



## Turing, Alan (1912-1954)

by Tyler Curtain

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It would be difficult to overestimate the importance to the modern world of the mathematical, philosophical, and cryptographic work of Alan Mathison Turing. A gifted mathematician, Turing is remembered today as one of the founders of computer science.

The gay and lesbian community remembers Turing not only for his work on computers and the cracking of the Enigma machine code during World War II, but also because of his needless, horrific death. He committed suicide at the age of 41, two years after his arrest, conviction, and forced chemical castration for a homosexual encounter. Though he died at an early age, a victim of British homophobia, he had already created whole new ways of thinking about computers, biology, minds, and humanity.

### Education

Alan Turing was born to upper middle class parents on June 23, 1912. His father and mother spent most of his childhood in India, where his father served in the Indian Civil Service. He was educated in the British public school system (the equivalent of "private" schools in the United States), and then went on to take a degree with distinction in mathematics at King's College, Cambridge.

Turing was a shy boy, admonished by his schoolmasters for not being "properly" athletic or studious. He was indifferent to a good deal of his school work, though he often excelled in examinations, and he early demonstrated his aptitude for math and science.

During his years at Sherburne School, Turing fell in love with a boy one year ahead of him in school, Christopher Morcom. The boys bonded over their shared passion for science. Turing's beloved Christopher died of tuberculosis at the age of 18. His death profoundly affected Turing and may have spurred his intellectual achievements.

Rather naive and somewhat unworldly, Turing was never particularly concerned to hide his sexuality, and throughout his life he spoke openly of his attraction to men.

At King's College, Cambridge, where he was an undergraduate from 1931 to 1934, he pursued his interest in quantum mathematics, probability, and logic. Although he was not a member of the famous homosexual literary and philosophical circles at Cambridge, he flourished in the special ambience and accepting atmosphere of King's College, which provided him his first real home.

One piece of evidence that his brilliance was early recognized by his tutors is that in 1935 he was elected a Fellow of King's College. After a stint at Princeton University, where he took his Ph. D. in 1938, he returned to Cambridge, where he first encountered the German Enigma machine.



**Top:** Alan Turing memorial statue in Sackville Park, Manchester, England.  
**Above:** A rebuilt "bombe," one of the early computers Turing designed to decode German communications during World War II. The photograph of the Alan Turing memorial was created by Wikimedia Commons contributor Imno. Both images appear under the GNU Free Documentation License.

## Early Success

Turing's first professional success came with solving a central problem in the philosophy of mathematics. He showed that one could *not* construct a universal machine, or algorithm, that proved whether any given mathematical statement was itself provable. The problem had been posed in 1900 by a famous German mathematician, David Hilbert.

In the course of solving Hilbert's *Entscheidungsproblem* (Decision Problem), Turing invented what is now known as the Universal Turing Machine. A Universal Turing Machine is a machine that can simulate any other machine. What he developed is what we have come to know as "the computer," what you are using to read this entry and a machine that can solve any number of general problems given the appropriate programming.

## Cracking the Enigma Code, Developing the Computer

During World War II, Turing was called on to help decode German messages that had been encrypted with a device known as "Enigma." Turing's work with other scientists at Bletchley Park, where British cryptographers worked feverishly to break the top-secret codes of the German armed forces, was crucial to the Allied success in the war.

Turing's work at Bletchley Park and the mathematics behind his work on the Universal Turing Machines led him to devise one of the earliest proposals on how to construct a computer. He conceptualized the world's first semi-programmable computer, Colossus, which helped crack the German codes. This work also led him to wonder if machines would one day "think."

To answer this question he wrote what has come to be one of the central essays in the philosophy of mind and the field of artificial intelligence. His essay, "Computer Machinery and Intelligence," describes a procedure for ascribing intelligence or "thinking" to a machine. This procedure is known now as "the Turing Test."

The Turing Test is simple in design, but side-steps a number of problems with traditional reasoning about intelligence. Turing imagined that in order to say that a computer is "intelligent" or that it *thinks*, one would need to give it a task to do on which its performance would be indistinguishable from that of a human. Turing called his test an "imitation game": "It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman."

In Turing's test, the woman is then replaced by a computer. If the computer can convince the interrogator that it is a woman at the same rate as the real woman did, then the computer can be said to think. Researchers have argued about the importance of gender to Turing's thought experiment, and the relationship of his homosexuality to how he framed the question. What is striking, though, is that Turing replaced the metaphysical question of "Can machines think?" with a practical problem of whether or not a human might distinguish a computer from another human in a conversation.

## Disaster

After pioneering in further work in computer and software design and in artificial intelligence, and after being honored for his war work with an OBE (Officer of the British Empire) in 1946 and elected a Fellow of the Royal Society in 1951 at an unusually young age, in 1952 Turing's life took an abrupt turn for the worse.

In 1948, Turing had accepted a position as Deputy Director of the Royal Society Computing Laboratory at the University of Manchester and moved to that city, where he soon became involved with a young working

class man, Murray Arnold, who would later burglarize his home.

After reporting the burglary, Turing was arrested and prosecuted for what was then known under British law as "Gross Indecency," a section of the Criminal Law Amendment Act of 1885 (also known as the Labouchère Amendment), under which Oscar Wilde had also been charged in 1895.

Turing was offered a stark choice: go to prison or submit to the administration of the hormone estrogen. This procedure was known as "organo-therapy," a form of aversion therapy designed to destroy his sex drive. It was a type of chemical castration.

The administration of the female hormone left Turing impotent. He also developed breasts. Two years after his arrest, and one year after this coerced and barbaric "therapy," Alan Turing used cyanide to kill himself.

He left no note, and the circumstances of his death were inadequately investigated and perhaps left deliberately murky to spare his mother anguish. She believed his death to be accidental. Most commentators believe, however, that he committed suicide by eating an apple smeared with cyanide-laced jam.

If one doubted that a homophobic society and the supposedly "neutral" sciences used to enforce its prejudices and expectations can cause great harm, one need only examine Turing's death to understand its eagerness to punish its gay and lesbian members. Notwithstanding the fact that he may have been the most brilliant scientist of his generation, someone whose work in deciphering the German codes during World War II played a major role in achieving Allied victory, Turing was nevertheless sacrificed to the cold war hysteria over homosexuality.

Turing died on June 7, 1954.

## **Bibliography**

Hodges, Andrew. *Alan Turing: The Enigma*. New York: Walker and Company, 1983.

\_\_\_\_\_. *Turing*. The Great Philosophers Series. Ray Monk and Frederic Raphael, consulting editors. New York: Routledge, 1997.

Prager, John. *On Turing*. Belmont, Calif.: Wadsworth, 2001.

Turing, Alan Mathison. *The Collected Works of A. M. Turing*. P. N. Furbank, General Editor. London: North-Holland, 1992.

[www.turing.org.uk/turing/Turing.html](http://www.turing.org.uk/turing/Turing.html).

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