



## Turing: Pioneer of the Information Age

*B. Jack Copeland*

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Alan Turing is regarded as one of the greatest scientists of the 20th century. But who was Turing, and what did he achieve during his tragically short life of 41 years? Best known as the genius who broke Germany's most secret codes during the war of 1939-45, Turing was also the father of the modern computer. Today, all who 'click-to-open' are familiar with the impact of Turing's ideas.

Here, B. Jack Copeland provides an account of Turing's life and work, exploring the key elements of his life-story in tandem with his leading ideas and contributions. The book highlights Turing's contributions to computing and to computer science, including Artificial Intelligence and Artificial Life, and the emphasis throughout is on the relevance of his work to modern developments. The story of his contributions to codebreaking during the Second World War is set in the context of his thinking about machines, as is the account of his work in the foundations of mathematics.

## Turing: Pioneer of the Information Age Details

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## From Reader Review Turing: Pioneer of the Information Age for online ebook

### Carlo Guillermo says

This book was, in summary, delves more into the technologies that Turing pioneered rather than a book with a more personal account of his life. That being said, it was definitely an interesting read and would highly recommend it to anyone even with the slightest interest in where computers and all our gadgetry fundamentally originated from. This book also has an interesting account of his death, which is popularly acknowledged as suicide. Or was it suicide? I guess you'll have to read and find out.

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### Toni says

I'll start this review just by saying what a huge fan of Alan Turing I am. He's a personal hero of mine and a driving force in what kind of Computer Scientist I strive to be (I even have a framed portrait of him hanging up in my office at home!). His work on computability and Turing machines are not only the foundation of Computer Science in general, but also describe algorithms, decidability, and in certain respects, the entire foundation of determinism, functionalism, and causality in the entire Universe (quite a bold claim, I know)! He came from a generation of absolutely phenomenal mathematical minds like Godel, von Neumann, Church, etc - and his contributions matches theirs toe-to-toe. So, as you can probably guess, I take writings about him pretty seriously!

That said, this was a good, albeit short, biography of some of his work and life. It specifically focuses on his "On Computable Numbers..." paper, his cryptography work during WWII, and his contributions to kick-starting the computer revolution during/after the war. It deals less (unlike some other biographies) on his personal life and struggles he went through due to his homosexuality. Interestingly enough, though light on personal life, the last chapter does focus on his death and debunking the idea that he committed suicide, using forensic evidence to highlight the probability of other causes. I found this interesting, and while I knew that there had always been questions around his death, Copeland did a good job at really questioning what happened (he definitely convinced me to at least be skeptical).

Turing has (deservedly) gotten more focus lately in the media, so it is good that he isn't as passed over as he once was - especially considering there are others in the Bletchley Park story that are still mostly unknown to this day (Flowers, Newman, etc). However, even given all that, when people think computers, they think Bill Gates or Steve Jobs - which isn't unfair given all those men contributed, but our entire world would be a different place today if it wasn't for Turing - so he deserves each and every book written about him.

Again, overall, good biography for what it covered - I did learn some new things about him. I also appreciated that Copeland put a description of how Turing machines actually work at the end of the book. Great stuff!

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### Rayo VM says

La historia no le hace justicia a todos. El próximo 7 de junio se cumplirán 60 años de la muerte de Alan

Turing, uno de esos tantos personajes que la historia le quedó a deber. A través de este libro, su autor Jack Copeland, una de las personas que más ha investigado sobre este brillante matemático británico, nos lleva de viaje por la vida y obra de Turing, un personaje cuyas aportaciones no se limitaron a la matemática y la computación sino que alcanzaron campos tan diversos como la química o la biología.

Aunque Turing era un personaje que disfrutaba trabajar en solitario, no puede decirse que la informática y las ramas derivadas sean producto de pocas mentes. El libro es también una historia con múltiples personajes, de colaboraciones y competencias, de errores y coincidencias que pudieron en otras circunstancias terminar en una historia distinta. En esta agitada carrera otros personajes cayeron en el olvido, tal es el caso de Tommy Flowers, el diseñador de "Coloso", la primera computadora electrónica. Pero el proyecto pertenecía a los grandes secretos del gobierno británico y por años nadie pudo hablar de él, ni el propio Flowers. Así que aún hasta ahora se nos suelen enseñar que la primera fue la ENIAC. A este y a otros más Copeland intenta hacerles un poco de justicia.

Sobre la muerte de Turing, Copeland también insiste que la única certeza que se tiene hasta ahora es del envenenamiento por cianuro. La escasa investigación que se hizo sobre el caso, influida negativamente quizás en parte por la situación de Turing y su preferencia, permite poner en duda la teoría más conocida del suicidio. Pero tampoco hay pruebas que apunten concretamente a otras direcciones como muerte por accidente o incluso un posible asesinato. La causa real seguirá siendo misterio.

Recomendable la lectura de este libro. La traducción al español contiene algunas faltas ortográficas y algunos fallos que desafortunadamente en momentos se prestan a dobles interpretaciones. De ahí en fuera me pareció interesante y excelente.

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### **Giovani Bp says**

Interesante, algo enredado, pero nada difícil. En algún momento se desvía un poco del tema para hablar de la guerra, pero supongo que es inevitable hablando de Turing.

Conclusiones bastante interesantes, ya que en todos lados pregongan que se suicidó con una manzana.

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### **Alex Chan says**

A detailed, informative account of Turing's life.

There's a lot of detail about his work – enough that as a fairly technical reader, I understood at a high level what Turing was working on, more than just "he did a clever thing here" – but also a lot about his personal life, and post-BP work, that was new to me.

A common trap is to paint Turing as a heroic British learner, or focus solely on what he did at Bletchley Park. This book avoids both. While it has plenty of detail about BP, I was glad to read a lot of new (to me) material about the people he worked with, their contributions, and the work he did both before and after WWII. I particularly enjoyed the chapter on his death, which challenges the commonly-held belief that he must have committed suicide.

By no means an essential read, but worth a look if you find this sort of thing interesting.

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## **Chris says**

There were so many issues with this book that at one point I started thinking that I should start keeping a list. I didn't....but will try to remember the ones that bugged me most. The main reason I gave 2 stars instead of 1 is because technically I did learn a few things about Alan Turing that I didn't know before.

I've read a few biography type books before and a biography CAN be written in a way that it is readable, like a story. In fact, it SHOULD be written that way.

Issues I had with this book:

1. It wasn't very readable. It didn't really tell Turing's story very well. It just listed facts over and over and sadly, not even chronologically. Facts were going back and forth in time constantly so it was hard to follow the "story" of Turing's life.
2. Who was the book about again? Oh yeah...Alan Turing. It's hard to remember when every chapter I'm getting pages and pages of mini biography on a ton of other people that were in Turing's life in one way or another. It often read more like the biography of early computers than anything specifically about Alan Turing.
3. Mismatch of chapter names.... There is a chapter titled "The Imitation Game" which is another name for the famous "Turing Test". However, the Turing test was NEVER mentioned in that chapter. It was introduced until the next chapter.
3. Out of order pictures. One of the last chapters had a picture of Turing in running gear/clothes. It talked about his running a chapter or three before. That's where the picture should have been. Nothing about running was mentioned where the picture was inserted.
4. Missing milestones. Alan Turing is essentially the father of 3 entire scientific fields. One of those was mathematical biology which is about the mathematics behind patterns such as found on animals (like a zebra or giraffe for instance), but that was barely mentioned in the book. It barely got more than a sentence.

Honestly...if the book had been about probably any other person, ever, I would likely not have finished it. Only because I hold Alan Turing in regard did I force myself to persevere.

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## **Jeff Brateman says**

This was an excellent layman's view of Turing's accomplishments, and the direct and indirect consequences of his research. I appreciated the style of writing, and the details that went beyond Turing himself. The book is written in a way so that one can experience the tragedy of his death, but is not consumed by it, like other articles on the subject.

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## **Stuart Taylor says**

I have always had a fascination with the history of computers and this book chronicles in exciting and easy to read terms, the invention and early development of the first electronic digital computer as a universal

machine, or Universal Turing Machine.

Born from necessity the development of Colossus is a story of secret wartime codes, national survival, piracy on the high seas, spies and espionage and the genius of the code breakers at Bletchley Park. It describes the roles of Alan Turing and a previously unsung GPO telephone engineer Tommy Flowers, whose proposal to build a computer using electronic valves in the face of almost universal criticism allowed the computing speed necessary to crack the Nazi Enigma and Tunny codes and shorten the Second World War by years, saving many, many millions of lives.

Post-war development of computers - as we know them today - into machines that can be programmed to carry out not just one function but any task from picture editing to playing music and movies to word processing is fascinating, and another of Alan Turing's greatest contributions.

And the list of contributions made by this unique and "shy genius" is long and significant, including theories of Artificial Intelligence, computer modelling of natural growth.

Alan Turing's final years do not make happy reading. I always believed he took his own life, but this account caused me to doubt this.

Jack Copeland's book appears to be very well researched and is peppered with citations from beginning to end. I have not checked the breadth of the sources quoted from however. Overall I would thoroughly recommend this book. It fills in the missing link between mechanical computers and their modern electronic descendants. I take my hat off to the author for his ability to describe, in simple enough terms for me to understand and be entertained by, some otherwise no doubt fiendishly complex mathematical concepts. This is a Stuart Taylor must read! :0)

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### **David says**

A fascinating insight to a great genius of the 20th century. To have invented the stored program computer is no mean achievement. In true British fashion his name is not as his career would merit. Apart from his Bletchley Park code breaking exploits I was intrigued to learn more about his death - of cyanide poisoning with a half eaten apple found by his bed. The coroner's enquiry was wrapped up in 48 hours with a verdict of suicide, however this author considers an open verdict would have been appropriate with accidental death or murder being the alternatives. His later work was done just near here at Manchester University so there is a nice local resonance - I remember taking my final exam for my IT chartered qualification in the 80s at the Kilburn Building at Manchester Uni - named after Tom Kilburn who worked closely with Turing. Perhaps the strangest tale, to 21st century ears, was his prosecution for homosexuality leading to a sentence of chemical castration, which was possibly linked to his death. A remarkable, and sadly shortened, life. For me the author struck a nice balance of a serious academic treatment of Turing's life along with an insight into the man and his times.

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### **Vikash says**

This was enjoyable, and the writing was fairly accessible. The author is clearly enamored of his subject, which is not to say there were distortions. It felt a bit uneven. The focus is very heavily on Turing's theories

and academic/intellectual/computing accomplishments. There is less about Turing the man, which was something I had hoped to find.

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### **Dina says**

No era para nada la biografía que buscaba, de hecho creo que sé lo mismo que sabía sobre Alan Turing. El libro ha sido una mala elección, no porque sea malo en sí o esté mal escrito, sino porque es un libro sobre Enigma que de forma secundaria habla de refilón sobre él...

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### **Just A. Bean says**

Though the book outlines Turing's life, it's much more focused on his theories and inventions, and how they spun off into the technology we have today. I had been hoping for something a tad more personal, but wanted a newer book with some of the more recent declassified material, and that dealt with alternative theories of his death, both of which this did, so I largely came away a happy camper. It's a pretty fast read, so mostly summarises Turing's work, before heading off into its implications, but did a good job of laying everything out for the layperson. I did find that Copeland perhaps overemphasised Turing's influence, as some inventions seemed to spring up in several places at the same time, and though Turing may have thought of them first, he didn't have time or interest in publishing everything, and others came up with the same ideas on their own, it seems. However, that was one or two small issues, and I enjoyed the overview of early computing, and the glimpses of Turing's life the book afforded, and appreciated all of the personal interviews and original documents the author included. If given a choice, I might get the book over the audio version (which had a perfectly good reader), as I expect the pictures would be helpful. Even this much of an outline did make me even more annoyed at *The Imitation Game* for being so comprehensively Hollywood.

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### **Ratratrat says**

Cercando un libro su Turing, l'ho trovato. Mi ha raccontato molto del suo lavoro e soprattutto di quello che fecero nel controsionaggio. Enigma è solo un a parte, ci furono anche Colossi ed altro: un intero computer poi smantellato e coperto da segreto militare. Sembra che ne avessero venduto alcune versioni recenti a qualche dittatore.. ma conservandosi la possibilità di decrittarlo! Della sua vita poco e della sua morte per cui per qualcuno è importante ( ebbe un processo per omosessualità per aver denunciato un furto di un amico occasionale) ma morì per probabile ingestione di cianuro. verdetto: suicidio, ma secondo il libro improbabile, facile anche incidente. che ci fa uno col cianuro? beh un tipo geniale e lo usava per lavori rudimentali di elettrolisi in casa...

Il libro dedica la maggior parte del testo agli studi e ricerche e realizzazioni di Turing, dalla "macchina universale" alle idee sui primi computer al test di Turing e l'intelligenza artificiale. Lo descrive come un genio, appunto pioniere dell'era informatica. Di lettura un po' pesantina.. e lo sto ortando avanti con uno che non finisco mai su spionaggio e controsionaggio nella II guerra..

se qualcuno lo cercava per una biografia di Turing come icona dei gay, questo non è il libro per lui.

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## **Brian Clegg says**

Alan Turing is a name that has grown in stature over the years. When I first got interested in computers all you really heard about was the Turing test – the idea of testing if a computer could think by having a conversation by teletype and seeing if you could tell if there was a computer or a human at the other end. Then came the revelations of the amazing code breaking work at Bletchley Park. Now, though, we know that Turing was much more than this, the single person who most deserves to be called the father of the computer (we allow Babbage to be grandfather).

All this and much more comes through in B. Jack Copeland's superb biography of Turing. It's not surprising this book (and its competitors) is on sale now. 2012 is the hundredth anniversary of Turing's birth. And it is a timely reminder of just how important Turing was to the development of the technology that is at the heart of much of our everyday lives (including the iPad I'm typing this on today).

If I had to find fault at all with this book, it can be a little summary in some aspects of Turing's private life – but I suspect this reflects the lack of information from a very private man. However if, like me, you're a bit of a computer geek it would be impossible not to be fascinated by the description of his ideas and the technology that was developed from them, beautifully written by Copeland. I've read plenty before about Enigma, but the section on this was still interesting, and the Tunny material (a later, more sophisticated German coding device, to crack which the Colossus computer was developed) was all new to me.

Similarly, I hadn't realised how many firsts belong in the UK rather than the US. I knew Turing's work led to the first stored program electronic computer – the first true computer in a modern sense – but I hadn't realised, for instance that Turing was the first to write the code for computer generated music, with the first computer music in the world produced using that code in Manchester (contrary to the myths you are likely to see online).

Although some of the personal life information is a little sketchy, Copeland really delivers on Turing's death. I had always accepted the story that he committed suicide with a poisoned apple as a result of the 'chemical castration' he chose as an alternative to prison for admitting homosexual acts. Copeland tears this myth to pieces. Turing had endured the hormone treatment with amusement – and it had finished a year before his death. By then he was fully recovered. He appears to have been happy and positive at the time of his death. He left a part-eaten apple by his bed every night. And he was experimenting on electroplating in a room adjacent to his bedroom – using a solution that gave off hydrogen cyanide. The postmortem was very poor, without testing whether the cyanide that killed him had been ingested or inhaled. The evidence seems strong that Turing's death was an unfortunate accident, not the tragic suicide that is usually portrayed.

In the end I can strongly recommend that anyone with an interest in computing should rush out and buy a copy of this book. Well written, fascinating and overthrowing a number of myths, it's a must-have.

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## **Alicea says**

The message that I got from *Turing: Pioneer of the Information Age* is that he never got any of the credit that he rightfully deserved. The main reason for this is that a lot of the groundbreaking work that he did was at

Bletchley Park and it had to be kept secret. Therefore, a vast majority of the credit for the development of the modern computer, stored programming, and artificial intelligence was given to others (both American and English). In fact, history books and textbooks on computer science up until fairly recently made no mention of the two men that were behind the development of modern computers: Alan Turing and Thomas Flowers. Turing was truly ahead of the times with his theories that computers could be 'taught' and that artificial intelligence was an inevitable part of our future (the fear is real within me, guys). Unfortunately, much of his findings on this went either unpublished or unseen and once again other scientists got the jump on him. (At this point, I have to say that this is just the opinion of one man but the overwhelming evidence backs him up.) I learned what the 'imitation game' is and also discovered I had read about it before in *Our Final Invention: Artificial Intelligence and the End of the Human Era* by James Barrat. The author only briefly touched on the tragic end to Turing's life and suggested that the case may not have been a cut and dry suicide after all. You'll have to read the book to get the full details! ;-)

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