

## The Man who knew too much

*Alan Turing and the Invention of the Computer*

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Turing is a man rescued from obscurity in recent decades, seen as one of the theoretical pioneers of the computer along with von Neumann. More precisely championing the position that computers should be universal machines, thus making a fundamental distinction between hardware and software, in particular understanding that they should not be architected to the specific problems, as old analogy machines necessarily were. It is tempting to attribute this retrospective attention to the biography by Andrew Hodges back in 1983, which has been followed by a spate of secondary ones, most of which, like the present book, seem rather superfluous.

Turing is known for three separate and interconnected things. First and foremost maybe for his paper on what later would be called the Turing machine. This was written in the wake of Gödel's epoch-making 1931 paper and addressed the so called Entscheidungsproblem formulated by Hilbert. When he wrote it, supplying a negative resolution to the problem, much to the consternation of Hilbert, he was still a very young man, his achievement earning him a stint as a graduate student at Princeton, which however failed to register any deeper impression either on Turing himself or the illustrious entourage which were to be found there after the Nazi expulsion of exceptional talent. Secondly during the war he successfully led attempts of cracking the Enigma code at Bletchley, designing special machines, the so called Bombers, specifically engineered to unravel the machinations of the Enigma machines. The ability to read encrypted messages, especially if you can keep your abilities a secret to your enemy is very crucial. One may however doubt whether this ability really made the difference between winning or losing the war, but certainly it contributed to shortening it. And finally Turing is a pivotal figure in Artificial Intelligence, making popular the view that machines could think, a view which, to say the least, is highly controversial and disturbing.

The author is no professional but an amateur in matters mathematical. This obviously puts him at a disadvantage as the purpose of the book is not so much to evoke a life of Turing, as to present his technical achievements in an intelligible way to a non-technically proficient readership. Furthermore the authors attempt to weave themes into the life is rather forced. In fact the book begins with the old British movie - The man in a white suit<sup>1</sup>, and proceeds to draw many contrived parallels between the hero of the movie and Turing's own fight against authorities. Furthermore Turing's homosexuality is made a very big thing out of. Its prevalence in liberal Cambridge circles is of course duly noted, with references to the Apostles (into which the shy and awkward Turing never was

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<sup>1</sup> The movie from 1951 starring (predictably?) Alec Guinness as the hapless inventor of the indestructible fabric, I recall vividly from being aired on Swedish TV in 1964

elected), John Maynard Keynes, and especially to E.M.Forster and his posthumously published *Maurice*, the repetitious nature of the latter bound to grate on the readers nerves. It becomes almost embarrassing when the author sees parallels Turings both strident and suppressed homosexuality with his interest in the decision problem and artificial intelligence. Even more embarrassing is the proposed links between his suicide (eating an apple dipped into cyanide) and a supposed obsession with Disneys' Snow White and the Seven Dwarfs. In fact the author even goes to the length of suggesting that Apples lgo with the apple (into which a bite has been taken) is a direct reference to Turings suicide and the associations with apples and the fruit of knowledge, hence the title of the book.

The author tries to give a both accessible and somewhat technical account of a Turing machine. I did not have the patience to read it carefully, sensing that the author has not fully grasped it himself. What remains is a rather confused account attempting to convey the initial impenetrability of Turings own original paper. A good popular account of the Turing machine is to be found in Penrose book, to which the author repeatedly refers to at the end. His account of the Enigma machine is somewhat better, as he tried not to be so technical, but once again more accessible popular accounts, like that of Singh, exists. Finally as to the possibility of machines ever thinking, the crucial philosophical contribution of Turing is the Turing test. If a human interlocutor cannot tell the difference between a human being and a machine pretending to be one, the machine is for all intents and purposes a thinking entity, any other interpretation is nothing but sentimentalism. Ultimately the judge of consciousness is consciousness itself, but by this exacting standard, any conscious being is reduced to solipisism, so after all we do assume that our fellow beings are conscious as well, even if this is but a polite stand. The most serious objection to AI is that a program only reflects the intelligence of its creator and can never transcend it. This does not take into account the process of evolution, which is a navigation in the huge configuration space of possibilities, which once launched is out of control. The exaggarated claims of strong AI having in recent years met with strong opposition, not only emotional, has to some extent tarnished the reputation of Turing, or at least as far as being an icon.

The book has a few good points, mainly in evoking the academic atmosphere at the time, depicting some of its main players. Alonzo Church comes across as a caricature, so entirely wrapped up in his logical investigations, as to make him humanly detached. (He did little for Turing besides tolerating him). Also the seminars with Wittgenstein provide period charm, although the author may try to make them to do more work than they are really equipped to do. To a specialist reader the repeated concessions to the general reader may be distracting. Each time a household name is brought up, like Cantor, Hilbert or Leibniz, the author feels compelled to do a short digression. This clearly brings home the point that the book is not meant for the initiated. One interesting remark though, which the author happens to make, is the striking equivalence between the different approaches to computability which are made by Turing, Gödel, Church etc. This in fact points to a Platonic conception of mathematics, that the different approaches are not just conventions and inventions, but actual discoverings, independant of mens minds, out there to be had for the taking. Any reference to Plantosim tends to embarrass people though, the present author appearing to be no exception.

Did Turing commit suicide, his life rendered untenable by constant hounding due to

his homosexuality? The verdict seems pretty clear in retrospect, but it was a conclusion resisted for many years, especially by those very close to him, such as his mother, trying to find all kinds of rationales for alternate interpretations. No matter what, his untimely death only adds to the intriguing character of his life.

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