Code Breaking during the Second World War

An Introduction

By

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Communications In Warfare

- Wireless radio caused a revolution in Military Communications
- Leaders could communicate with units instantaneously and vice versa.
- Wireless radio ended the need to lay or string up wire thus saving time and equipment.

Communications during WWI

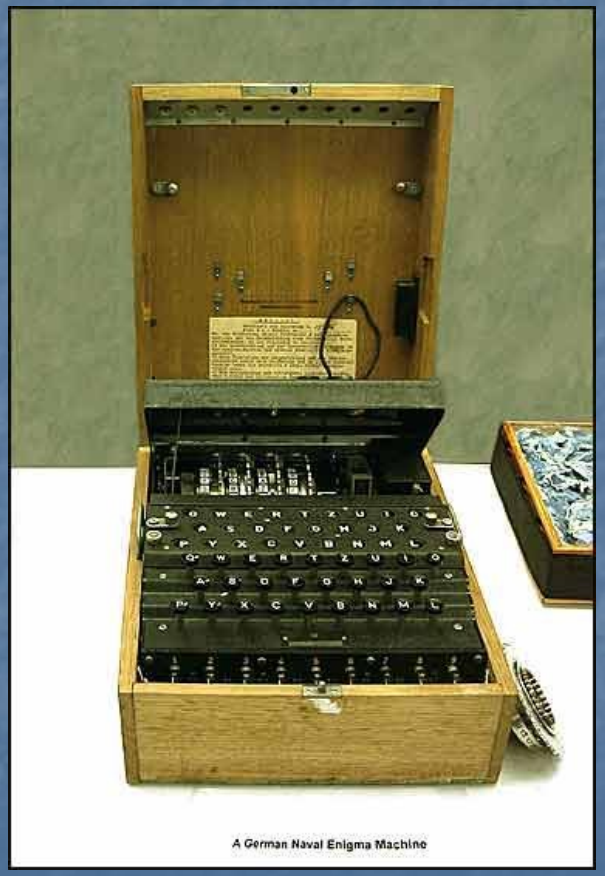
- Wireless was used during World War One
- The effect was minimal due to the greater destructive power of weapons which resulted in a general stalemate on the Western Front.
- Codes were developed to keep combatants from listening in on each others plans and communications.
- Codes were routinely broken.

Codes and machines developed in the interwar period

- The need for better ways to secure codes was clear.
- Dutch Naval officers began work on a machine to encrypt messages.
- The Germans acquired the patent in 1918.
- A military model was adopted in 1926.
- This machine was known as the Enigma.

The Enigma

- The enigma machine was a typewriter device.
- The Enigma used rotors that were set to a combination which encrypted a plain text message to a pattern of letters.
- It could be set many different ways.



A German Naval Enigma Machine

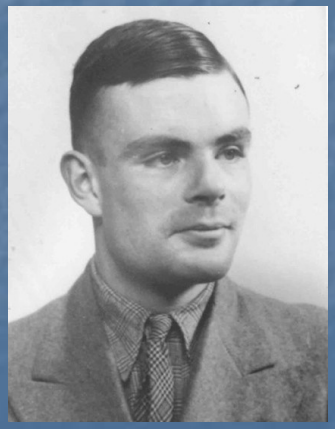
The Enigma

- Thus there were numerous combinations that could be set.
- Letters would be encrypted to different letters and not always the same letter.
- The message recipient merely set the rotors in the same combination as the sender and deciphered the message by typing in the code.
- The Germans thought this machine to be undecipherable by merely ensuring the security of the rotor settings' combinations.

However, the British had a plan….

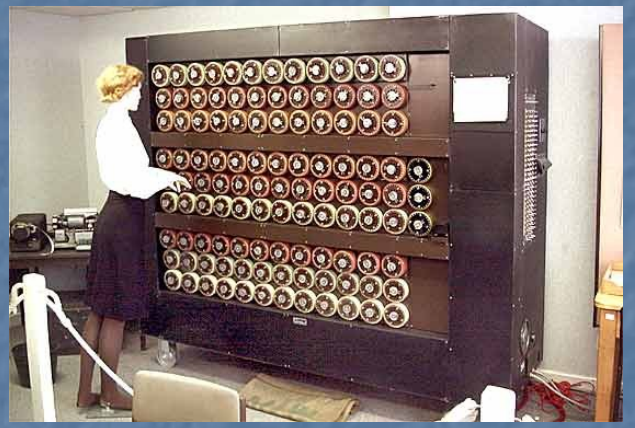
The Code Breakers

- Polish scientists began studying the Enigma before the war.
- They contacted the British and a special operation was set up at Bletchley Park, a manor in Britain.
- An incredible collection of scientists, mathematicians, and even crossword puzzle experts were assembled to break the Enigma code.



The Code Breakers

- The Code Breakers got to work and were able to break the codes.
- It was not easy and took constant effort.
- They developed many machines that helped decrypt messages including one of the world's first computers.

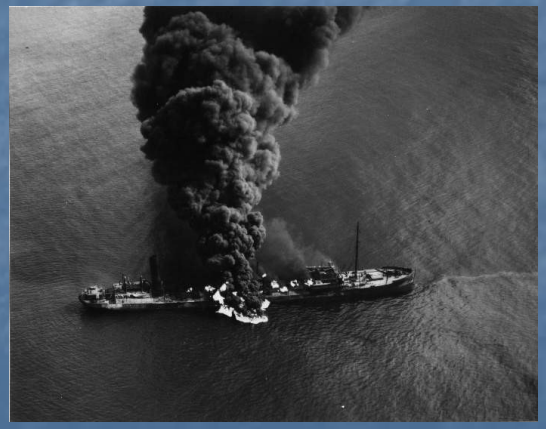


The effects

- The operation at Bletchley Park began to have a positive effect.
- In North Africa and especially in the Battle of the Atlantic.

The Battle of the Atlantic

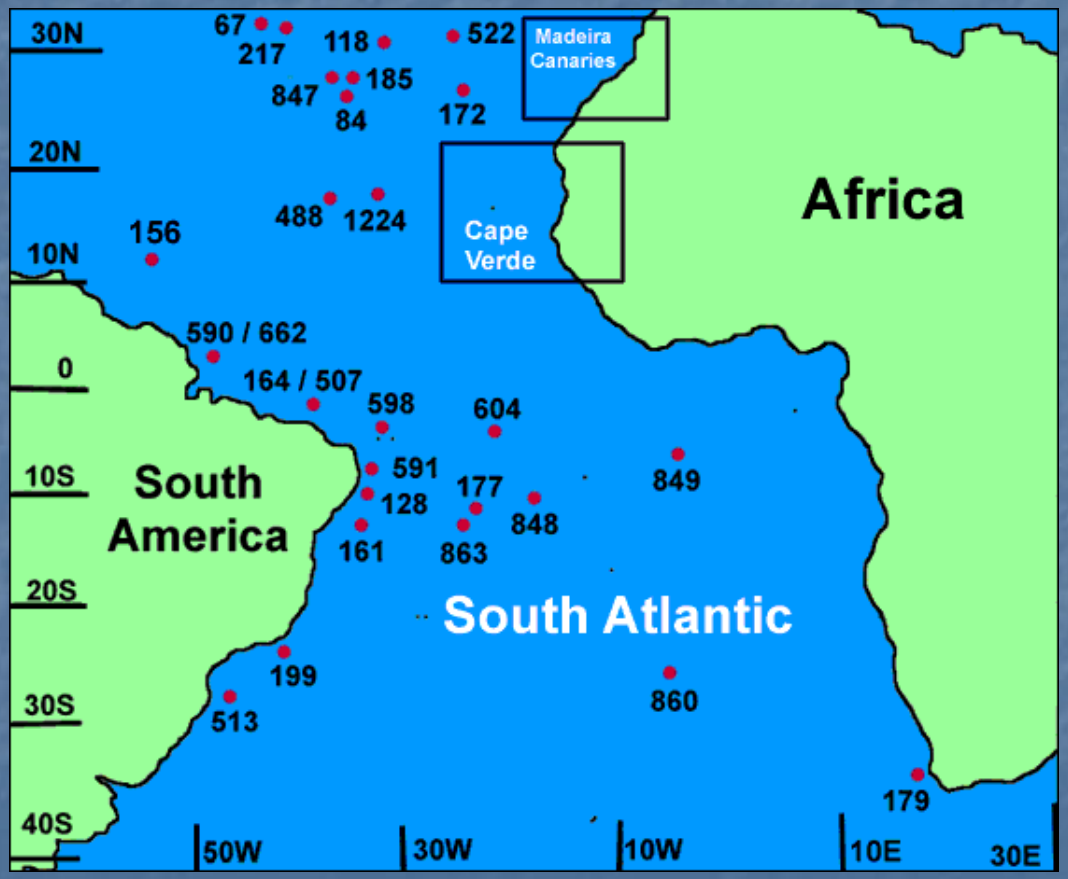
- The U-Boat menace in the Atlantic was a primary focus at Bletchley Park.
- Allied shipping losses were high early in the war.
- This threatened Britain's ability to carry on the fight.



The Battle of the Atlantic (cont.)

- Enigma components were captured from U-Boats.
- This led to Bletchley Park to be able to decipher German communications with U-Boats.
- Allied forces could then locate U-Boat positions and reroute convoys.

U-Boat losses increased, the red dots indicate U-Boats sunk.



Bletchley Park's contribution to victory.

- Bletchley Park's operations gave the Allies the ability to decipher German codes at various times during the War in Europe.
- How they did this and how much of an effect it had is for you to find out.
- Happy Hunting!

News Chronicle

HITLER DEAD

Doenitz, new Fuehrer, says: We fight on

WEHRMACHT ORDERED TO MAINTAIN DISCIPLINE

All the generals must surrender

Berlin's garrison heroled togeller in last stand

HIMMLER WAS OUT OF TOUCH

Code Breaking in the Pacific

- Code breaking was also an important part of the pacific war.
- U.S. Naval intelligence was routinely able to decipher Japanese codes.
- This had a dramatic effect.

The Battle of Midway

- The most stunning example of U.S. Naval code breaking resulted in the Battle of Midway.
- By deciphering Japanese codes the U.S. Navy were able to counter a planned attack at Midway Island in 1942.
- The result was a massive victory that was the turning point of the Pacific War.

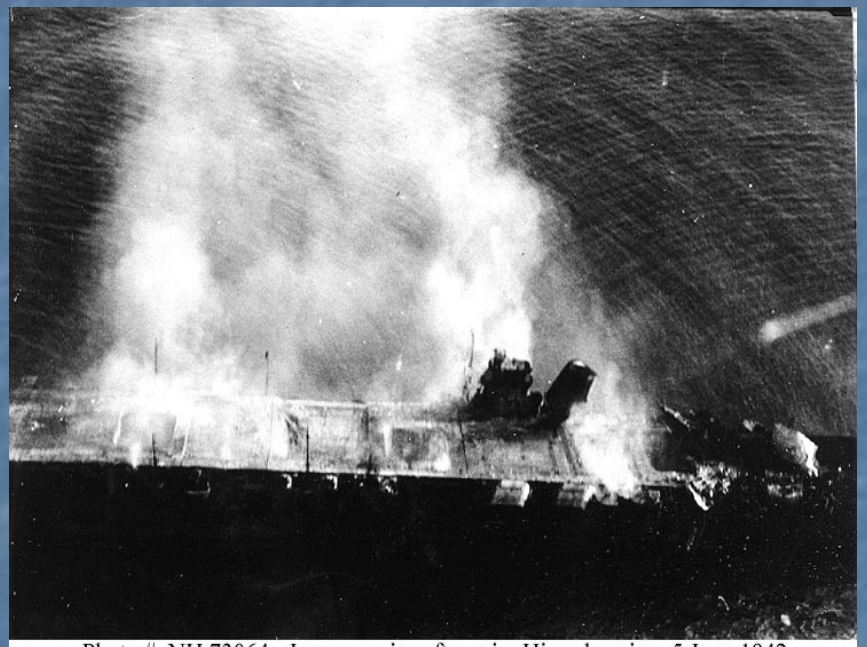
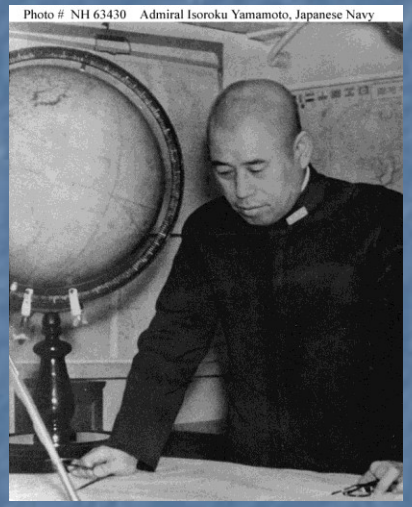


Photo # NH 73064 Japanese aircraft carrier Hiryu burning, 5 June 1942

Another coup for Code Breakers

- In 1943, U.S. naval intelligence intercepted messages that outlined a tour by the Japanese Admiral Yamamoto.
- He was the commander of the Japanese Navy and an excellent leader.
- The deciphered messages allowed American Air forces to intercept and shoot down his plane.



Conclusion

- The importance of code breaking operations in World War II is clear to see.
- A good place to study this is at http://www.bbc.co.uk/history/war/wwtwo/enigma_03.shtml.
- The end.

References

- http://www.history.navy.mil/photos/events/wwii.pac/midway/midway.htm
- http://www.gwpda.org
- http://www.bbc.co.uk/history/war/wwtwo
- http://www.bletchleypark.org.uk
- http://www.alanturing.net
- http://www.uboat.net
- http://www.bletchleypark.net/stationx/

Picture Descriptions in order of appearance

- WWI German soldiers cutting wire.
- WWI US radio operators (Field Artillery).
- The Enigma machine.
- Winston Churchill.
- Marian Rejewski.
- Alan Turing.
- Turing's "Bombe" computer.
- Lorenz deciphering machine.
- Field Marshall Montgomery.

Pictures cont.

- Destroyer, HMS Hogue.
- Frigate, HMS Barham.
- Tanker.
- U-505.
- U-Boat.
- Map of U-Boat losses in So. Atlantic from U-Boat.net.
- US Coast Guard crew.
- Newspaper headline.
- Japanese carrier Hiryu.

Pictures cont.

- Admiral Yamamoto.
- Painting of aerial ambush of Yamamoto’s plane.
- Bletchley Park mansion.