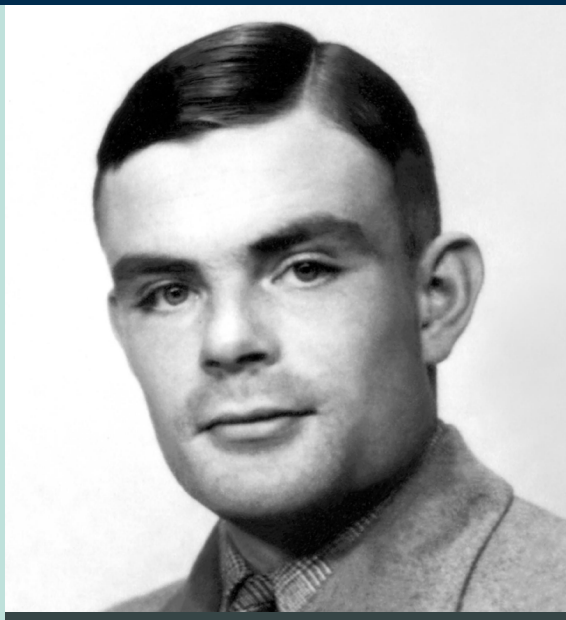
Alan Turing (1912–1954) and LGBTQ+ persecution

Alan Turing was a pioneering English mathematician and computer scientist, who had a huge impact on the twentieth century. Turing's work on computing helped to lay the groundwork for our modern world. In the 1930s he developed the idea of a machine that could be programmed to make calculations: the basics of today's modern computer. He designed the software for the world's first computer in the 1940s. He also wrote about the possibility of artificial intelligence (AI). He is best-known today for his work cracking the German Enigma code during the Second World War, work that saved millions of lives. But, rather than being honoured by the country he helped save, Turing died forgotten and disgraced. Why? Because as well as being a genius, Turing was gay at a time when his sexuality was a crime.



Contributer: © Alpha Historica / Alamy Stock Photo

Alan Turing (1912-1954), a British mathematician, is widely considered to be the father of theoretical computer science and artificial intelligence.

Turing's early computing research

In 1936 Turing wrote a paper suggesting 'universal computing devices' (later nicknamed "Turing Machines") could be built to carry out any type of calculation so long as it was programmed with the method to do so. Until then the idea of a machine being able to do this was considered impossible. Turing's work was widely praised in America, where Turing spent some time working. It also meant that when war broke out, Turing was at the top of the list when the British government was looking for people to help break German military codes.

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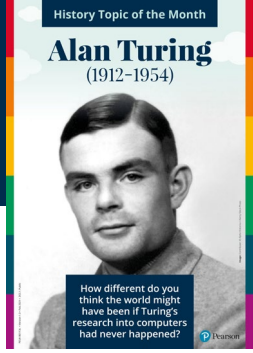
A German Enigma machine. You can see the rotor settings at the top. The user would type the message using the keys. The replacement letters would light up above the keyboard.

Enigma

When the Second World War began in 1939, the British government had a major challenge. The German military used the Engima code to disguise its messages. The code used what is known as a substitution system. A basic substitution system is where one letter in the alphabet is replaced with another – for example, 'A' could be replaced by 'T'. The Engima code however was much more complex.



The machine contained three rotors which kept changing the replacement letter while the message was typed. Each of these rotors moved as each letter was entered. This meant entering the same letter each time did not mean you would get the same letter coming out at the end: so, for example, if you entered 'AAA' rather than 'TTT' you might get 'TDK'. There were also other settings that swapped or moved certain pairs of letters. A letter could never be encoded as itself – so, no matter what happened, 'A' could never appear as 'A'.

All this meant that the message sent looks like a completely random set of letters. It can only be decrypted if you know the exact setting of the machine when the message was written. Unfortunately, there were 158,962,555,826,360,000 ways of setting up the machine. And the German military changed the setting every single day.

Breaking the code

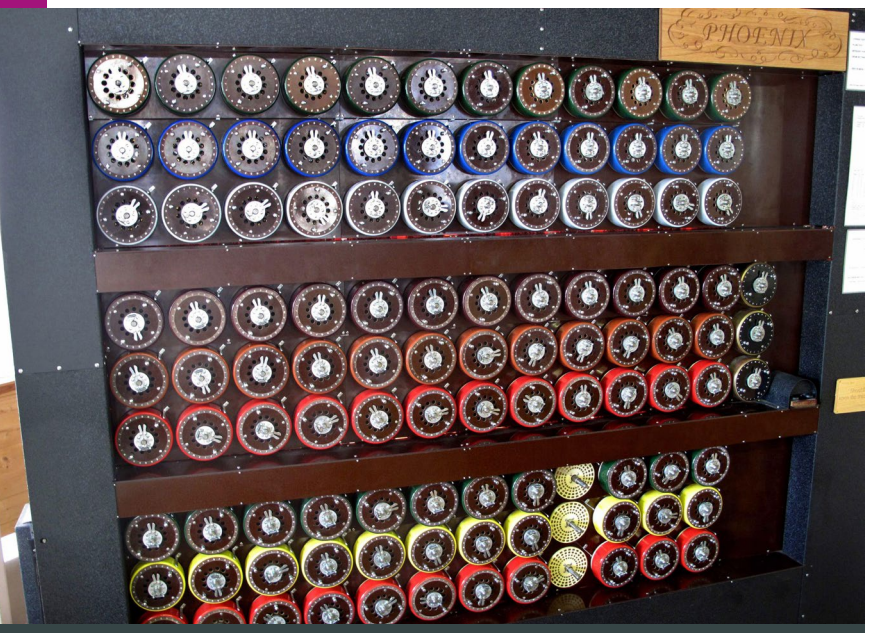
The British government set up a code-breaking centre at Bletchley Park. Hundreds of people were recruited to work there as cryptographers (code-breakers) – from academics to champion crossword solvers.

The 'old fashioned' method of breaking the code – basically just careful trial and error – meant Enigma messages took weeks to break, by which time they were useless. For the Allies to take advantage, the messages needed to be broken as quickly as possible after being sent.

Contributor: © Gordon Bell/Shutterstock

Bletchley Park in Buckinghamshire , the location of the British code-breakers in the Second World War. During the war, the British code-breaking team worked at this building, handling thousands of intercepted messages a day.

History Topic of the Month: Alan Turing (1912–1954) and LGBTQ+ persecution



Contributer: © Bletchley Park - Andrew Nicholson / Alamy Stock Photo

Rebuild of Turing Bombe at Bletchley Park

For Turing the answer was obvious: this was a job for a machine. Turing designed a machine called the Bombe. This was an early computer which searched for possible machine settings to decode the message. Its dials and rotors were set up to mimic Enigma machines and quickly run through different possible settings and combinations. This reduced the possible settings to a much smaller number – the cryptographer could then work with this small number of settings to correctly decode the message.

Using the Bombe, Turing's team was able to work out much more quickly the settings being used by the machines that day. With the code broken, the Allied forces could know what the Germans were planning to do almost instantly.

Changing the war

However, many people were suspicious of these machines – despite Turing's decrypted messages already helping reduce the number of Allied ships lost to German U-boats (submarines). To make a real impact, Turing needed more money – the Bombe cost £100,000 (about £4m today) to build.

Turing wrote to Prime Minister Winston Churchill in October 1941, explaining what he was doing, the impact it was having and how he needed more resources to speed up their work. Churchill was impressed – and ordered the military to give Turing everything he needed.

Eventually 211 Bombes were built. At its peak the team at Bletchley Park were decoding 3,000 messages a day– by the end of the war it had decoded 2.5 million messages. Dwight D Eisenhower, the commander of the Allied forces, claimed their work reduced the length of the war by two years and saved millions of lives.

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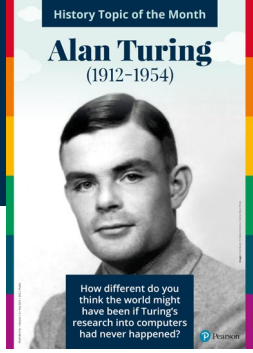


Turing after the war

Turing was awarded an OBE – but his work at Bletchley Park was top secret. The British Government didn't want anyone to know how successful it had been at breaking codes: those skills might come in handy again in the future, and they didn't want any future enemies to know about them. Turing, and the other people at Bletchley Park, signed the Official Secrets Act banning them from ever talking about what they had done during the war.

After the war, Turing continued to be a pioneer in computer programming. He developed the idea of the Turing Test for artificial intelligence. This argued a computer was able to 'think' if it was able to trick a person in conversation into thinking they were talking to another person, not a machine. Turing tested these ideas by building the very first chess playing computer.

However, Turing's career was about to be cruelly ended.

Sexuality laws of the 1950s

In Britain , until 1967, being gay was a crime. A law passed in 1885 had made any physical relationship between two men a crime – whether it was in public or not. Two people could be arrested if it was found they had a relationship in the privacy of their own home. This remained a criminal offence until 1967.

Any man found to be in a gay relationship could face arrest, prosecution and disgrace. Being gay was seen by many as 'unnatural' and even dangerous. This meant LGTBQ+ people were forced to live lives of denial and secrecy.

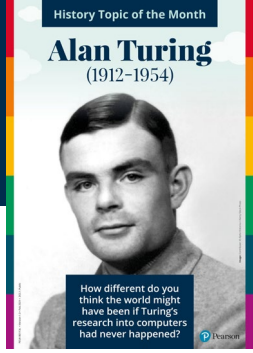
Police arrests increased after the war. The police sometimes used undercover officers to entrap gay men. Hundreds of men were arrested and put on trial. Punishments ranged from fines, prison time and medical 'treatments' to 'cure' the men of their feelings.

People were forced to hide who they were. LGTBQ+ people could be easily blackmailed if their secrets were known. If discovered they could lose everything.

Turing's arrest and prosecution

Turing was aware of his sexuality from an early age. He had been briefly engaged to a fellow worker at Bletchley Park, Joan Clarke. She accepted his sexuality, but Turing eventually decided not to go through with the marriage.

In January 1952, Turing started a relationship with Arnold Murray. That month, Turing's home was burgled. Turing reported the crime to the police – and during his report admitted he and Murray were in a relationship. Turing was immediately arrested by the police – who were much more interested in his sexual orientation than the burglary.



In March, Turing was convicted in court. He only escaped prison because he agreed to a hormone 'treatment'. This was designed to reduce his libido and desire to be with a man again. The treatment was hugely uncomfortable and resulted in humiliating physical changes, including impotence and growing breasts.

After his conviction Turing had his security clearance removed and was banned from working with British Intelligence. He was also banned from visiting America. Turing was disgraced. In June 1954, he took his own life.

Turing's legacy

Immediately after his death, Turing was forgotten. It wasn't until the mid 1970s that the work done at Bletchley Park started to be declassified by the government. Until then people had no idea Britain had broken the German war codes – or that Turing had been vital to doing it. There were no memorials to Turing or any other code-breaker – it wasn't until 1994 that Manchester named a road after him, the first public memorial to Turing.

Contributer: © John Bracegirdle / Alamy Stock Photo

Blue plaque on Warrington Crescent, Little Venice, London

Slowly articles, books, plays and film and television dramas started to explore Turing's life. Almost fifty years after his death, he was seen as a hero who helped save millions of lives. His early work on computers also became more widely known – and understood as helping to change the world – as the Internet grew.

In September 2009, the Prime Minster Gordon Brown issued an unequivocal apology on behalf of the government to Alan Turing 55 years after his death.

Officially though, he was still a convicted criminal. Petitions and campaigns were started to get Turing a pardon. Eventually, in 2014, the pardon became law. However, thousands of people arrested under the same law are still legally criminals – and they deserve pardons as much as Turing.

Turing continues to be honoured today – later this year he will even appear on the new £50 note. A new £100 million government scheme to support students to study and work will also be named after Turing.

Turing's life shows that even the best and brightest of us can become victims of official prejudice. But it also makes us hope that, over time, we can overcome these prejudices.

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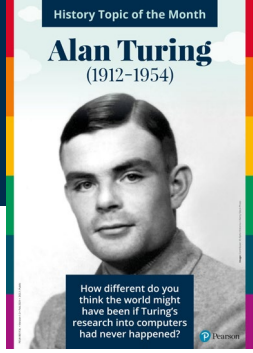

Discussion points

- How different do you think the world might have been if Turing's research into computers had never happened?
- Imagine what your life would be like if you had to make sure that you had to keep who you are a secret. How do you think this would change your behaviour?
- To keep the secret that the Enigma code had been broken, the Allies had to make difficult choices. Sometimes this meant not acting on information on the messages – and sacrificing lives – so as not to let the Germans suspect the code had been broken. How would you feel about making impossible choices like this?
- Eisenhower said the work at Bletchley Park shortened the war and saved millions of lives – why do you think this was?
- Why do you think it was important to people that Turing – and others convicted for being gay – received a pardon?

Reading list

Books

Alan Turing: The Enigma - Andrew Hodges

Prof: Alan Turing Decoded - Dermot Turing

Alan Turing: The Enigma Man - Nigel Cawthrone

Breaking the Code - Hugh Whitemore (award winning play about Turing's life)

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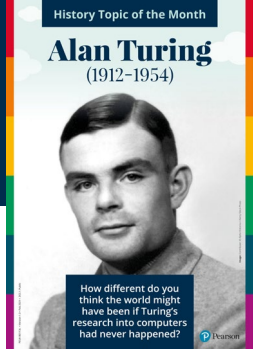

Articles

Bletchley Park

The Turing Digital Archive

Alan Turing: Creator of modern computing

Alan Turing Biography: Computer Pioneer, Gay Icon

How Alan Turing Invented the Computer Age

How did the Enigma machine work?

Cracking the Enigma code: How Turing's Bombe turned the tide of WWII

Turing named the code breaking machine "Christopher"

https://www.youtube.com/watch/ASfAPOiq_eQ

LGBT

A short history of LGBT rights in the UK

A timeline of LGBTQ communities in the UK

Coming out of the dark ages

Letters reveal Alan Turing's battle with his sexuality

PLACES TO VISIT

Bletchley Park

Alan Turing's birth place

Take a look at Pearson's Diversity and Inclusion in History webpages for more great content.