

# Une tentative pour avoir la moyenne.

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# Introduction

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# How to secretly send a message ?

- steganography

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- steganography
- cryptography

But also..

- translation of the message into an obscure language

# Code talkers appeared in the first half of 20th century

Meeting of two conditions :

- The existence of the radio and the phone
- By that time, most of the cipher machines were too slow and fragile to be used for tactical field communications



**Figure 1** – The SIGABA

We speak of the Navajo code talkers who are the best known and whose story is declassified since 1968.

Plan :

- relation between the Navajos and the US in the late of the 19th century
- how Navajo code talkers have been recruited
- study of the Navajo code.

# Navajos and US in the late of the 19th century

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- The long walk
- Boarding schools



# The long walk

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- The journey lasted 18 days
  - Nearly 2000 Navajos died of exposure to elements and starvations

# Boarding schools

At the beginning of the 20th century, many American Indian children were in church-operated boarding schools.

They were forced to

- speak in english instead of their native language
- cut their hair and give up their traditional clothing
- drop their traditional native names and take English ones
- replace their traditional religious practices by Christianity.

They were taught that their cultures were inferior.

## Navajos as code talkers : how they have been recruited

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- Preliminary : the code talkers during the WWI
- Pacific war and the idea of Philip Johnston
- The demonstration

## Preliminary : the code talkers during the WWI

- First use of native American code talkers : Cherokee.

September 1918 : During the Second Battle of the Somme

- They helped to win the battle.
- After WWI, Germany sent students and anthropologists in America in order to study the various tribal dialects of American Indians.

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# Pacific war and the idea of Philip Johnston

Philip Johnston



- at 9 years old, he was asked to serve as an interpreter for a Navajo delegation.
- WWI veteran.
- 1942 : he proposed to the Marine Corps that Navajos and other tribes could be recruited as code talkers.

The major general Clayton Barney Vogel accepted to try the idea.



# The demonstration

Johnston recruited four bilingual Navajos and, on February 28, they went to Camp Elliott for a demonstration.

- Two of the Navajos translated in Navajo typical military field orders and sent it by radio to their companions
- The companions translated the message in english.

Example,

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Translation was done in 20 second instead of the 30 minutes needed by machines at that time.

- May 1942 : 29 Navajos recruit task develop a Navajo code.
- Altogether, between 375 to 420 Navajos participated to the program.

# Efficiency of the Navajos code talkers

Battle of Iwo Jima :

- six Navajo Code Talkers were operating continuously. They sent more than 800 messages. All of the messages were transmitted without error.

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- They also served during the Korean War and at the beginning of the Vietnam War.
- According to the NY times, the Navajo code is the only spoken military code never to have been deciphered.



# Navajo and Navajo code

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- Why the Navajo language was a good choice
- How the code works
- Some flaws of the code
- Some evolutions of the code

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- Extremely difficult to distinguish for uninitiated Navajo Speakers
- Imposture aren't easy to make : it requires to speak Navajo with a good accent.



# How it works

Because of a lack of military terms in the Navajo language, there was the need for a code which consisted in two different parts :

- Dictionary for common military words



NAVAJO CODES NAME OF SHIPS		
SHIPS	TOH-DINEH-IH	SEA FORCE
BATTLESHIP	LO-TSO	WHALE
AIRCRAFT	TSIDI-MOFFA-YE-HI	BIRD CARRIER
SUBMARINE	BESH-LO	IRON FISH
MINE SWEEPER	CHA	BEAVER
DESTROYER	CA-LO	SHARK
TRANSPORT	DINEH-NAY-YE-HI	MAN CARRIER
CRUISER	LO-TSO-YAZZIE	SMALL WHALE
MOSQUITO BOAT	TSE-E	MOSQUITO

<https://www.cia.gov/news-information/featured-story-archive/2008-featured-story-archive/navajo-code-talkers/>

# How it works

- A phonetic alphabet table

A	WOL-LA-CHEE	Ant
B	NA-HASH-CHID	Badger
C	MOASI	Cat
D	CHINDI	Devil
E	AH-JAH	Ear
F	MA-E	Fox

**Figure 2** – correspondance for some letters

<https://www.cia.gov/news-information/featured-story-archive/2008-featured-story-archive/navajo-code-talkers/>

## How it works

- Navajo Code Talkers memorized 17 pages of code during their training.
- It was easier because of their culture of oral transmission.

A code talker answered one of his officers who had asked why Navajos were able to memorize the complex code so quickly :

*For us, everything is memory, it is part of our heritage. We have no written language. Our songs, our prayers, our stories, they are all handed down from grandfather to father to children and we listen, we hear, we learn to remember everything. It is part of our training.*  
*(Power of a Navajo : Carl Gorman, the Man and His Life, by Henry and Georgia Greenberg, 1996)*

# Some flaws of the code

About the code itself :

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In practice :

- Navajos trained at different times and places so they develop different evolutions of the code. The solution to this flaw was to frequently exchange Navajos from one division into another.
- There was not enough code talkers and some battalions remained without the capacity to decrypt and encrypt messages.

# Evolution of the code

- The original dictionary of 211 terms has been progressively expanded to 411.
- Multiple words to spell one letter.

A	WOL-LA-CHEE	Ant
A	BE-LA-SANA	Apple
A	TSE-NILL	Axe

**Figure 3** – multiple correspondances for one letter

<https://www.cia.gov/news-information/featured-story-archive/2008-featured-story-archive/navajo-code-talkers/>



## Conclusion :

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# Declassification and recognition of code talkers after the war

The program has been classified until 1968.

Recognition of code talkers :

- 2000 : the US Congress passed legislation to honor the Navajo Code Talkers and give them special gold and silver congressional medals.
- 2008 : the Code talkers recognition act was signed into law by president George W. Bush, which recognizes every other native american code talker who served in the United States military during WWI or WWII

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But there is still some lack of respect...

- 2017 : during a White House event intended to honor the Navajo code talkers, Trump used the nickname "Pocahontas" to deride Elizabeth Warren, a political opponent.

## Sources used

- <https://www.archives.gov/education/lessons/code-talkers>
- <https://navajocodetalkers.org/>
- <https://www.cia.gov/news-information/featured-story-archive/2008-featured-story-archive/navajo-code-talkers/>
- [https://en.wikipedia.org/wiki/Code\\_talker](https://en.wikipedia.org/wiki/Code_talker)
- <http://www.historynet.com/world-war-ii-navajo-code-talkers.htm>
- [https://www.nytimes.com/2014/06/06/us/chester-nez-dies-at-93-his-native-tongue-helped-to-win-a-war-of-words.html?\\_r=0](https://www.nytimes.com/2014/06/06/us/chester-nez-dies-at-93-his-native-tongue-helped-to-win-a-war-of-words.html?_r=0)