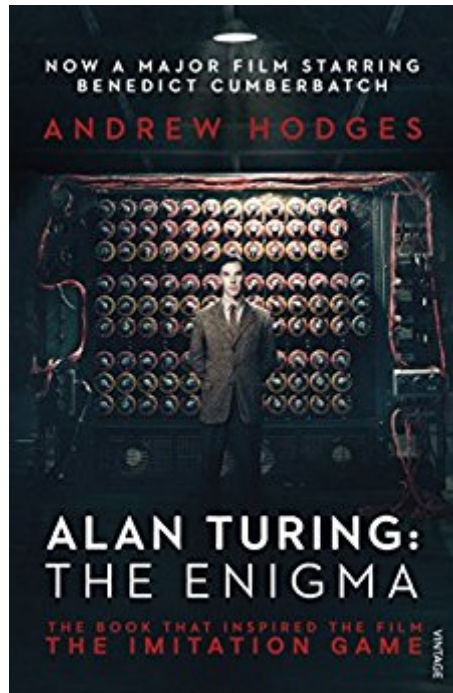




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# Alan Turing: The Enigma



## Synopsis

The official book behind the Academy Award-winning film *The Imitation Game*, starring Benedict Cumberbatch and Keira Knightley. Alan Turing was the mathematician whose cipher-cracking transformed the Second World War. Taken on by British Intelligence in 1938, as a shy young Cambridge don, he combined brilliant logic with a flair for engineering. In 1940 his machines were breaking the Enigma-enciphered messages of Nazi Germany's air force. He then headed the penetration of the super-secure U-boat communications. But his vision went far beyond this achievement. Before the war he had invented the concept of the universal machine, and in 1945 he turned this into the first design for a digital computer. Turing's far-sighted plans for the digital era forged ahead into a vision for Artificial Intelligence. However, in 1952 his homosexuality rendered him a criminal and he was subjected to humiliating treatment. In 1954, aged 41, Alan Turing took his own life.

## Book Information

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## Customer Reviews

Never have I been so amazed at how one author, even if he IS a mathematician himself, could so break down complex scientific issues into such an easily digestible and simple presentation. It was mere child's play to understand what concepts and creative processes and mathematical formulas

Mr. Turing and company dealt, all those long and formative years ago. If you can't fathom author Andrew Hodges' breaking down of complex principles to mere pabulum for the reader to grasp, if simplistically, then you should not venture further into a mathematics, physics or even a silly little computer science major. He makes it THAT easy! Amazing. Now, having said that, I DO think as most of the other 640 commentators have stated, (exactly 67.84% of total commentators, to be precise) that the weight of the text is in many ways too taken up with all this simplistic math and science. We really do NOT get a full picture of Alan Turing or his life. Apparently there is a LOT Mr. Hodges left out, (and not ONLY Sweden) that would be more appropriate to the telling of a regular biography of a real person. We do not see many of Alan Turing's warts and we spend far too little time with HIM and HIS life, in favor of a more chemical rendition, dealing as much with the history of computers (shame on you, Gates and Jobs for pretending YOU discovered things!) as it is with a history of Mr. Turing's life. If we learned anything from the movie (need I mention the name of it?) it is that Hollywood can take merely a few essential facts and run away with reality, but AH WELL to all that, for that is Hollywood and its twisted version of the truth at least got all of us interested in the REAL Alan Turing, didn't it? Thus it is a very very bad SHAME when more than half the book is given over, not to biography, but to computer history. We never truly sense any continuity in the story of Alan Turing. We don't know all the things he was engaged in or what so many other things he did. Mostly, his life is expressed in a few pages of real biography at a rationed time. We hear where he's moved, what lectures he gives, what papers he writes. He never COMES ALIVE. Oddly, that is what Turing might have argued on behalf of his early computer dreams.....that, deep down, "Number 5 is ALIVE!". But the sad part is that if his invention is truly alive, Mr. Hodges represents Alan Turing as a dummy terminal. Lifeless on its own. This wasn't the real man represented here but remember, this IS a "scientific biography" (read the back cover) and so perhaps Mr. Hodges DID meet his goals; he expressed the life of Alan Turing as a mathematical function dependent on the variable of computer science.

The book begins with the obligatory summary of his parents' lives and Turing's rather uneventful early years. It gets interesting when Turing gets to Cambridge, where he faces real intellectual challenges and starts on what was to be his major scientific accomplishment: the question known as  $\lambda$ -calculus. Hodges provides a very good discussion of this question and Turing's resolution, and how it led to the concept of the Turing machine, a model that can be said to be implemented in all modern computers, but in no way serves as an ancestor of any of them. The real fascination of Turing's career (for most of the reading public) is his work on calculating machines to

aid in the decrypting messages from the German Enigma machine used to encode their naval communications, most particularly with their submarines. The particular contribution of Turing was the design of the electro-mechanical device called the  *bombe*  (an anglicization of the Polish  *bomba* , for a prior device for a similar purpose developed in Poland based on even earlier work in France in the late 1930's, at a time when both these countries seemed more sensitive to the need for decoding German military communications than was England). Turing's bombe was an electro-mechanical device that efficiently replicated the action of several Enigma machines wired together. As used by the Germans, the rotors of the Enigma (which provided the random encryption) were reset each day. The challenge for the British was to twiddle the rotors in the array of bombe's until they got some rational looking text from an attempted decryption of the intercepted German messages. Most of the enormous number of possible rotor settings were generally reduced by screening out those that did not produce any of a frequently used set of terms (called  *cribbs* ) anywhere in the message. Once a promising setting was determined, all the rest of the messages for that day could be decoded. The book provides extensive details of bombe operations and how they were applied. The book describes the roles of many individuals as the bombes were improved and their numbers expanded to operate at several sites in England (as a precaution against aerial bombardment of a single site). While the book gives Turing the most important role in this process, it is nowhere near the importance implied in the movie  *The Imitation Game* , which is loosely based on this book. The book describes several of Turing's unique contributions including his famous letter to Churchill, dated October 21, 1941, as an eminent scientist pleading for more funds to accelerate the Bletchley Park effort, Churchill's positive response may have made a significant difference in anti-submarine warfare at that time. Another unique contribution was Turing's visit to the United States from November 1942-March 1943, with his offering very perceptive guidance on the US bombe construction program (which eventually surpassed the British in numbers and speed of computation). Nearly half of the last 100 pages of the book is devoted to Turing's affair with Arnold Murray and his subsequent prosecution for it. The author reveals that he (Hodges) is also a homosexual, as if to prepare the reader for some insight on the matter. I would have appreciated some explanation of the fact that, although Turing had a number of sexual relations with men of his own age, class and intellectual attainments (described fleetingly in the prior narrative), he suddenly chose a working class man, less than half his age, with only modest intellectual yearnings and no accomplishments. [My own interpretation is that he wanted, consciously or subconsciously, to be a martyr and brought the whole thing on himself by going to the police to report a minor burglary connected to the affair.] As

for the larger social significance of the situation, Hodges tries to build a case that Turing was especially prosecuted because it was perceived that his uncontrollability made him a serious security threat. This argument is not very convincing since Turing had done no security work for at least 5 years previous and had no prospect of doing any in the future. Furthermore, there is no evidence of any involvement by high government officials, only a few local police and prosecutors. I would advise skipping the rather lengthy introduction (31 pages) until after you've read the book; it doesn't introduce the subject, but does give some interesting tidbits of discoveries and re-interpretations since Turing's death. This subject is also treated in the Author's note at the end of the book.

Alan Turing: The Enigma by Andrew Hodges covers a fascinating and important subject in the life of Alan Turing, but I would not recommend it to a math layman like myself. Much of the book outlines the history of mathematical and scientific ideas of the first half of the 20th century, Alan's included of course, as well as describing the machines that he helped design and build. This makes for extremely rough reading, especially since the book is over 500 pages. I commend Hodges for the large amount of research that went into this book especially since Alan was so secretive.

I am upgrading my review from \*\*\* to \*\*\*\* as I plow through the book. The book is quite good, but quite detailed or technical. Not for a general reader. It is quite good to see the role that Turing played during WW II and how effective he was. He was also very ineffective at times because he was clueless about social clues and unwilling/unable to understand military/war hierarchies. Still a fascinating and detailed, detailed, and more detailed book. My original review: Digression after digression, especially at the beginning of the book. Do I really need to know what letters Turing sent to a friend's mother or how she replied? Quite distracting. Too many digressions about historical figures, too. There is too much of that in the first 15% or so of the book. Once the book gets into Turing's post-graduate work and his work to create computers, that kind detail is very useful -- and relevant. I ordered this book as a Kindle book, because there were too many complaints about the small font in the print copies. It's easy to read on a Kindle app.

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