Security and Efficiency in Communication Intelligence
Examining Innovation in the Revolutionary and Civil War Eras

Introduction

I unfolded the small card, the paper wrinkled in my tense grip. Reading the words before me my heart dropped. My commander had summoned me, my assignment had begun.

During the Revolutionary and Civil War eras, spy networks utilized a range of technological advancements and techniques that prioritized security and efficiency in response to wartime circumstances. An examination of the methods used by the Culper Spy Ring during the Revolutionary War and by Union and Confederate spies during the Civil War reveals that the forms of communication intelligence perpetuated then changed two defining American conflicts, leading to the progressive refinement of espionage methods. The literature includes detailed accounts of the evolution of communication intelligence methods, including both continuities and changes between the Revolutionary and Civil War eras. Existing scholarship focuses primarily on three main topics. First, it broadly examines intelligence
engagement in conflicts, focusing on how intelligence has played a crucial role in warfare throughout history. Second, it focuses on the role of spy rings within communication intelligence, and how these actors contributed to the success or failure of espionage. Third, it introduces the new methods and technologies that have been adopted and utilized within each conflict. Each of these topics has been extensively examined, providing a comprehensive historical analysis of each subject. While thorough in its examination of intelligence engagement, the role of spy rings, and the introduction of innovative technologies, scholarship has so far neglected to study. This paper builds on prior research by considering the relationship between communication intelligence methods and technological innovation through a lens that prioritizes questions of security and efficiency. Overall, this analysis of the Revolutionary and Civil War conflicts examines the relationship between security and efficiency in communication intelligence methods, as well as the related inventions and technological innovations that emerged.

Communication methods during the Revolutionary and Civil War eras relied on human capital and intelligence techniques that centered around secure and efficient means of disseminating information, and these were driven by wartime circumstances and the changing pace of conflict. Across these two defining periods, many methods of intelligence persisted; however, new inventions and technological developments did lead to innovations during the Civil War.

During the Revolutionary War, the American Colonies, which had fought alongside Britain in prior conflicts, had been exposed to, and thus adopted, techniques used by their former allies. Therefore, throughout the Revolutionary period, both sides of the conflict utilized similar methods of covert communication, which had originated in Britain. While it is true that the Colonies utilized a considerable number of these techniques in warfare, such as the use of codes and modes of concealment from the British, these innovations were primarily adopted to ensure secure Colonial communication. Revolutionary-era tactics revolved around human capital, thereby leveraging person-to-person communication in the most secure manner possible. Examining the Civil War period reveals both the continuation and changing methodology that occurred between these two conflicts. While secret communication in the Civil War–era was still in many ways a pen-and-paper affair, utilizing codes and means of concealment, the
adoption and implementation of the civilian telegraph network, in use since its advent in 1844, illustrates how inventions and technological advancements that occurred between these two war periods led to the establishment of new forms of communication intelligence. Yet, while the North perfected immediacy in telegraph communication prior to the Civil War, the South had not adopted that technology, leading the factions to establish different means of intelligence communication within the war. For both sides, the passing of intelligence was naturally of paramount importance, in order to establish a strong defense and take advantage of offensive opportunities. Therefore, as the pace of the war significantly quickened, secrecy was deemphasized in favor of expedience. As a result, secure and efficient communication intelligence methods were implemented in response to the unique circumstance associated with the Revolutionary and Civil Wars.

The following analysis examines how the adoption of technology, as well as new forms of innovation that prioritized security and efficiency, intrinsically altered communication intelligence methods during the Revolutionary and Civil Wars. Communication theorist James W. Carey has defined communication as “a process whereby messages are transmitted and distributed in space for the control of distance and people.” Effective communication has the potential to give an opponent an upper hand when working with sound intelligence. As such, prioritizing effective means of communication during wartime can significantly influence the outcome of a conflict. Looking specifically at the Revolutionary and Civil Wars within the United States, ensuring secure and efficient communication, resulting in innovative means of gathering information, gave each side a much better chance of achieving its objectives. The methods utilized during the Revolutionary era illustrate the importance of security within innovation, highlighting the use of invisible ink, codes, and concealment. In comparison to the methods utilized during the Revolutionary War, it is apparent that during the Civil War there was a need for more efficient means of communication. As a result, innovative forms of intelligence practices, such as visual signaling systems and the telegraph, were repurposed making it possible for war to be fought at a much faster rate.
The American Revolution, recognized for its intelligence innovation, utilized means of communication adopted from Britain. It is worth noting that while technological innovation in intelligence did not significantly change over the course of the war, increased value of security and practices of intelligence communication led to effective networks in which information was gathered. As James Carey notes, society is fundamentally based on technology and communication. Therefore, Revolutionary society was deeply rooted in its ability to facilitate technological innovation and secure means of communication that valued secrecy and security in order to effectively gather necessary information. Additionally, during the Revolutionary War, the dissemination of communication intelligence relied on human capital—networks of individuals who physically transported messages to one another.

The Revolutionary War utilized numerous forms of intelligence communication methods. Before introducing these, it is helpful to outline a brief description of Revolutionary innovation. On November 29, 1775, the Continental Congress created the Committee of Secret Correspondence for the purpose of collecting foreign intelligence. During the Revolutionary War, it was General George Washington who actually facilitated the effective gathering of information. Washington, as G. J. A. O’Toole notes in his book Honorable Treachery, initially sought to use members of the Sons of Liberty as spies; however, this plan was hindered by their widely expressed loyalty. Therefore, in order to create an effective intelligence communication system, Washington established an intricate network of personal spies and spy rings, including the famous Culper Spy Ring. The methods employed by these groups included invisible ink, codes, and practices of concealment.

Invisible Ink

The feather quill lightly brushes against your cheek as you bend over examining the black script. “Dear Sir,” the two words written in a brilliant font. Between the lines of text, just wide enough but not too wide to alert someone, you trace over the words that have all but disappeared.
At the time of the Revolutionary War and during prior conflicts, invisible inks were one of the most prevalent methods of intelligence innovation and covert communication. The three forms of invisible ink commonly used at the time were solutions of bismuth, gallo-tannic acid, and lead. Inks would be made visible through the use of heat or a differing reagent, therefore, making them accessible without requiring technological advances. During this period the British relied heavily on classic forms of invisible ink, which utilized lime and lemon juices during the development processes, as well as the newer sympathetic stains.

Over time, technological advancements led to an evolution in means of intelligence and covert communication. During the American Revolution, Sir James Jay introduced a new form of “sympathetic ink to communicate secret military information back to his brother in America.” His particular method involved writing a decoy letter on the top of a sheet of paper before composing an invisible letter on the bottom half. Jay’s ink was made of a solution of tannic acid, and when the paper it was written on was coated in ferrous sulfate, dark letters would appear, revealing the hidden message. Jay’s ink provides insight into the evolution of covert communication during the Revolutionary era and illustrates that invisible ink was a prevalent innovative method at this time.

Figure A: A letter of General Correspondence from Bezaleel Kerr to Aneas Urquhart, May 22, 1779. This letter from George Washington’s Papers illustrates the use of invisible ink written between the lines of a seemingly normal letter. Text written in invisible ink appears a lighter color than that written in normal ink. Image courtesy of the Library of Congress.
Invisible ink was a scarce resource. James Jay’s ink was difficult to produce in large quantities; accordingly, it was primarily reserved for communication between Washington and the Culper Spy Ring. Furthermore, to prevent raising suspicion by carrying seemingly blank documents likely to harbor invisible writing, it was common for spies to utilize “blank pages and margin spaces in pamphlets and books, spaces between lines in social or business correspondence, and ... larger packages of blank paper being transported for sale or business use” to hide their messages. Military reports were even concealed in invisible ink between the lines of decoy love letters or correspondence between friends.

Spies the world over relied heavily on invisible ink during the Revolutionary period, and it served as a fundamental means of secure innovation. Its popularity during conflicts illustrates its significance as a necessary innovation, which is exemplified in the communication between parties such as General Washington and the Culper Spy Ring. For example, Ring member Robert Townsend sent information written in invisible ink from New York to fellow Ring member Abraham Woodhull in Setauket about British military happenings. These person-to-person messages would then pass through a series of exchanges, ultimately reaching General Washington. Invisible ink helped protect human capital and security, aiding General Washington and the Culper Spy Ring in order to gain the upper hand against British opponents.

Codes

You carefully turn the tattered pages, your finger searching for the last three digits. 682, 348, 272, placing them in their rightful order you close the book and tuck it deep within your trunk as you wait for the last of the ink to dry.

Codes also served as a means of secure covert correspondence during the Revolutionary War. Both sides depended on codes to convey messages during the conflict in order to maintain efficient conversations without threatening their own security.

In the most classic sense, a code is when “a number or character represents entire words and requires that both the sender and the receiver
have identical numerical listings, such as a code book.” Therefore, as a means of communication, codes were a unique practice, and while certain elements amongst them were the same, others varied widely. A code book, such as the popularly used *Enticks Dictionary*, enabled spies to establish a code much more securely than the number-substitution method; however, employing a book code was a lengthy process during both creation and decoding. The book code method was utilized around the world, and was routinely practiced by both American and British forces during the Revolutionary War. However, while book codes proved to be effective, they were considered most appropriate for diplomatic matters, as they took too much time to utilize during the heat of a conflict.

*Figure B: A page from the Culper Spy Ring Code found in Mount Vernon's Primary Sources. Image courtesy of the Library of Congress.*
The Culper Spy Ring employed a complex coding system, including the use of book codes. However, due to the need for efficiency in communication with other members of the Ring or General Washington, they more often relied on numerical substitution coding methods. The Ring assigned “each pertinent word, location, or name a numeric code.” Their system is evident in various examples: “711 meant General Washington, 723 was for New York, 722 was for Culper, Jr. (Townsend) and 721 was for Culper, Sr. (Woodhull).” This secure number system was regularly utilized in forms of covert communication to discreetly and effectively convey secret messages without having to employ a lengthy book key. Because numeric codes were easily recognized as code by the intended recipient, this innovation was more efficient.

In order to conceal codes of all forms, messages were often hidden amidst letters, typically addressed to enemy supporters in order to deflect suspicion. This required strategic planning and organization on the part of generals and majors in order to establish a code system, such as the assignment of code names, that was “at once specific enough to be clearly and instantly identifiable to the intended recipient, yet not so unusual as to obviously be a fake name nor so common that an innocent individual who happened to bear the same name might be hunted down by the enemy.” In order to further limit potential for suspicion and discovery, letters written in code would also typically be secured through the use of invisible ink. The combination of both coding and invisible ink was common practice at the time, illustrating how increasing the complexity of covert communication establishes a more secure intelligence network.

Concealment

The small scrap of paper was tightly pressed against the button’s smooth surface, carefully flattened to avoid detection. The dark fabric tightly sewn to cover the button hid beneath it a hurried script. As the button is refastened, you step out into the brisk winter air pulling your coat tighter around you hoping the delivery will go undetected.
Revolutionary intelligence innovation depended heavily on the practice of hiding secret messages. The Revolutionary War, and prior conflicts, spawned numerous systems of concealment in order to trick the enemy. It is worth analyzing examples of concealment, as they added to the security of covert intelligence communication.

During the Revolutionary era, both British and American armies relied on the transmission of messages without discovery. The British utilized every trick imaginable when it came to hiding messages in plain sight. For example, they would write messages on thin pieces of paper that were rolled and placed inside hollow quills. These feathers would then be transported as “packing
around a breakable package or simply as a supply of writing implements.” Additional methods of British concealment included code masks, which were sheets of paper cut into patterns that when placed on top of a letter would reveal a secret message through the cut out portions of the mask. Each of these methods are examples of how hiding, especially in plain sight, facilitated security and successful transmission of covert communications during the intelligence gathering process.

It was not just the British who depended on methods of concealment. American armies also utilized techniques to convey communications directly under the noses of their enemies. The Culper Spy Ring frequently used the dead drop system to deliver messages. In a dead drop, a spy hides a message in a predetermined location, such as a hole in a tree or under a specific patch of rocks, then leaves the message unattended. Another agent, aware of the predetermined drop location, would then collect the communication and escort the message to its destination. The practice of the dead drop enabled the efficient transfer of secret communications without concealing potentially dangerous information in an easily found hiding spot; nevertheless, “hiding messages in ordinary objects was unobtrusive and usually worked.” The dead drop, unlike invisible ink or codes, was a fairly impersonal act of concealment, and it was therefore less secure than acts of hiding in plain sight in the sense that it could easily be discovered by the enemy. Therefore, spies engaging with dead drops have to trust those with whom they are communicating in order to successfully exchange and convey covert communication without interception. Also, just as the British used methods of hiding in plain sight, Americans used various forms of hidden compartments. Messages were hidden in the “waistband of a man’s breeches, in false heels on shoes, in false handles on knives,” or beneath coat buttons, as was utilized by spy Lydia Darragh. These methods of hiding enabled effective communication between parties to occur without raising enemy suspicion. Regarding American methods of hiding, General Washington believed that if a message “appeared suspicious or was treated with the utmost caution and concern, it was more likely to tip off British inspectors.” While the writing of secret messages serves as an important part of intelligence communication, innovative methods of transporting messages are just as critical for efficient means of intelligence gathering to occur.
Overview

The Revolutionary War exemplifies how security and efficiency within intelligence gathering practices directly engendered innovations, including invisible ink, codes, and the conveyance of messages through hiding techniques. Kenneth A. Daigler notes that the Culper Spy Ring used both invisible ink and encoding, as well as methods of concealment, to efficiently and securely communicate with other members of the Ring and General Washington. It was this need for security that shaped methods of intelligence gathering, invisible ink, codes, and concealment, as paramount for the continued success of covert communications and intelligence during the Revolutionary War era.

The Civil War

Between the Revolutionary era and the start of the Civil War, innovative communication methods emerged out of the new possibilities born of the Industrial Revolution. These methods fundamentally altered means of intelligence gathering, thereby establishing the Civil War as a period of significant, innovative growth. While communication intelligence still revolved around pen-and-paper techniques and the concept of secure “transmission of signals or messages over distance for the purpose of control,” the Civil War era saw definitive shifts regarding aspects of efficiency within the intelligence field. The use of visual signaling systems and the telegraph illustrate the response to the need for increased efficiency for transmitting secure covert communication. Simultaneously, the use of human capital evolved to include communication methods that were independent of physical movement and more efficient in transferring information from point to point.

The period between the conclusion of the Revolutionary War and the start of the Civil War witnessed considerable advancements in technology that altered the nature of intelligence communication. For example, while codes and ciphers were still utilized as effective means of secure transmission of intelligence, new technology was warranted. As communication theorist James W. Carey argues, the adoption of advanced technology facilitated more efficient means of communication and transportation, therefore quickening
the pace at which an army could “extend influence, control, and power over wider distances and greater populations.” This more developed form of secure covert communication, reliant on efficiency and establishing the use of novel technology, introduced two methods of communication that were new to the American intelligence system: the use of visual signal systems and the telegraph. These forms of communication continued, however, to rely on human capital, which had “provided the backbone of operational and tactical intelligence for centuries, and would remain fundamental throughout the Civil War.” This use of traditional human involvement partnered with a drive for efficiency ushered in the use of technologies that enabled wars to be fought at a much faster pace.

Visual Signal Systems

You slowly survey your surroundings, your flag clutched between your hands. A cool breeze carries the smell of smoke and the soft whisper of swaying trees. You stand, watching and waiting, for the moment your flag will rise and cut the crisp morning air.

The use of visual signal codes became prevalent during the Civil War. Signal codes, a term used to describe a flag alphabet, enabled visual communication between one point and another, permitting efficient communication during a fast-moving war. However, these codes were much easier to intercept and

Figure D: Diagram illustrating Myer’s “wig-wag” flag signaling system, it has been reversed to depict Myer’s original code. Image courtesy of: David L. Woods, A History of Tactical Communication Techniques (Orlando, Fla.: Martin-Marietta Corp., 1965), plate V-6.
decode than the earlier methods of intelligence communication. The visual signaling system, also called the wig-wag system, was developed by U.S. Army officer Major Albert James Myer, and it was utilized by both the Confederate and Union armies—the Confederate Signal Bureau being established prior to the Union Signal Corps. The practice of visual communication was heavily influenced by naval signaling methods and adapted for land warfare.

The practice of flag signaling resurfaced and was repurposed during the Civil War, enabling both the Confederates and the Union to quickly transmit coded instructions across enemy lines. For example, the wig-wag system was utilized during the first battle of Bull Run. Captain E. Porter Alexander of the Confederate Signal Bureau wrote:

I was watching the flag of our station at Stone Bridge when in the distant edge of the field of view of my glass, a gleam caught my eye. It was the reflection of the sun (which was low in the east behind me), from a polished brass field piece...

Observing attentively, I discovered McDowell’s column in the open field north of Sudley’s Ford crossing Bull Run and turning our left flank.

Alexander’s recognition of the oncoming troops provided him with ample time to signal his superiors, and ultimately contributed significantly to the Confederate success at Bull Run.

The use of flags for signaling was far less secure than earlier methods of covert communication, and it entailed hard-to-avoid risks. Signal intelligence was “based on the interception of communications”; both the Confederates and the Union relied on the interception of enemy signals to benefit their own military intelligence understanding. The Union Signal Corps utilized Myer’s four-element flag code, in which “movements of the flag to left or right of vertical in series would denote the numbers one to four.” For example, “odd numbers would usually be signed by a movement to the left, so one wave to the left would denote ‘1’ while two waves to the left would be ‘3’.” This code system enabled efficient sharing of numerical communications; however, it would be fairly simple for an enemy to decode the individual flag movements and therefore understand the content of the message. Furthermore, flags portraying bright colors or patterns would be utilized in order to increase
visibility. While this served to attract the attention of the intended parties, it also increased the chance of being seen by the opponent. Thus, bright colors and easily recognizable signals made interception especially common. While this new form of intelligence communication served to efficiently transmit information in a way that suited the fast pace of modern war, it was far less secure than methods utilized during the Revolutionary War. Even so, this intentional investment in developing efficient communication methods was a direct response to the circumstances and the need for innovations.

During the Civil War, signal programs on both sides served as intelligence agencies. These programs facilitated the gathering of information and the interception of enemy communications, enabling them to serve as critical players in the military game. What the Union Signal Corps did that the Confederates failed to do, however, was to utilize their “signal officers as a source of intelligence acquisition.” These officers, who essentially mirrored the roles of spies in traditional forms of intelligence, had the potential to learn and understand enemy flag signals, thereby having the potential to secretly intercept important military communications. By utilizing human capital and emphasizing efficiency over security, new forms of intelligence communication, such as the wig-wag flag system, were established.

The Telegraph

Dit, dah-dit, dit, dah-dah, dah-dit-dah-dah your finger hurriedly presses the small button, rhythmically timing each tap. You sit in silence, nervously awaiting a response.

Between the Revolutionary and Civil Wars, the development of the telegraph in 1844 greatly reduced the use of invisible ink and written codes within the United States. The development and adoption of the telegraph provided a means of communication across long distances at a much more efficient rate than carrying letters from one location to another. The telegraph was not originally created for use in military conflicts, but instead as a means of creating a civilian network. It was telegraph’s exceptional efficiency and its ability to convey information across great distances quickly that led to its military application and the limited use of traditional forms of intelligence,
such as the utilization of book codes or the passing of letters techniques. As Carey states, the telegraph served as “a new form of reporting and a new form of knowledge,” that ultimately enabled “messages to be separated from the physical movement of objects.” With the adoption of the telegraph as a means of intelligence communication, a fundamental shift occurred that enabled messaging to occur at much faster rates than could have been achieved with previous methods. At the same time, however, this technology, too, was reliant on human capital to both send and receive messages. Overall, the adoption of the telegraph as a means of military innovation happened due to a need for more efficient practices of covert communication, creating in the process a new important and enduring partnership between intelligence and technology.

The Civil War was the first crucial military event in which the telegraph served as a fundamental method of intelligence innovation. While it was still a relatively new form of technology, the Union immediately put it to use, and as historian G. J. A. O’Toole notes, the adoption of the telegraph during the Civil War helped quicken the pace of battle, ultimately establishing it as a necessary technique of efficient communication. This can be illustrated through the use of the telegraph by Union General Herman Haupt prior to the battle at Gettysburg, when he dictated the following message to Baltimore and Washington:

Information just received, 12:45 a.m., leads to the belief that the concentration of the forces of the enemy will be at Gettysburg rather than Chambersburg. The movement on their part is very rapid and hurried. They returned from Carlisle in the direction of Gettysburg by way of the Petersburg pike. Firing about Petersburg and Dillsburg this p.m. continued some hours. Meade should by all means be informed, and be prepared for sudden attack from Lee’s whole army.

This use of the telegraph, in particular during the Gettysburg Campaign, is ultimately what led to the efficient communication between Union leaders and allowed for appropriate preparation for conflict against the enemy. If it had not been for telegraph communications, such as that of General Haupt, the Union Army may not have won the campaign. According to William Rattle Plum, the Union telegraph network was significantly more extensive
during the Gettysburg Campaign, so each position could receive instant communication. The same was not true for the Confederates, because “Lee had no telegraphic communication north of Culpeper, and little need of any, prior to his advance.”

During this conflict, the Union Army maximized the available technology.

The Confederacy, unlike the Union, did not adopt or have access to its own telegraph operations; however, it did utilize Union lines for wiretapping in order to gather information. Wiretapping was fairly easy to do, as it required no new technology and was utilized by linemen as a routine maintenance technique, therefore making it worthwhile to the Confederates. Rather than acquire a telegraph system, the Confederates utilized the Vigenère polyalphabetic substitution cipher within their telegrams and communications. This cipher uses a “system in which the relationship between the ciphertext and the plaintext alphabets constantly changes throughout the message according to some pre-established key,” making the system confusing and disorganized.

Similar to the intent of invisible ink, the telegraph provided the opportunity to convey information hidden from the enemy. However, as was the case with this less advanced predecessor, the interception of these messages did occur and resulted in costly losses if the information fell into certain hands. As historian Andrew Pettegree writes, having control over communication networks could potentially be decisive on the battlefield. Unlike the methods of written codes used in earlier conflicts, where in order to intercept a message one had to obtain a specific piece of paper, the telegraph provided plenty of opportunities for enemy wiretapping. Wiretapping enabled the foe to gather information without ever seeing or confronting the messenger. Preventative measures were therefore necessary in order to increase security and to limit the knowledge accessible to the enemy. To minimize the risks posed by the stealing of important military intelligence, the Union would include false information in telegraphs, preventing the Confederates from gaining access to truthful knowledge, as well as manipulating their understanding of the situation at hand. Additionally, false orders would be released over telegraph in hopes of deterring the enemy, leading them to be unprepared in the face of the actual conflict.

So, while the adoption of the telegraph established a new form of intelligence communication, it also brought with it an increased risk of discovery, one that
earlier methods such as invisible ink did not incur. Nevertheless, the telegraph, as illustrated by the Gettysburg Campaign, could—at its best—dramatically improve the military preparedness of an army.

Figure E: An image of a telegraph station located at Wilcox’s Landing near Charles City County, Virginia in 1864. Image courtesy of the Library of Congress.

Overview

The Civil War made clear the necessity for greater efficiency, which manifested in new forms of intelligence, in order to match the accelerated pace of war. Covert communication practices involving visual signaling and the telegraph rapidly replaced the earlier methods of invisible ink, codes, and concealment. Therefore, the emphasis of expediency over security resulted in the adoption of new technological innovations and strategies. However, while the time required to send and receive secret communications decreased rapidly, the ability to intercept these messages increased significantly, negatively impacting intelligence security. Visual signaling and the telegraph, while reliant on new forms of technology, were still dependent on the use of human capital. Therefore, while the actual methods of communication were different between the Revolutionary and Civil War eras, person-to-person versus point-to-point, their reliance on human involvement and value of secure and efficient communication methods was the same.
Conclusion

The relationship between security and efficiency during wartime has led to the creation and refinement of many different means of intelligence communication. An examination of communication innovation strategies reveals that traditional pen-and-paper tactics were still a necessity during the Revolutionary War; however, as the pace of war quickened during the Civil War era, more secure and efficient communication methods were needed. While the use of new techniques such as visual signaling practices and the telegraph were widely recognized for their efficiency, their discovery led to additional innovations. As intelligence communication values continued to develop, both technological innovations and practices of warfare also evolved.

In the time since the conclusion of the Civil War, the United States has experienced considerable changes in its intelligence institutions. Following this war, the government began to establish modern intelligence systems. The Office of Intelligence, established within the Bureau of Navigation in 1882, which soon became the Office of Naval Intelligence, was given the mission of collecting intelligence information on foreign navies in times of both war and peace. In 1908 the Bureau of Investigation, which became the Federal Bureau of Investigation in 1935, was tasked with achieving covert communication surrounding German-style “sabotage and subversion.” In 1917 the first United States Signals Intelligence Agency was established and given the responsibility of “decoding military communications and providing codes for use by the U.S. military.” The formulation of these intelligence institutions provided guidance and greater learning surrounding methods of decoding, deciphering, and intercepting technological transmissions, and made various agencies responsible for “investigating espionage, counterespionage, sabotage, and violations of the neutrality laws.” During World War II the U.S. Army’s Signal Intelligence Service participated in a project code named Venona, in which the mission was to break an encryption and examine and exploit Soviet diplomatic communications, an achievement that underscores the continued need for the decoding methods utilized, in far less advanced form, during the Revolutionary War. Also during World War II, the Office of Strategic Services and Military Intelligence Service were set up with the purpose of collecting and analyzing signals intelligence, interpreting photographs, and performing ground reconnaissance missions. Then, with the passing of the
National Security Act of 1947, the Central Intelligence Agency was formed.\textsuperscript{56} This institution solidified the United States’ place within modern intelligence, and perpetuated the use of covert communication methods and the adoption of new technological innovations.

The evolution of communication intelligence within the United States began with the relationship between security and efficiency in the Revolutionary and Civil War eras. The technological advancements and techniques that arose between these periods of conflict illustrate the prioritization of security and efficiency as the pace of warfare continued to increase. The continued development of methods such as codes and concealment, partnered with new technological innovations, directly contributed to the refining of covert communication methods and use of human capital. By examining the use of secure and efficient means of communication intelligence, it is evident that both within the Revolutionary and Civil War eras, these values served as a driving force for the establishment and longevity of wartime innovation.

Notes


2  O’Toole, \textit{Honorable Treachery}, 137.


4  O’Toole, \textit{Honorable Treachery}, 27, 37, 39.

5  Nagy, \textit{Invisible Ink}, 29, 32.


Mahoney and Mahoney, *Gallantry in Action*, 72.


Mahoney and Mahoney, *Gallantry in Action*, 309.

Mahoney and Mahoney, *Gallantry in Action*, 309.


O’Toole, *Honorable Treachery*, 47.

Mahoney and Mahoney, *Gallantry in Action*, 296.


Carey, *Communication as Culture*, 12.


Carey, *Communication as Culture*, 33.


Donne, *Much Embarrassed*, 89.
30 Fishel, *The Secret War for the Union*, 347.


37 O’Toole, *Honorable Treachery*, 128.


39 O’Toole, *Honorable Treachery*, 137.


41 Carey, *Communication as Culture*, 156–57.

42 O’Toole, *Honorable Treachery*, 130, 137.

43 Fishel, *The Secret War for the Union*, 517.


46 O’Toole, *Honorable Treachery*, 138–139.


50 O’Toole, *Honorable Treachery*, 139.


52 O’Toole, *Honorable Treachery*, 177, 179, 195, 241.

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