Two Cryptologic Nights at the Cinema

The Red Machine
Directed by Stephanie Argy and Alex Boehm, 2010
The Imitation Game
Directed by Morten Tyldum, based on the book by Andrew Hodges, 2014

Reviewed by David Hatch

I have long been a movie buff, and have always been a sucker for movies based on history. Films that take care in recreating an historical event or show something about an important person are a joy to watch. For the historian, films that botch the events are also a source of joy, although for different reasons.[a]

No motion picture can be absolutely accurate in showing historical events. No historian, least of all me, expects that. But painstaking efforts to show the past can do important things for those in the present: for example, *The Longest Day* (1962), a motion picture that is relatively bloodless compared even to today's television programs, still helps viewers understand the vast scope of the D-Day operation and its complexity, as well as the sacrifice of their future by thousands of young men so that our future could be secure.

This brings us to movies that are less scrupulous in showing the past, and, specifically, to the 2010 production *The Red Machine*. In a generally favorable review, the magazine *Wired* said, "How faithful is the movie's 'Red Machine' to the real thing? [The writer and director] strove for historical accuracy in every respect."

As an historian writing about this film, my dilemma is: where to begin? The film has historical inaccuracies beginning about 30 seconds into the story, and the mistakes just keep on coming.

Set in the late 1930s, the film story opens in a large but sparsely furnished room where half a dozen civilian codebreakers working for the US Navy are scanning and rapidly solving encrypted messages sent by the Japanese Navy. One of them finds an anomalous message, and, after consulting reference material and one of his colleagues, decides to show it to "Miss Aggie." Later scenes, by the way, show this building to be a stand-alone, wooden, barracks-style structure in the middle of a Navy base.

Pause for a reality check: the Navy in the 1930s required that its cryptanalysts be active duty officers (the Army did hire civilians.) Until World War II began, the cryptologic work was done in cramped quarters in the Navy Building. This was a large office complex located in the District of Columbia on the site of what is now the Vietnam Memorial.

"Miss Aggie" was a real person, Agnes Myer Driscoll, a civilian exception to the Navy's requirement about active duty officers as cryptologists. She had been involved in cryptology since World War I, and was acknowledged by the uniformed cryptanalysts around her as the most talented of them all. While she was an important person in Navy cryptology in the 1930s, the film depicts her as supervising the effort, which is untrue; in real life she acted in a capacity that we would today call "technical director."

The anomalous message turns out to have been enciphered on a cryptomachine, quickly given the nickname "Red." Admitting that it would take years to solve through pure analysis, the Navy springs a talented young safecracker from a DC jail and offers him his freedom if he will help them break undetected into Japanese facilities to photograph the Red Machine and related keying documents.

The Red Machine is in a locked and guarded room in an apartment rented by the Japanese Naval attaché, while keying documents are in an office safe in the Japanese embassy. The balance of the movie shows the preparation and execution of the two capers.

a. A version of this article will appear in a forthcoming issue of *Cryptologic Quarterly*, an internal publication of the National Security Agency.

When we finally see it, the Red Machine greatly resembles a rubicund ENIGMA. In a thrilling scene, the burglar and the lieutenant minding him fully disassemble it, down seemingly to the dust in the open spaces, for photographing.

There was a Red Machine in real life; however, it was used by the Japanese Foreign Ministry—not the Navy—and it was solved by the US Army, not the Navy. Just to complicate the real life story, the US Navy had pinched a copy of an earlier Japanese Navy codebook, which the Americans called the "Red Code," based on the binder in which it was kept. (Prewar codebreaking was nothing if not colorful!)

Before World War II, there were a few occasions in which the US Navy conducted "black bag jobs" against Japanese targets. This is not well documented, but appears to have been done against Japanese ships in American ports and, perhaps, consular buildings. A former NSA senior used to refer to this as "second-story cryptanalysis."

There was one incident in the 1930s that vaguely resembles the black bag job in the movie. Two officers from OP-20-G, the Navy's cryptologic organization, following a rumor that a Japanese attaché kept cryptographic materials in his apartment, entered the apartment disguised as electric company workers, and searched it. They found nothing, and left—after receiving a quarter tip each from the butler.

Most of the Navy's cryptanalytic work, like the Army's, was done by pure analysis. This is important and even exciting, but, unfortunately, is not very cinematic.

One other problem: I'm not into militaria, but something else looks wrong in the film. All the Navy officers wear their medals on their work uniforms—not a ribbon in a row of ribbons, but the actual medal hanging from a strip of cloth. My understanding is that this was done only with the highest level of formal dress uniforms.

The Navy's pre-World War II cryptanalytic work was vitally important; in fact, we would have been much less well-prepared for the wartime effort if we had not had the COMINT information the Navy produced in the 1930s.

I like a thriller as much as anybody, but *The Red Machine* does a real disservice to cryptology today in misportraying how the work was done. It certainly is disrespectful to the small and skilled group of professionals who actually solved Japanese codes and ciphers in the 1930s and war years.

The Imitation Game, a major motion picture released in 2014, pays tribute to the accomplishments of Dr. Alan Turing. He was the mathematics genius—a word used carefully, not just as an enthusiastic tribute—who made important contributions at Bletchley Park toward exploiting German cryptosystems in World War II, and whose theoretical work led to development of the modern computer. Turing was homosexual, was forced into hormonal treatments as the result of a court case, and committed suicide in 1954.

The movie is richly filmed, with good acting and a riveting story. Benedict Cumberbatch as the adult Alan Turing is especially memorable and may only have been out-acted by the young man who played the teenaged Turing as he wrestled with questions of his self-identity.

The story, however, is riddled with inaccuracies. Most of them don't matter much if one looks at the story as a parable people today need to internalize about the misunderstood genius and the tribulations a gay man had to pass through in a hostile society.

A few of the inaccuracies do matter, however. My personal opinion is that the film makers owe an apology to the families of Alastair Denniston and Hugh Alexander. Denniston, the director of Bletchley Park, though he held reserve rank in the Royal Navy, had been a civilian cryptanalyst since World War I. The film portrayed him as a military martinet who opposed Turing because Turing lacked discipline and ignored the chain of command. Denniston was replaced as director early in the war because his management skills were not equal to an industrial-scale enterprise; he did not harass Turing for failing to conform to expected norms of wartime behavior.

Hugh O'Donel Alexander, once chess champion of the British Empire, went on to a long career at GCHQ after the war. The film portrays him as a bragging womanizer; this portrayal runs contrary to all we know about him—he was already married by the outbreak of the war and was a good family man.

These two characters are likely included in the film to show how the bureaucracy reacted to Turing, and to contrast his homosexuality with the actions of an ag-

gressive heterosexual. This doesn't bother my historical sensibilities; on the contrary, these characters help put Turing's life and contribution into perspective. I just wish the filmmakers had used false names for the characters.

The film shows Alan Turing as the center of all the successful cryptanalytic activity at Bletchley Park, including the purchase of parts, and assembly of the cryptanalytic bombe, which exploited ENIGMA-based messages. In actuality, the bombe was designed by Turing but built elsewhere; Turing's bombe was made faster and more efficient by Gordon Welchman, also a Cambridge mathematician.

Turing really was important, but he wasn't Superman. In this aspect, *The Imitation Game* reminds me of those classic "biopix" of the 1930s: young Tom Edison knows, despite all opposition, that he will grow up to invent the light bulb.

One other significant inaccuracy should be noted. In the film, once Turing and a few colleagues have solved the Naval ENIGMA machine and have shown that the bombe can solve messages on a recurring basis, Turing and these colleagues decide how the resulting intelligence—called ULTRA—will be distributed. The source is secret, even the Bletchley Park hierarchy is not to know the ENIGMA has been solved, and the Turing team calculates statistically which decrypts will be released to the military, thus determining who will live or die in battle. This is necessary, they say, to prevent the Germans from realizing that the ENIGMA is vulnerable.

This is not true. The ULTRA decrypts were distributed by the military to a select group of cleared readers, mostly senior commanders and their intelligence officers. The commanders were required to come up with a cover plan to disguise the source of their information before they could act on it. In real life, for example, Allied commanders, who were remarkably well informed about their enemy, would order unnecessary reconnaissance or patrolling to fool the Germans about their intelligence source. Despite a number of myths, no one's life was sacrificed to protect the ULTRA secret.

Let me mention two small but interesting miscues among many inaccuracies. After Turing's arrest, a newspaper article sports the headline, "Cambridge Professor Convicted of Indecent Acts." Actually, Turing was a professor at the University of Manchester.

There was a Soviet spy at Bletchley Park, and the movie references him. However, the film shows the spy unmasked because he used an insecure "Beale cipher" when passing secrets to the Soviets. In reality, the Beale cipher refers to a specific encrypted message from early 18th century Virginia that is reputed to hide the location of a fabulous buried treasure; it is not a particular kind of cipher.

Lest you think I didn't like *The Imitation Game*, let me say that I did enjoy it as a movie. It is well written, has good performances, and raises social and political issues that still must be settled today. It is good to see Turing getting the public recognition that he deserves, and it is good to remind us all of the unjust and tragic consequences of acting on society's prejudices.

But these inaccuracies affect the Intelligence Community, especially the cryptologic community, in several negative ways. The films give the public a false concept of what cryptology is and how cryptologists protect the country. *The Red Machine* reinforces the idea that intelligence agencies will do anything, including outright criminal acts, to achieve their goals. *The Imitation Game* shows members of the Intelligence Community playing God with people's lives.

If the public accepts these as true to life, and they will—most of us have encountered people who think James Bond movies are documentaries—how long before these false beliefs about cryptologic work are reflected in the actions of their government representation?

Not the least of the negative effects of these false images will be their influence on recruiting the next generation of cryptologists.

It may be impossible to show the drama and excitement of real-life cryptologic work on the screen in any popular way. If this is true, we can only hope that in the future filmmakers will avoid showing it in fanciful ways that have a negative impact on the community.

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