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Cryptography and its Role in Countering French Espionage during the Algerian War of Independence (1957–1962)

الشيفرة ودورها في مكافحة الجوسسة الفرنسية خلال الثورة التحريرية الجزائرية 1962-1957

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Abstract:

This study inspects the importance and role of the code in enhancing the intelligence security of the Algerian Liberation Revolution (1957-1962), our paper focused on the analysis of the historical background of the emergence of the Code Authority and its development within the Directorate of Vigilance and Anti-Establishment of the Ministry of Information, highlighting its contribution to maintaining the secrecy of internal and external communications of the ELN. By monitoring the development of the technical and organizational structure in favor of the code, it was found that the Algerian revolution paid increasing attention to this vital area, despite the lack of potential. The study also showed how the code became a strategic tool and one of the most important interests of the Anti-Establishment Directorate of the Ministry of Information and Intelligence. The results of the research confirm that the code was not only a technical tool but an effective defense intelligence tool, which contributed to aborting enemy penetrations and enhancing the security of the revolution.

Keywords: cryptography; espionage; secret communication; National Liberation Army; intelligence warfare.

ملخص:

تتمحور ورقتنا البحثية حول دراسة أهمية ودور الشيفرة في تعزيز الأمن الاستخباراتي للثورة التحريرية الجزائرية(1957-1962)، ركّزت الورقة على تحليل الخلفية التاريخية لنشأة مصلحة الشيفرة، وتطورها ضمن مديرية اليقظة ومكافحة الجوسسة التابعة لوزارة الاستعلامات، مبرزة مساهمتها في الحفاظ على سرية الاتصالات الداخلية والخارجية لجيش التحرير الوطني. ومن خلال رصد تطور البنية التقنية والتنظيمية لمصلحة الشيفرة، تبيّن أن الثورة الجزائرية أولت اهتماما متزايدا لهذا المجال الحيوي، رغم قلة الإمكانات. كما بيّنت الدراسة كيف أصبحت الشيفرة آداة استراتيجية ومن أهم مصالح مديرية مكافحة الجوسسة التابعة لوزارة الاستعلامات والاستخبارات. تؤكد نتائج البحث أن الشيفرة لم تكن مجرد أداة تقنية بل أداة استخباراتية دفاعية فعالة، ساهمت في إجهاض اختراقات العدو وتعزيز أمن الثورة.

كلمات مفتاحية: شيفرة؛ جوسسة؛ اتصالات سرية؛ جيش التحرير الوطني، حرب استخباراتية.

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1. Introduction

Encryption, or encryption, is one of the most important security techniques used in intelligence wars, by keeping the secrets of correspondence, through the process of encrypting the information sent and converting its texts into symbols and numbers, and on the other hand can be detected through the decryption of messages.

Through this article, we tried to study the historical background of the use of the code during the Algerian liberation revolution of 1957-1962 in the context of the fight against the establishment, which the French enemy was working on in order to penetrate the ranks of the National Liberation Army, highlighting the importance of this technology in the face of the enemy's military penetrations, and how the code specialists with their simple techniques faced these penetrations.

2. Significance of the Study

During the Algerian liberation revolution, the role of the Cypher Service made it of great importance in the military and strategic support of the Algerian National Liberation Army. And that's why we shed light on its most important aspects by revealing what the code is. Its historical background, its use in the fight against the establishment that was carried out by the enemy especially on internal and external communications between the leaders of the National Liberation Army, Through these elements, we tried to focus on the importance of the topic in the history of one aspect of the Algerian liberation revolution on the one hand and on the role of this technology in promoting intelligence wars between the conflicting parties.

4. Scope of the Study

The objective limit of this study was extended in knowing the role of code technology in the fight against the French institution during the Algerian liberation revolution, while the temporal field of the subject was extended between 1957-1962, which is the period when the code originated as an interest independent of the telecommunications interest and became an active role in Algerian inquiries and intelligence.

5. Objectives of the Study:

The objective of this study is to facilitate a deeper understanding of the cryptographic system used by the National Liberation Army as a defensive and security measure to protect its sensitive information from French intelligence infiltration. Additionally, the study aims to document this often-overlooked topic, which has not received adequate attention in terms of research, analysis, and scholarly exploration.

6. Statement of the Problem

The central focus of this study is to examine the nature of cryptography as a technique utilized by the National Liberation Army, which sought to

enhance its effectiveness by establishing a specialized cryptographic unit within the Counter-Espionage Directorate. This unit was tasked with both infiltrating enemy messages and countering espionage efforts. The study aims to address questions regarding the role of cryptography in overcoming enemy intelligence operations and how it helped maintain internal security against potential breaches.

7. Methodology

This study adopts a historical-analytical approach, which is particularly well-suited for examining a pivotal period in the history of the Algerian War of Independence. It focuses on the development of the Cipher Service and its efforts to combat French espionage threats. The study traces the chronological events and analyzes the security and intelligence roles played by the cryptographic system within the National Liberation Army, taking into account the field and political conditions of the time.

Additionally, the study employs a descriptive-documentary method to present data and information, drawing on a range of sources such as documents, testimonies, previous studies, and specialized books. This methodology ensures a well-rounded and clear depiction of the Cipher Service's operations, while avoiding oversimplification or excessive narrative.

8. Definition of Cryptography:

The term "encryption" is derived from the Greek word *kryptos*, meaning "hidden." Cryptography, in turn, is rooted in the Arabic term ‘الصفر’, which was introduced into the numerical system and has a corresponding term in Latin: *Cipher* (Ibrahim, 2010, p. 102). This concept is an essential component of digital systems, as it enables the transformation of plain text into an incomprehensible form using specific methods. By mastering these techniques, those familiar with the system can decode the information and comprehend its content, highlighting encryption's dual role as both a protective mechanism and a means of encrypted communication (Mrayati, Meer, & Al-Tayyan, 1987, p. 28). Cryptography has long been used in our region, particularly in the Maghreb. For instance, the historian of the Saadian state, Mohammed al-Saghir al-Marrakchi, described the system of cryptography as follows: "To mention the name and seek its referent, or to mention the referent and seek the name. Know that they do not require the exact arrangement of the letters in extracting the term; they are satisfied with the word regardless of its specific form. If this occurs in poetry, it is considered an embellishment and is called 'ta'diyyah'" (Al-Saghir, 1888). Therefore, cryptography, in simple terms, involves the use of a set of Arabic alphabetic characters that may represent names of individuals, but in a concealed manner.

We will attempt to provide some examples of cryptography, but before doing so, it is important for the reader to understand that this process

traditionally relies on calculations based on the Abjad system, where letters are converted into known numbers using the Abjad-Hawz method. It is worth noting that in the Maghreb region, there was an ancient system of alphabetic calculation distinct from that of the Mashriq. In addition to the use of the ' أبجد هوز' system, there is a third variant that was used for dating manuscripts, numbering the pages of manuscripts, and in judicial documents. This system became known as the 'Fassi script' (Qassem, 2001, p. 2014). Over time, this system evolved to become a tool for cryptography, serving as an alternative method for concealing information in correspondence and communication practices.

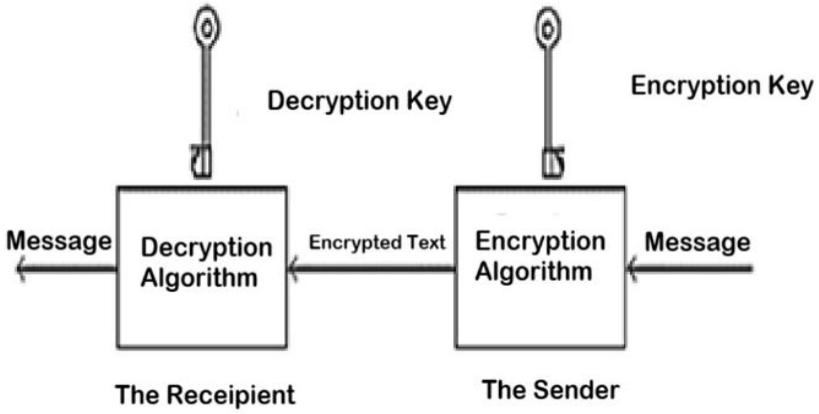
Cryptography is a form of language or symbolic writing used by two or more individuals with the aim of concealing the message intended for delivery to a third party. Its primary purpose is to ensure the security of the information contained within the messages. The level of security depends on the degree of confidentiality and the rigor of the encryption method employed, which, in turn, depends on the technique used (Triki & Annak, 2025, p. 182). Modern classical encryption techniques are based on two main methods, referred to as "transposition methods." Through these methods, one can conceive of more complex or somewhat secure variations, depending on the level of rigor, the quality of the design, and the ingenuity and creativity of the person or organization creating them. However, the most secure method for delivering a message to a correspondent is not sending it via radio but rather entrusting it to a courier or communication agent who is responsible for delivering it directly by hand, ensuring that the message does not fall into the hands of the enemy, which often occurs during battles and clashes.

Thus, encryption becomes the most sensitive point for an army engaged in warfare, making the use of couriers impractical, especially when the correspondence is being transmitted over long distances, sometimes hundreds of kilometers (Bouzid, 2015, pp. 75-76).

9. Key Terminology in the Encryption Process:

The information intended to be concealed is often referred to as the *original encrypted text* or *encryption statement*. The set of rules used to encrypt the original text is known as the *encryption algorithm*. This algorithm typically relies on an *encryption key*, which serves as its input, alongside the message itself. In order for the recipient to retrieve the original message from the encrypted text, a decryption *algorithm* must be available. When used with the appropriate decryption key, this algorithm recovers the original text from the encrypted version. The following diagram illustrates the schematic description of using an encryption system to protect a transmitted message.

Figure (1): Clarification of the terms related to the cipher and the encrypted message



Source: by the author

In general, the set of rules that comprise these cryptographic algorithms is highly complex and requires careful design. However, within the context of this study, the reader may regard these algorithms as "magical formulas" that transform data into an unreadable format, with the assistance of encryption keys (Murphy, 2012, pp. 15-16).

10. Historical Background of Cryptography Before the Establishment of the Counter-Espionage Directorate (1956-1958)

Regarding the cryptographic service, it did not truly exist at the beginning of the Algerian War of Independence. From 1956 to 1958, it was an integral part of the communications service linked to wireless radio stations, where both the technician and their assistant, both domestically and abroad, simultaneously served as both the sender and the codebreaker (Boudraa, 2021, p. 156). The team working on decoding ciphers and codes at the network command center, especially the main center, was almost continuously engaged in their tasks due to the volume of correspondence, the diversity of ciphers, and the urgency of operations. The era of cardboard has passed, and the means and methods of encryption became less rudimentary and more sophisticated. This was achieved through the efforts of one of the encryption specialists, who designed and proposed a new technique to the authorities. After its approval, the cryptography team began establishing terms, usage methods, and keys, and proceeded to print copies of the ciphers according to the number of stations that existed at that time.

This work took several weeks, concerning the encryption means directed inward, which were placed inside an envelope and then delivered to the General Staff of the Fifth Wilaya, which ensured their transfer and delivery across the provinces (Bouzid, 2015, pp. 55-56).

Each radio station possessed an encryption document that could be used immediately, while the military officer retained a second code, different from the first, to hand over to the codebreaker technician when the first code expired or was canceled due to suspicions. As soon as any code expired or was canceled, a third code, different from the first and the second, was issued to be distributed to the recipients, followed by a fourth, a fifth, and so on, with no specific number set. However, later, each province was provided with a different code, for three main reasons:

- **The first reason:**

It is enough for one document to fall into the hands of the enemy in any region for all other documents in the remaining provinces to become suspect, thereby necessitating their cancellation.

- **The second reason:**

Messages encrypted with the same code, numbering in the dozens daily, could provide the enemy with abundant material that would make it easier for them to decipher our codes.

- **The third reason:**

This is related to the separation of networks from one another; possessing a separate code enables the provincial commander to communicate with the commanders of districts or sectors, who in turn can communicate with him, without the other provinces being able to read the content of these messages. Furthermore, any province could communicate with another through the central headquarters of the network command, which ensured connectivity between the provinces.

- **The fourth reason:**

It concerns our material capabilities, which were very limited at that time; they were confined to a group of soldiers not exceeding six in number, a few typewriters, and a single "Roneo" duplicating machine. Such means did not allow for ensuring adequate supply and provision of codes, given their extensive use within the networks, while external stations were being opened across the world, one after another.

Thus, the communications service began to take on broader dimensions, similar to the encryption service, and their development reached a point where separating the two became an urgent necessity (Bouzid, 2015, pp. 56-57).

11. The Cipher Service Center at the Directorate of Vigilance and Counter-Espionage (DVCR)

After the establishment of the Provisional Government on September 18, 1958, in Cairo, the Ministry of Public Communications created the Directorate of Vigilance and Counter-Espionage (DVCR) on September 28, 1958, as an entity under this ministry (Brawn, 2015, p. 141). It was placed under the responsibility of Abdel Rahman Brouan, known as Safar, a former student of the University of Toulouse (Ministry of Mujahideen, 2014, p. 139).

The tasks assigned to the Directorate of Vigilance and Counter-Espionage consisted of ensuring the security of the revolution on both the internal and external fronts, as follows:

- **On the internal front:** The Directorate worked to combat espionage and to identify the weak points of the revolution, understand their causes, and find ways to address them. It also monitored traitors, deserters, and defeatists, in other words, anyone who could harm the revolution (Brawn, 2015, p. 146). This was achieved by obstructing the psychological warfare led by the enemy, by identifying the focal points of such operations in order to neutralize them (Ministry of Mujahideen, 2014, p. 139).
- **On the external front:** Its mission consisted of combating espionage by verifying the nationalities of enemy spies, whether Algerian, French, or foreign, tasked with spying on or infiltrating the National Liberation Front (FLN). It was also assigned to detect the intelligence activities of other countries.
- Collecting as much information as possible about individuals who had either close or distant connections with the revolution**.**
- Coordination with other ministries through the use of services outside the Ministry of Public Communications (MALG). The information that could be provided by these services would greatly facilitate the execution of a significant portion of its assigned tasks. Regarding coordination, the ministries were obliged to:

The ministries were obligated to provide the Directorate of Vigilance and Counter-Espionage with all information concerning their employees. They were also required to report any intelligence they possessed regarding Algerian circles, traitors, suspects, the morale of activists, soldiers, and officials, as well as potential leaks of secrets, defeatist plans, regionalist tendencies, and other threats.

The Directorate of Vigilance and Counter-Espionage successfully countered the psychological operations conducted by the French enemy's Fifth Bureau, which operated under the supervision of Radio Voice of the Country. Moreover, it confronted the activities of the Social Action Service (SAS), the Urban Action Service (SUA), and the Operational Protection Detachment

(DOP), which were responsible for preventive measures, interrogation facilities, and torture. It also neutralized the efforts of the Bureau of Studies and Liaison (BEL), an entity charged with intelligence gathering, propaganda, news distortion, and manipulation (Ministry of Mujahideen, 2014).

12. The Use of Code in Counter-Espionage:

After the successes achieved by the Algerian Liberation Revolution, the Code Service was separated from the Communications Service, of which it had been an integral part. It was subsequently promoted to a sub-directorate under the leadership of Captain Abdelkader Bouzid, known as Abu al-Fath. The service was placed under the supervision of the Directorate of Vigilance and Counter-Espionage (DVCR) to better preserve the secrecy of its activities and to ensure the protection of its personnel and means against all potential dangers (Kablia, 2020, p. 95).

With its growing importance, it expanded to include the development and invention of secure and robust encryption codes, alongside the training and enhancement of the skills of cryptographers, enabling them to use the codes in a rational and controlled manner that prevents any risk of their rapid decryption by the enemy (Brawn, 2015, pp. 146-149).

This service also experienced significant development after its headquarters was established in a location isolated from other departments and was equipped with all the necessary equipment to perform its mission effectively. It was provided with a portable printing machine, and cryptography specialists obtained numerous books and publications dealing with the science of cryptography. This contributed to handling codes with greater precision and compliance with the rules of encrypted writing, thereby facilitating their decryption.

The cryptography specialists were not oblivious to the psychological aspect that the enemy was strong, nor did they underestimate its capabilities. This awareness prompted them to take all necessary technical measures, ensuring that the codes were tightly secured to guarantee the safety of encrypted communications as much as possible. On the tactical level, they frequently changed the keys and codes, which made the task of the enemy's codebreakers almost impossible. The adversary was not given sufficient time to conduct research nor enough material to work with, as the number of messages encrypted with the same code was minimized. Additionally, they narrowed the scope of investigation into the base documents (Bouzid, 2015, p. 60).

In 1957, the Algerian Liberation Revolution began training cryptography personnel, relying on Algerians who had acquired experience and expertise either during their military service in the signal corps of the French army or as activists who had studied and learned wired and wireless communications

techniques and electrical sciences in specialized institutes and technical centers. Moreover, the leadership of the revolution did not hesitate to benefit from the expertise of foreign military specialists who had defected from the ranks of the French army and joined the National Liberation Army or were recruited to serve its cause (Boudraa, 2021, p. 153).

13. Tasks of the Cryptography Service

13.1. Military Tasks

The responsibility borne by the Cryptography and Codes Service was immense, as it was not solely its own but was shared with other departments. The cryptographic war, during the armed struggle, took on various dimensions and expanded into multiple fields, such as codebreaking, intelligence, and counterintelligence (counter-espionage).

This war materialized gradually as the armed struggle continued, with caution intensifying in both camps. Each side became increasingly concerned with safeguarding its secrets by doubling efforts to prevent the other from penetrating its defenses. However, the enemy was the first to possess all the means and weapons necessary to wage this battle, whereas the National Liberation Army did not enjoy the same advantage (Bouzid, 2015, p. 52).

In 1957, the enemy army used a code known as Charlie Émile Askar (C.E.A.) (Dabbah, 2013) and another encryption system called C.M.O.D, which was replaced in 1958 by a code named Slidax (Ministry of Mujahideen, 2014, p. 59).

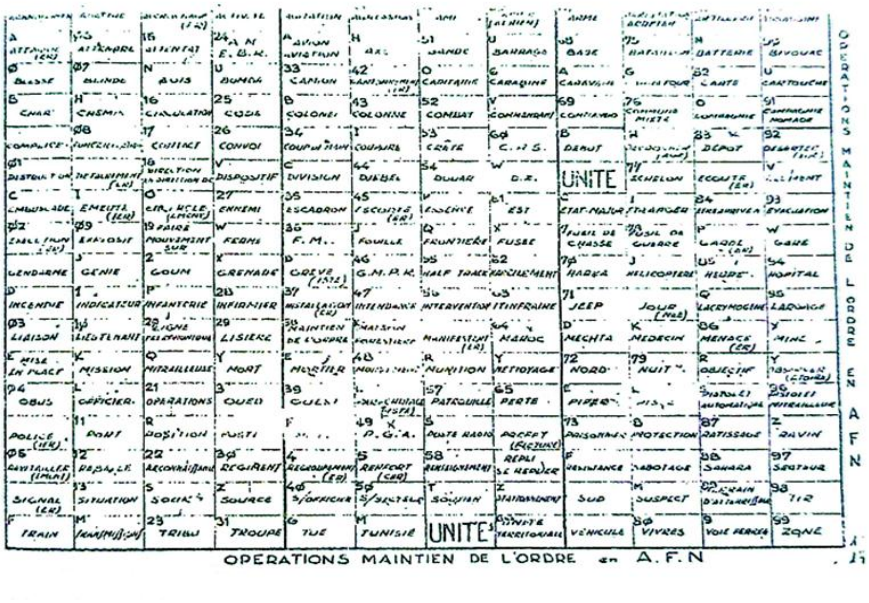
The Slidax card encryption was a form of partial message encryption. It functioned by sending a card that contained all the alphabet letters, all numbers, and a set of binary and ternary letter combinations. The National Liberation Front obtained a copy of this card. An example of it is presented as follows:

xBmassu OJ jour 6 ZK CP infanterie ZK
Hélicoptére JV por PK OV men éé par 9°

The decryption of this message reveals that: *"General Massu is arriving today, May 8, 1956, by helicopter to Palestro to inspect the operation carried out by the 9th Infantry Brigade."*

The French army was unaware that ‘the Fellaghas’ (as they called them) or the so-called outlaws were capable of deciphering these codes or even possessing such a weapon (Brawn, 2015, p. 94).

Figure (2): An Example of the SLYDEX Encryption Card Used by the French Army



Source: (Brawn, 2015, p. 298)

At the beginning of 1959, the cryptographers working in the intelligence and reconnaissance service began reconstructing the French encryption cards known as SLYDEX (Dabbah, 2013, p. 86). In the same year, the Cryptography Service consisted of only twelve agents responsible for preparing and producing encryption tools. Thanks to the expertise they had acquired and their intelligent use of it, the National Liberation Army was able to develop a skilled cryptography service capable of effectively carrying out its tasks.

This was achieved through the intensive use of communication equipment, despite the difficulty of transporting it to the battlefront, which sometimes caused severe damage and required constant and appropriate maintenance (Ministry of Mujahideen, 2014, p. 64). The use of cryptography contributed to obtaining accurate information through wireless communications. Based on the intelligence provided by the signal corps, the National Liberation Army was able to take the necessary measures to thwart enemy plots and neutralize its plans (Hashashna, 2024, p. 555).

13.2. Media Tasks:

a. Radio:

The radio received information and news to broadcast over the airwaves, thereby directing its messages to the people. This information often related to

operations carried out by the soldiers of the National Liberation Army, with the aim of boosting morale and strengthening national spirit among the masses.

b. Press:

The Cryptography Service provided the initial information for the revolutionary press. This information was directed to *El Moudjahid* newspaper and the Algerian Press Agency, which received their news through wireless communication networks. They, in turn, published it to the international press. The transmission and distribution of media content were carried out through wireless broadcasting using communication devices, enabling the voice of the revolution to reach beyond the borders.

It is worth noting that the Information Interception Service worked side by side with the Transmission and Reception Services, each complementing the work of the other within a precise coordination system aimed at supporting the media front of the revolution (Hashashna, 2024, p. 556).

14. An Example of the Encryption System Used by the National Liberation Army

At its inception, the Cryptography Service relied on semi-primitive means, limited to the simplest tools, namely, a rectangular cardboard sheet measuring 36 cm by 26 cm, divided into squares resembling a crossword puzzle but with larger dimensions. Each square contained either an alphabetical letter, a diphthong (e.g., SE, ER, AN), a triphthong (e.g., ENT, ART, AGE), or a complete word such as Radio, Arme, or Ali. These were used to encode words, for example: Armement (meaning armament or military equipment) would be broken down into arme, the letter M, and ENT.

Each of these three segments had its own coordinates, which were transmitted via radio to allow for the reconstruction of the word. To decrypt the message, the correspondent had to first take the vertical coordinate, then the horizontal coordinate to identify the marked squares, and then gradually record the content of the message. For example:

- **AR** gives: **ARME**
- **BX** gives: **M**
- **CV** gives: **ENT**

At times, we could not deduce the word at first glance; it required us to think for two minutes or more before we were able to write it down (Bouzid, 2015, p. 53).

A good encryption system must be simple to use yet highly secure. However, despite all the precautions taken, errors, whether accidental or intentional, occurred in wireless messages due to lack of attention or difficulties in usage. If this is not taken into account, it results in a loss of time,

and sometimes confusion arises during the initial phase of wireless transmission (Senoussi, 2010, p. 79).

14.1. Message Encryption Method

The message was drafted by the Wilaya leadership, then transferred through the communications center, where it was delivered as a telegram to a liaison officer. This officer, in turn, placed it in the designated communications center, following the receipt notification procedure specified in the communications regulations. The priority for sending messages was determined according to the level of urgency previously set by the sender, such as telegram, very urgent, urgent, etc.

Before being transmitted via radio, the message was usually sent to the Cryptography Service, which, depending on the security level of the content, applied the appropriate encryption. As a direct result of the encryption process, only the cryptographer and, naturally, the sender were aware of the message's content. Thus, the communications operator, who transmitted the message via Morse signals, was completely unaware of the message's origin or subject matter. His role was limited solely to sending a telegram written as a sequence of letters and numbers that would be incomprehensible to any reader lacking the encryption key.

This key was held only by the cryptographers, those operating at the transmission station and those at the reception station, for security reasons. If enemy devices managed to intercept the message, they would not be able to exploit it without first passing it through decryption procedures, which required a relatively long time to determine the content.

Thus, the time needed to convert the message into an unencrypted language eliminated the possibility of quickly exploiting the provided information. Moreover, if the enemy succeeded in capturing the communications operator, they would not be able to extract any useful information from him regarding the encrypted messages (Hassani, 2012, p. 210).

Regarding the process of deceiving the enemy, the number of encryption rules was proportionally increased, with each network having its own capabilities and distinct keys that necessarily had to be changed continuously. This method helped save time and prevent enemy penetration of the messages, especially since the enemy relied on a continuous monitoring system. To mislead the French services, the cryptography team continually sent false telegrams (Senoussi, 2010, p. 80).

14.2. Model of the Q-Code System

The Q-Code System:

The Q-Code system is an international symbolic coding system designed to facilitate communications between transmission stations. It was widely used in both military and civilian sectors due to its ability to abbreviate technical phrases and ease the speed of understanding between communication parties.

Practical Examples:

- **Network Command Center Code:** 1KV
- **Station Code:** 8VN

To establish a connection or maintain continuous listening, several calls are sent during the designated idle time by repeatedly transmitting the letter **V**.

Example of a Message:

8VN de 1KV. 4QTC OP. K.

Meaning:

"This is 1KV; I have four urgent messages for 8VN. Here is the line, proceed to speak."

This system greatly helped in facilitating and streamlining communications between stations, as well as contributing to the organization of work within wireless networks (Brawn, 2015, pp. 267-296). A summary of the Q-Code table is presented below:

Table (1): the International Q-Code System

Q Cipher	
Symbol	Meaning
P	Urgent
QAP	Continuous monitoring/Are you on continuous monitoring?
QRM	Communication interference
QPA	Verify your identity
QRK	I can hear you, but sometimes I can't hear you well—other times, I can hear you clearly.
QRQ	Radio check. How do you read me
QSM	Your message is unreadable
QRL	Change your frequency
QRM	Picked up interference in the communication
QSL	Message received on the 18th at 17:50
QSP	Please forward urgent message PseQSP.QTC.NR87P8VN number 87 to 8VN
QTA	Message cancelled
QTC	4 QTC TO 8CB — I have four messages for station 8CB

QRX	QRX = 18 — I will call you back at 18:00 hours
Z	Urgent telegram
HR	Here
K	Over to you, I'm listening

Source: by the author

The table illustrates the Q-code system, an international communication and message-receiving code system that was used by the National Liberation Army for sending and receiving messages.

15. Findings of the Study

Based on what has been presented in this study regarding the role of code in combating French espionage during the Algerian War of Independence (1957–1962), we have reached a set of conclusions that highlight the strategic importance of this intelligence technique:

- The code played a pivotal role in protecting the confidentiality of both internal and external communications of the National Liberation Army, making it an effective intelligence tool within the strategy of defending the revolution and one of the key achievements of the Counter-Espionage Directorate.
- Despite limited technical and logistical means, the National Liberation Army was able to develop its defensive capabilities and secure its ranks against French infiltration attempts, thanks to strong will and continuous security efforts.
- The expertise of former Algerian conscripts in the French army, along with the support of defecting specialists from the French military, contributed to the development of the coding system and the training of qualified agents to implement it effectively.
- The role of the code was not confined to purely military aspects; it also extended to the media dimension, as it helped provide accurate information to the revolutionary press, especially *El Moudjahid* newspaper and the Algerian Press Agency, thereby contributing to exposing colonial crimes and internationalizing the Algerian revolution.
- The functions of the code were diverse, it was not limited to counter-espionage, enemy infiltration, and securing secret communications, but also served as an effective tool in supplying the press with preliminary information on the enemy army and developments in the Algerian War of Independence.
- Its function went beyond encrypting messages, evolving into a component of psychological warfare and a counter-offensive against

French intelligence by thwarting infiltration attempts and securing revolutionary communication networks.

- The encrypted documents and practical models (such as messages and cards) demonstrated that the revolutionary leadership succeeded in disrupting French espionage mechanisms and thwarted enemy attempts to decode encrypted content.

16. Conclusion

By examining the role of the code during the Algerian liberation revolution, this study revealed a hidden and detailed aspect of the national struggle system. Beyond weapons and military operations, the war on the information and knowledge front has been going on at an equally ferocious pace, and the code's interest has been a strategic tool in keeping communications secret and confusing the French intelligence machine.

Through encrypted documents and archived messages, it was confirmed that the revolutionary leadership not only lacked the means, but devised them under the pressure of the field, reflecting a high level of organization and technological awareness for a conventional liberation war. The study also showed that the code was not just a means of protecting information, but the embodiment of an independent identity and a counter-cognitive authority that protects revolutionary decision-making from manipulation or leakage.

In the end, this conclusion confirms that the code was not only a defense tool, but a symbol of information sovereignty that contributed to the steadfastness of the home front, and then the victory of the revolution over the most equipped armies at the time. This experiment opens new avenues for studying the intelligence dimension of the resistance in Algeria and the Third World in general.

Recommendations of the Study

- The need to document the history of the code in Algeria and teach it academically. It is recommended that the study of code history and communications security be included in Algerian historical and military studies curricula, to highlight this crucial aspect of the national struggle.
- Digitization and archiving of encrypted documents: It is important to convert original models of encrypted messages and documents into verified and archived digital formats, accompanied by technical explanations, to make them accessible to researchers in history and cybersecurity.
- Conducting comparative studies with other revolutionary experiences: The scope of research can be broadened by comparing the Algerian Liberation Army's experience in cryptography with similar experiences

in other liberation movements (such as Vietnam or Cuba), to understand both shared techniques and unique characteristics.

- Launching university research projects on "revolutionary intelligence": It is advisable to encourage academic research on the history of Algerian revolutionary intelligence and link it to modern concepts in cryptography and cybersecurity, in order to build a strategic knowledge base.
- Translating this experience into lessons in modern information security: The experience of the Algerian War of Independence can be leveraged to design curricula that teach the principles of information security and encryption, connecting the past to the present, particularly in light of contemporary cyber warfare challenges.
- Establishing a national museum for the history of communications and the revolution: It is recommended to create a dedicated museum for revolutionary communication tools, featuring code models, transmission devices, and original documents, serving as both a documentary and educational space for future generations.

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