

Alan Turing and the Historical Accuracy of *The Imitation Game*

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## INTRODUCTION

Alan Mathison Turing was born to Julius Mathison Turing and Ethel Sara Turing on June 23, 1912, in London.<sup>1</sup> He was a critical and highly influential codebreaker during World War II as well as an esteemed mathematician following the war. Turing was responsible for the eventual breaking of the Nazi Enigma code and the creation of the first plans for artificial intelligence and a digital “computer.”<sup>2</sup> The film *The Imitation Game* is based on Turing’s actual life experiences, specifically those surrounding his involvement with codebreaking during World War II. While the film is a fairly accurate portrayal of Turing’s life and accomplishments, it focuses primarily on his achievements as a codebreaker during World War II, therefore lacking in other equally important events Turing was involved with throughout his lifetime. It is important to also learn about these events when learning about Alan Turing because his legacy is not defined by his time as a codebreaker alone, while World War II and his involvement is indeed a significant part. However, there are a number of other projects Turing was involved with that are just as significant. Turing’s vision for future technology is something that the effects of which can be seen all around the world today. Due to this, he can be considered to be the father of modern computer science and artificial intelligence as we know it. The film touches on some of Turing’s relationships with many people but fails to go more in-depth on some of the most important relationships and doesn’t mention some at all. Another aspect of Turing’s life that the film fails to discuss at all is his work as a mathematician outside of World War II. Some of the

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<sup>1</sup> Newman, M. H. A. "Alan Mathison Turing. 1912-1954." *Biographical Memoirs of Fellows of the Royal Society* 1 (1955): [www.jstor.org/stable/769256](http://www.jstor.org/stable/769256), 253.

<sup>2</sup> *The Imitation Game*. The Weinstein Company, 2015.

accomplishments that he made following the war were just as, if not more, important than those he made as a codebreaker or while developing the first artificial intelligence.

## RELATIONSHIPS

### Christopher Morcom

Christopher Morcom was a promising student and peer of Alan Turing's at Sherborne School. Turing greatly admired Morcom and, being a year younger, looked up to him. According to Canon D.B. Eperson, a staff member at Sherborne School, Morcom and Turing were "the most brilliant boys that it was our privilege to teach at school."<sup>3</sup> Morcom and Turing quickly became close friends and for Turing, the tight-knit friendship would eventually grow into his first love. Morcom had been Turing's first real friend and companion. They would spend hours of time together studying and Turing was finally no longer lonely. Turing would often share his academic work and findings with Morcom who was open to hearing everything that Turing had to say. After Eperson's class they could be found discussing ideas such as relativity. Turing found that Morcom went to the library during his private study and often went there himself. Turing wrote: "I so enjoyed Chris' company there, that ever since I always used to go to the library instead of my study." Soon after Morcom was accepted to Cambridge, he died of his tuberculosis at age 18. He had been taken to London by an ambulance, undergone two operations, and endured six days of pain before passing at noon on February 13, 1930. Turing was devastated at the loss of his friend. While Turing had been aware of Morcom's illness, no one had told him that his life had been in constant danger. Turing and his mother wrote a number

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<sup>3</sup> Eperson, Canon D. B. "Educating a Mathematical Genius: Alan Turing at Sherborne School."

of letters to Mrs. Morcom sending their condolences for the loss of her son, something to which Mrs. Morcom was forever grateful. Christopher Morcom was a key person in the life of Alan Turing, perhaps the most important. Without Morcom, Turing may never have gone on to pursue his path in mathematics, codebreaking, and artificial intelligence.<sup>4</sup>

### **Joan Clarke**

Alan Turing met Joan Clarke in June of 1940 when they were both recruited to be codebreakers during World War II. She was the only woman working there among many men. Turing quickly befriended Clarke and would manipulate their schedules so that the two could work together in their spare time. The two went out to the movie theater and spent some of their days off together. Turing eventually proposed marriage to Clarke and she gladly accepted. However, he decided to break off the engagement due to his homosexual tendencies which he figured would impede the relationship and cause it to not work out. Turing told Clarke about his homosexuality and while he was not sure what kind of response he would receive; he certainly was not expecting her to be so unfazed. She reportedly had suspicions about Turing the whole time.<sup>5</sup> This relationship with Clarke was critical to Turing's development as a person and to his legacy as a mathematician and codebreaker. It was his second real friendship after Christopher Morcom and his first time really getting to know someone of the opposite sex besides his family. Without Clarke's support and encouragement, Turing may never have pursued the path he did following the war.

### **Arnold Murray**

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<sup>4</sup> Hodges, Andrew. *Alan Turing: the Enigma*. Princeton, NJ: Princeton University Press, 2014.

<sup>5</sup> Hodges.

Arnold Murray was a man searching for his identity. He longed to have a perfect relationship with a woman, but knew when he was with men he did not feel any sense of “putting on a performance.” He was often called a “Mary Ann” because of his sensitivity and intelligence. While contrary to the public beliefs at that time, homosexuality was to him considered to be an elitist group ideology or something he aspired to be. Turing met Murray passing on the street and invited him for lunch in the restaurant across the street. The two were instantly attracted to each other and would develop a sexual relationship. It was this relationship, though Turing had more like it, that was the cause of his conviction in 1952. The Criminal Law Amendment Act of 1885 was the piece of legislature that Turing was convicted under. A part of the Act was an attempt at effectively abolishing homosexuality from Britain, especially when it came to men having sexual relationships with other men.<sup>6</sup> Section 11 of the Act states:

Any male person who, in public or private, commits, or is a party to the commission of, or procures or attempts to procure the commission by any male person of, any act of gross indecency with another male person, shall be guilty of a misdemeanor, and being convicted thereof shall be liable at the discretion of the Court to be imprisoned for any term not exceeding two years, with or without hard labour.<sup>7</sup>

Following his conviction, Turing accepted chemical castration so that he wouldn't have to go to prison.<sup>8</sup> Tragically, on June 7, 1954, Alan Turing committed suicide in his home and was found by his housekeeper.<sup>9</sup>

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<sup>6</sup> Burnie, Robert William. “The Criminal Law Amendment Act.” London, 1885.

<sup>7</sup> Burnie.

<sup>8</sup> Hodges.

<sup>9</sup> Newman, 253.

## WORK BEYOND WORLD WAR II

### The Turing Test

While the creation of the Turing Test began during World War II, it was perfected by Turing in 1950. The Turing Test was a test created by Alan Turing in order to determine the overall intelligence of “thinking” machines. It was a way to compare artificial intelligence to the human brain and better understand its limits and overall potential. The Turing Test was also known as the Imitation Game, thus sparking the inspiration behind the name of the film. Turing claimed that the computer imitates the human and he compared this interaction to the interaction of two humans playing chess.<sup>10</sup> The basic idea behind the Turing Test is that a machine will pass it if a human engages in a conversation with that machine and cannot tell if it is machine or human. The test is still used today,<sup>11</sup> another example of Turing’s far-reaching influence and legacy.

### Building The First Computer

In 1945, Alan Turing designed the ACE or Automatic Computing Engine. The design itself “was the first relatively complete specification of an electronic stored-program general-purpose digital computer.”<sup>12</sup> The Pilot Model ACE ran its first program on May 10, 1950 and automatically became the fastest computer in the world. Turing’s design helped employ

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<sup>10</sup> Hernandez-Orallo, Jose. "Beyond the Turing Test." *Journal of Logic, Language, and Information* 9, no. 4 (2000): [www.jstor.org/stable/40180237](http://www.jstor.org/stable/40180237), 447.

<sup>11</sup> Hernandez-Orallo, 448.

<sup>12</sup> Copeland, B. Jack, and Diane Proudfoot. "What Turing Did after He Invented the Universal Turing Machine." *Journal of Logic, Language, and Information* 9, no. 4 (2000): [www.jstor.org/stable/40180239](http://www.jstor.org/stable/40180239), 491.

others to create increasingly more complex and useful computers such as the Bendix G15 Computer and the MOSAIC Computer.<sup>13</sup> While Turing did not win the race for building the world's first digital computer, he did greatly influence its production and design the successor of the first digital computer called the Ferranti Mark I. The Ferranti Mark I was also the first computer that was commercially available and ten were sold.<sup>14</sup>

### **Artificial Intelligence**

Alan Turing was one of the first of many to begin conducting research in the field known today as artificial intelligence. He first began giving the topic considerable amounts of thought during his time as a codebreaker during World War II. He believed in the possibility of computing machines being able to learn from experience as well as solve complex problems by searching through the “space of possible solutions.”<sup>15</sup> Turing published a number of reports, lectures, speeches, and other works sharing his ideas and theories on artificial intelligence.<sup>16</sup> One such lecture called “Intelligent machinery, a heretical theory” explores these. Turing challenges the thought that machines cannot think for you. He claims that computing machines are capable of far more than anyone believes. They can solve problems, test formulas, prove equations, among other things. Machines do not break down or make mistakes when completing calculations like humans are prone to. While Turing acknowledges that there are bound to be moments where machines make mathematical mistakes, the chance of a human making mistakes

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<sup>13</sup> Copeland, 491.

<sup>14</sup> Copeland, 492.

<sup>15</sup> Copeland, 494.

<sup>16</sup> Copeland, 495.

is much higher than a machine. He believes that machines “will stimulate the behavior of the human mind very closely” and aid humans in making new discoveries that can better the world as we know it. Turing says that good can come from taking advantage of these computing machines and using them to think for us and find solutions to complex problems.<sup>17</sup>

## CONCLUSION

The legacy of Alan Turing is remarkable in many ways. Not only did he manage to impact such a vast number of people as a mathematician and as a codebreaker, but also as a person in general. His forward-thinking tendencies and overall perception of the world around him is something still very much appreciated around the world today. His courage as a codebreaker, mathematician, gay man, and more is what led him to become such an increasingly more well known and important historical figure. He stood in the face of discrimination and adversity because of his sexual orientation and accomplished some of the greatest achievements that the modern world has ever seen. The film *The Imitation Game* does a thorough job covering the life of Alan Turing and specifically his time as a codebreaker during World War II. However, besides his pivotal accomplishments during the war, Turing should also be remembered for his other achievements because they are just as influential and important. Alongside this, the film also either leaves out important relationships of Turing’s or does not go into enough detail explaining them. All these aspects are crucial to understanding Turing’s life and legacy. Without Alan Turing to pave the way through research concerning artificial intelligence and mathematics, society today would be very different and most likely lacking in many of the technological and

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<sup>17</sup> Turing, Alan. “Intelligent machinery, a heretical theory.” Lecture presented to “51 Society,” Manchester, 1951.



scientific advancements that we have taken for granted. Perhaps the most influential man of his time, Alan Turing's legacy is one of hope, achievement, bravery, and intelligence.

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