# Coded Messages

A Review of

*The Imitation Game* (2014)
by Morten Tyldum (Director)

Reviewed by

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*The Imitation Game*, directed by Morten Tyldum with screenplay by Graham Moore, is about the life of Alan Turing, identified by *Time Magazine* as one of the 20th century's greatest minds, alongside Einstein, the Wright brothers, and Crick and Watson (Copeland, 2012, p. 3). Turing was the inventor of computers, and founder of artificial intelligence.

Psychologists have all been affected by the cognitive revolution, and, in his history of this movement, Gardner (1985, p. 17) wrote, "the logical-mathematical work that ultimately had the greatest import for cognitive science" was Turing's. Gardner is referring here, principally, to Turing's (1936) paper, "On Computable Numbers," in which he proposed a universal machine that could do all the calculations that a human could ever do. This came to be known as a Turing Machine: the basis for digital computers. If you have a phone in your pocket, it's a small computer, part of Turing's legacy.

Those who know about Turing may recognize that the film's title, *The Imitation Game,* comes from the world's first paper on computationally based artificial intelligence, written by Turing in 1950. In it, he proposed what has become known as the Turing Test, which he called an imitation game. In it, there are three participants: two people and a computer. They can communicate with each other only via tele-typewriters. One of the people asks questions of the other two participants, and tries to work out which is the human and which is the computer. Turing thought that at some point in the future a computer could be programmed to be sufficiently intelligent that the person who received its answers to questions wouldn't be able to distinguish it from a human being. It hasn't happened yet, but it's likely that it will.

The film chooses a more cinematically tractable aspect of Turing's life: his role in decrypting German radio messages during World War II. Turing worked throughout the War at the British secret Government Code and Cypher School, at Bletchley Park. His first major accomplishment there was breaking the German naval Enigma code, which had been thought to be impenetrable. As the Germans improved their coding techniques, the code-breakers at Bletchley Park developed methods that included building computers, and became able to read messages coded in new ways.

The film, based on Hodges (1985) biography of Turing, has significant omissions and invented elements. It does not, for instance, show how breaking the Enigma code depended, at first, on work done by Polish code-breakers who constructed a prototype machine that was critical for the decryption process. The film shows Turing inventing the machine himself. He is then shown as doing the code-breaking alone, which also was not the case; he had important collaborators.

In the War, Britain and the Soviet Union were dependent for supplies carried in convoys across the Atlantic from North America. In the War's first half, German U-boats were so successful at sinking convoy ships that there was talk among the Allies of being unable to continue to fight. Because, however, of decrypting German messages so that positions of U-boats were known, and because of improvements in Allied weaponry, in a single month, May 1943, a quarter of the total U-boat strength was sunk, and Allied shipping losses dropped dramatically. Admiral Donitz called off his remaining U-boats and admitted that the Germans had lost the Battle of the Atlantic.

In *The Imitation Game,* Turing is played by Benedict Cumberbatch. The film shows that, at Bletchley Park, he met the mathematician Joan Clarke (played by Keira Knightley). They went out together a few times, and he proposed marriage; she accepted. Not long afterward, he told her that he had homosexual tendencies. She was entirely unworried by this. He later broke off the engagement, but they remained friends.

By telling Clarke about his tendencies, what Turing meant, of course, was that he and she should not be engaged in the ordinary way. It's a nice touch of the film to show, in several episodes, how Turing found it curious that people often don't say what they mean. They talk in codes. Turing was passionate about the truth, but with Clarke he had found himself, too, talking in an encrypted language. The coded nature of human talk is a theme that, in an ingeniously transformed way, comes up in his 1950 paper on how a computer might imitate a human being.

This film offers the general public the story of Turing's work in breaking German codes so that strategic messages from Hitler and his commanders were made available to Allied commanders. At the end of the film, captions on the screen tell viewers that the decryption of German messages at Bletchley Park shortened the war by perhaps as much as two years, and hence saved millions of lives. Copeland (2012) said that in his contribution to the Allied victory over the Nazis, "Turing stands alongside Churchill and Eisenhower" (p. 7).

Until recently, because of the Cold War, the British had decreed that everything that took place at Bletchley Park should remain secret. In 1943, the prototype of the first programmable computer, called Colossus, had been built at Bletchley Park. By the end of the War, nine Colossus computers were in use there. This too was kept secret, and hence made for gaps in official histories of computing. The secrecy meant also that contributions not just of Turing but of the other people who worked at Bletchley Park—by the end of World War II their number was 9,000, three-quarters of them women—went unknown. In 2014, refurbished huts of the Government Code and Cypher School at Bletchley Park were opened to the public. On the site, too, the National Museum of Computing has now been opened. It includes a rebuilt Colossus computer.

In 1951, Turing was charged with breaking the law prohibiting homosexual acts. He was convicted and subjected to chemical castration by injection of female hormones. He died in 1953, at the age of 41, perhaps by suicide.

At the time of Turing's death, a movement was under way to abolish the British law against homosexual acts. Fradella (2002) explained that the British Parliament established the 14-member Wolfenden Committee, which first met in 1954. It recommended, by a majority of 13 to 1, that the law that criminalized homosexual activity should be repealed. The repeal took place in 1976. As Fradella explained, although by the beginning of the 21st century laws against homosexual activity had been repealed by many states of the United States, and although in other states these laws had been invalidated in the courts, "The presence of sodomy statutes on the books perpetuates homophobia and heterosexism" (p. 288). Such laws encourage stigmatization and discrimination against gay people. Herek (2006) wrote that, at the time of his article, homosexual couples had some degree of official recognition in most European countries, but that in the United States recognition was being achieved more slowly.

It was not until the third edition of the American Psychiatric Association's (1973) *Diagnostic and Statistical Manual of Mental Disorders* that homosexuality was removed from designation as a mental disorder. In the manual's earlier editions, psychiatrists and psychologists had gone beyond the law. The law referred only to certain actions. By categorizing homosexuality as a disease, the *Diagnostic and Statistical Manual* had made the whole person a target. This, too, contributed to discrimination.

In *The Imitation Game,* Turing's arrest and interrogation by the police in 1951 propels the film toward a tragic ending. The contribution Turing made, to Britain and to Western democracy, makes his case especially egregious. Discrimination against homosexual people, however, still damages many lives. All citizens deserve respect, whatever their sexual orientation.

The film is moving and worthwhile, though one might be misled by some of its invented elements. For those who want a more accurate idea of Turing's life and accomplishments, I recommend a biography by Hodges (1985) or by Copeland (2012). In the film and in the biographies, Alan Turing comes across not just as an eccentric genius, a kind of machine, but as an actual person, engaging and likeable.

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