

The Enigma of the Bombe!
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Senior Division
Individual Website
Website: 1,193
Process Paper: 473

Topic/Theme: Since I have been working with programming for years, and have been interested in computer science and cryptography in general, I decided to work on a topic that is related to computer science and cryptography for this year's theme of turning points in history. For this year I chose the cryptanalytic bombe, which although it isn't technically a computer, it was a predecessor to the computer. Additionally, this topic works with cryptography which is one of my interests within the computer science world.

Research: Considering that my topic regards world war two, I wanted to make sure that I had multiple perspectives, so when I was conducting my research I made sure that I had sources that weren't just from the perspective of a government, but also sources that came from places such as museums and online articles. Additionally, I wanted to make sure I wasn't assuming that the bombe was the only factor in the cryptographic war effort, and thus I had done some research on other decryption machines such as the Colossus machine. I had also made sure to do research on the Enigma machine, which was responsible for producing the encryptions that the bombe had to decrypt.

Production Process: I had used my programming experience that I've accumulated prior, and during this project to program my website for my project. I had taken advantage of the NHDWebCentral software's import code option to make the website from scratch via HTML and CSS code that I wrote. In addition to my preliminary experience, I had used internet resources such as w3schools.com in order to collect additional programming knowledge to construct the website. After the regional contest, I had applied the suggestions I had received from judges, and had modified my website in order to better reflect my topic.

Argument: As Hitler rose to power during the 1930s and the German military modified the Enigma machine to improve encryption security, Poland developed a preliminary prototype of a decryption method to crack what was believed to be an unbreakable code. As World War II progressed, Alan Turing led a group of British mathematicians to improve Poland's decryption technology, ultimately developing the cryptanalytic bombe and creating a turning point in the years long Battle of the Atlantic. Use of the cryptanalytic bombe aided Allied forces in decrypting German U-boat transmissions, potentially shortening the war by several years and ultimately leading to Allied victory in the Atlantic theater.

Significance: The development of the Bombe had aided significantly to the Battle of the Atlantic. In addition, it represented the advancement of decryption technology as it was one of the first major cases of using a machine to decrypt information. Even though the Polish Bomba technically came before the Bombe, the British Bombe's impact in decryption technology was more significant than that of the Bombe.