within AFSA would handle matters requiring the input of counsel. Specific existing requirements for legal assistance included the following:

- Determine costly mistakes and errors of judgment in R&D contracts to obviate them in future actions and to recommend adjustments to extant contracts
- Recommend appropriate R&D contract type for R&D contracts
- Separate pure legal functions from R&D procurements
- Determine the means to place the AFSA director in greater control of contracts awarded to the Signal Corps
- Determine the legality of using appropriated funds for combined civilian and military training contracts (and matters involving per diem, maintenance, temporary duty [TDY], and permanent change of station for trainees)
- Terminate civilian security risks and attend termination hearings
- Obtain three-service agreement for adoption of a uniform punitive code for minor offenses to be enforced by the respective services upon recommendation by the adjutant general, AFSA
- Determine whether a recreation fund would be legal under extant authorities
- Maintain top secret control over AFSA-originated items
- Keep civilian personnel from being called to active duty

The report recommended that this legal activity be established under the chief of staff in order to have the reach and clout necessary to adequately function.

The report further noted that AFSA staff elements, with few exceptions, expressed a need for legal assistance at the staff level to ensure adequate guidance for the implementation of their respective commitments. The Defense Department general counsel was emphatic in his recommendation that a legal office be established at AFSA and offered his assistance for any agency-level problems beyond the scope of an AFSA legal office.

Legal Autonomy

AFSA was not able to lean upon the older established activities for much of its legal support, as it was placed under the Joint Chiefs of Staff (JCS) while the services remained operationally under the Secretary of Defense. Consequently, while staying carefully within service and JCS prerogatives, the survey and subsequent review determined that a centralized legal activity could address responsibilities needing attention throughout AFSA, such as:

- Compliance with laws and directives affecting AFSA
- Proposed legislation affecting AFSA
- Command policy
- Security
- Employee termination
- Employee training
- Property and contracts
- Procurement expenditures
- Services regulations (in conflict with AFSA regulations)
- Budget

AFSA had the requirement for legal advice under special applications of the governing law, but particularly so when operating in questionable areas. In steering that delicate course, a careful analysis of the law was considered nec-

essary, as was the need to provide legal guidance on the conduct of diplomatic liaison to ameliorate untenable situations.

An autonomous AFSA legal activity was considered essential to allow the office to give information freely and objectively without being compromised by special interests or factional influences. Further, the activity would need to cut across all AFSA elements, facilitating a freer exchange of information and guidance. In the past, AFSA elements were reluctant to seek legal guidance from those focused exclusively on patent law and R&D.

The AFSA legal activity, as described in the survey and review, would include these functional responsibilities:

- Advise and assist all elements of AFSA in general legal matters
- Review and advise on all pending legislation
- Review and comment on the legal sufficiency of proposed regulations or directives
- Review AFSA procurement requests for conformity with law, regulation, and directive
- Prosecute patents and patent infringement

However, the idea of creating a legal division at the staff level came to naught. The AFSA comptroller sent the chief of staff a memorandum in August 1952[2] in which he stated, "So long as AFSA is not a unified command and so long as the Signal Corps and other agencies continue to handle our procurement, it is believed that the Agency legal function is not such as to warrant emphasis through establishment of a separate legal division. AFSA's mission and functions are not assigned by statute, and any legal interpretation of ours would be subject to authoritative reinterpretation at the echelon where statutory authority and responsibility rests."

The comptroller also opined ". . . that under the Army Staff concept or organization, overall responsibility for legal counsel, as for other functions, should be specifically assigned somewhere at staff level." This meant that the conundrum of separate responsibilities with separate and disparate functions would be perpetuated with no chance for a unified and centralized legal view.

A Solution: Staff Legal Officer

To ensure staff supervision over AFSA legal matters, the comptroller indicated that he saw two possible alternatives:

- Appoint a staff legal officer in an existing staff division
- Create a new (special) staff division and centralize legal functions within the division

The comptroller decided that the advantages of appointing a staff legal officer far outweighed those of creating a new staff division. The staff legal officer could provide representation for most of the agency's legal requirements, although there would be no centralization of all legal activities. The disadvantages of creating a legal division were in his estimation insurmountable because it would:

- Place the legal office in both advisory and operating capacities
- Vest too much power in the legal group (elements within AFSA should be able to act despite legal counsel's advice against such action)
- Provide a division to which other staff divisions could pass the buck on responsibility for difficult problems with the claim that they had "legal implications"
- Not provide the required separation from the operational groups; that is, the office would be in conflict with itself as a definitive line and advisory staff element

As a result of his analysis, the comptroller recommended the appointment of an agency legal

officer in the Plans and Policy Division, which was enabled on September 19, 1952. (Comment No. 5 to the comptroller's above memorandum states that the next published Table of Authorization would reflect a requirement in the Plans and Policy Division for an Air Force 05 [Lt. Col.] Legal Officer.)

As one can see, things don't always go how one would perceive them to logically flow. As Robert Burns famously said, "The best laid schemes o' mice an' men /Gang aft agley"[3] (often paraphrased in English as "The best-laid plans of mice and men/Often go awry"). Hindsight leads us to believe that a centralized functional division at the chief of staff level would have coordinated legal matters more effectively than a staff legal officer could.

This became a moot point when AFSA became the National Security Agency on October 24, 1952, with the signing of the "Truman Memorandum." A general counsel was in place by 1953.

Notes

1. Staff Report to Chief of Staff, AFSA, "Legal Requirements of AFSA," dated June 16, 1952. NSA folder "Legal Officer-AFSA Staff."
2. Memorandum, Comptroller to Chief of Staff, dated August 6, 1952, Subject: Establishment of Staff Legal Division. NSA folder "Legal Officer-AFSA Staff."
3. Robert Burns, "Tae a Moose [To a Mouse]," 1785, accessed June 6, 2016, https://en.wikipedia.org/wiki/To_a_Mouse.

Edward A. Scott retired from NSA in 2008 and is a volunteer with the Center for Cryptologic History. During his career, he served in a variety of technical and analytical positions in several different organizations. His primary focus was on representing cryptologic interests within the Intelligence Community.

Family Album

Before the Dawn: Life at a Remote SIGINT Site during the Cold War

For this Family Album, the Center for Cryptologic History draws upon the recollections and photographs of Russ Breighner, a retired Russian linguist for the US Air Force (USAF), to describe the unique, day-to-day experiences of signals intelligence (SIGINT) operators assigned to one of the most remote US military sites during the Cold War.

Right: The after-effects of a winter storm. Russ Breighner and a colleague were once isolated in the radio direction-finding shack on St. Lawrence Island off Alaska after a storm dumped several feet of snow. It took a bulldozer three days to dig a path to the snowbound structure.

Northeast Cape is located on St. Lawrence Island, which offers a very cold and very snowy environment befitting its location in the Bering Sea. Courtesy of the University of Texas Libraries, The University of Texas at Austin

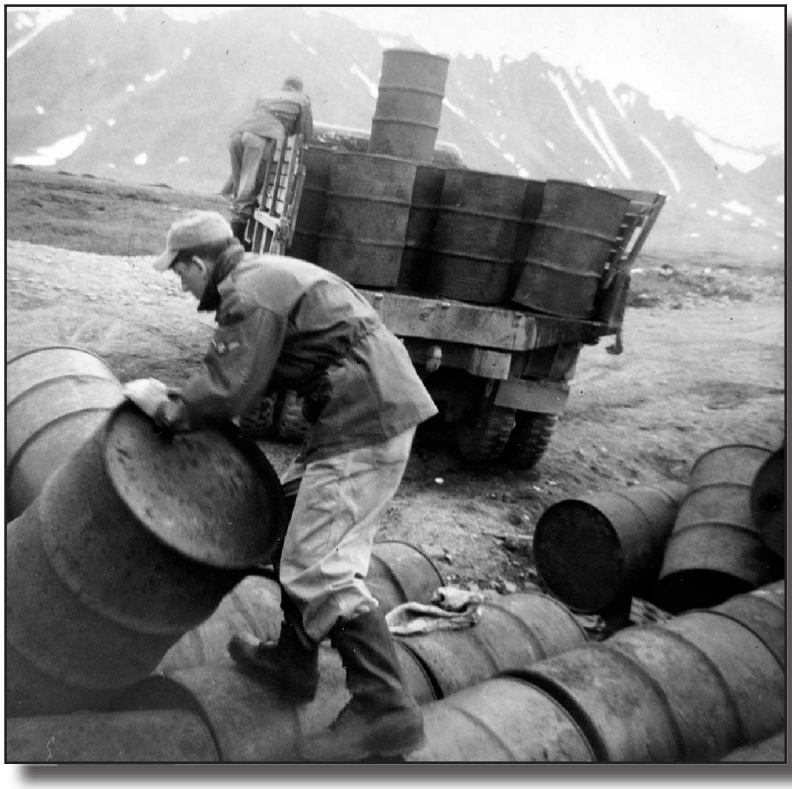
Breighner arrived at Elmendorf Air Force Base (AFB) in Anchorage, Alaska, in August 1957 to begin a two-year assignment with the 6981st Radio Group Mobile (RGM) of the USAF Security Service. In mid-May 1958 he received orders to transfer to a detachment of the 6981st RGM based on St. Lawrence Island in the Bering Sea.

Northeast Cape's rugged terrain adjacent to the base

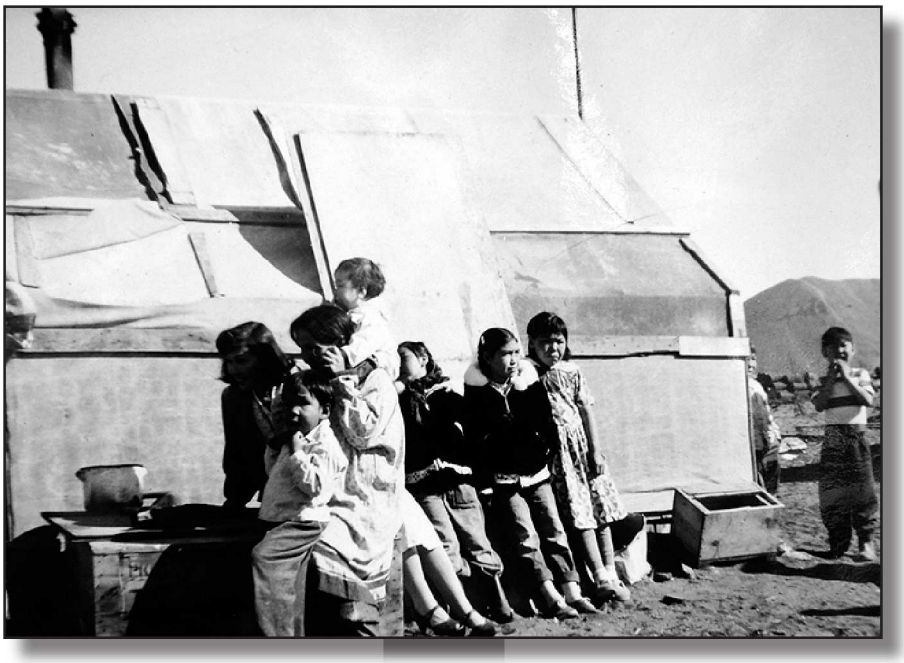
"American SIGINT operations in remote locations, such as Northeast Cape, St. Lawrence Island, in the Territory of Alaska, 1958, occurred on the [periphery] of active warfare," Breighner explained. "US intelligence collection efforts against the Soviet Union's military were distinctly discouraged by them and actively countered wherever the Kremlin felt the United States was vulnerable to attack." Between 1950 and 1970, Soviet fighters shot down 20 American aircraft, including the September 1958 downing of a USAF C-130 over Soviet Armenia. Six flight crew and 11 SIGINT operators perished. "It was only a Cold War if no one was shooting at you," Breighner wryly noted. Regardless, as Brieghner recalled, "the young Americans serving at remote sites amidst the hardships and threats not only persisted in their duties, they responded with magnificent patriotism and dedication."

Breighner traveled from Elmendorf AFB to Northeast Cape via a USAF Fairchild C-123 like the one above. After a short stop in Nome, Breighner and his colleagues flew about 120 miles southwest at low altitude. En route, they passed over a polar bear colony on the ice pack.

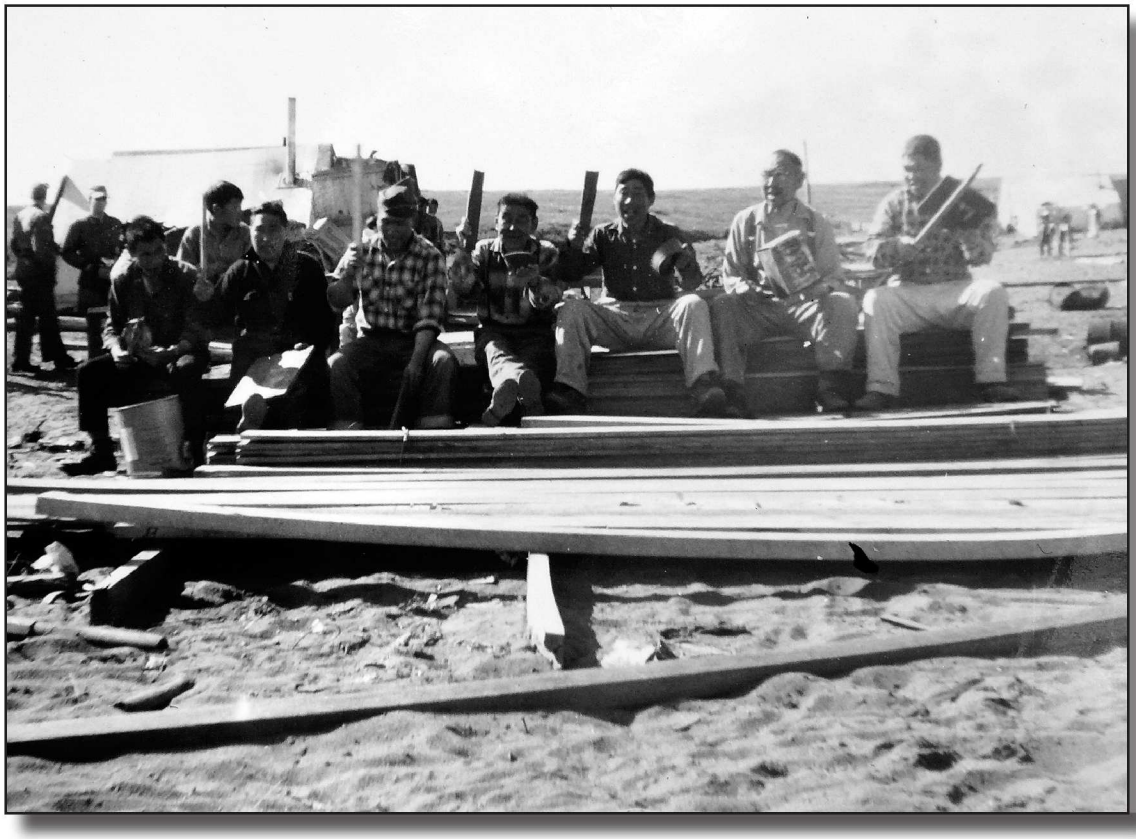
A Jeep awaits the arrival of an M-29 Weasel to return it to the snow-packed road. Sliding off of the slightly elevated roadway was not uncommon, especially during whiteout conditions.



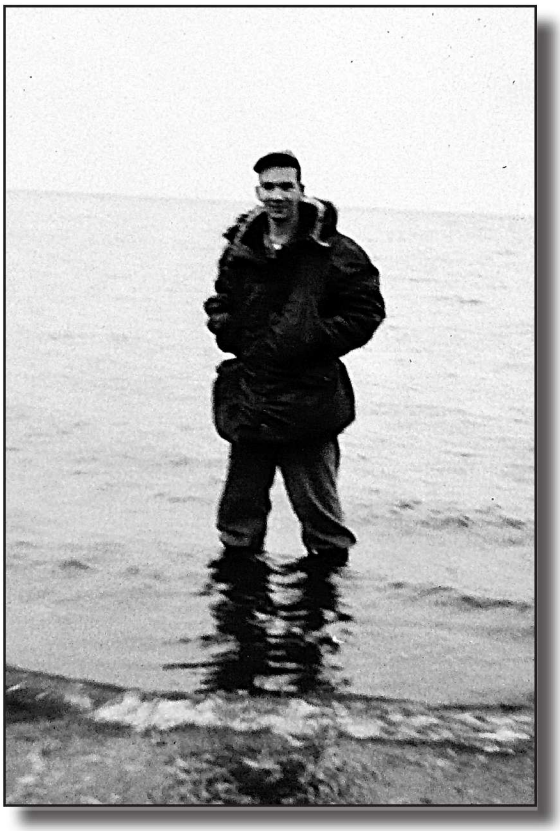
In addition to the less-than-hospitable setting, the airmen of the 6981st Radio Group Mobile faced "other duties as assigned" on their days off. In this photo, airmen are placing empty petroleum (POL) barrels in a moat surrounding the operations center.



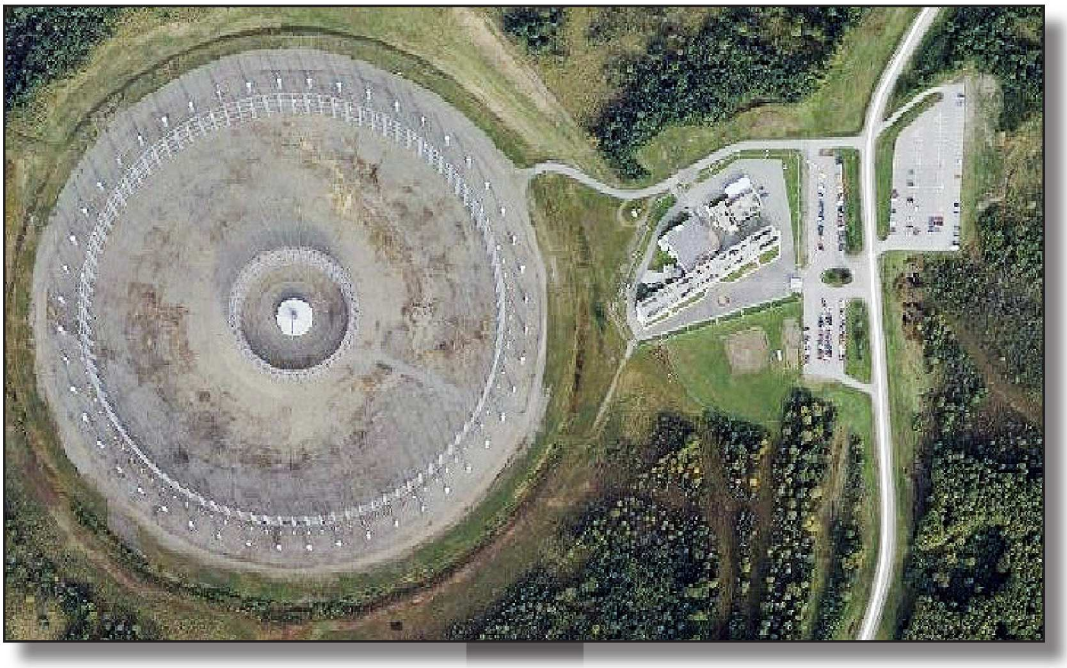
During the summer months, Siberian Yupik Eskimos from Savoonga relocated to their fishing camp near the base. *Above*, Yupik children rest outside a summer cabin sealed with plywood and tarpaper. *Below*, a Yupik band prepares for a performance.



A birthday celebration showcases the spirit of camaraderie among the airmen of the 6981st Radio Group Mobile.



In 1958 Breighner celebrates the Fourth of July by briefly wading into the Bering Sea.



The AN/FLR-9 Wullenweber-class radio antenna, located adjacent to the 6981st Headquarters building on Elmendorf AFB.

All photos provided by Russ Breighner.

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