Annotated Bibliography

Primary Sources

Calvocoressi, Peter. *Top Secret Ultra: An Insider's Account of How British Intelligence Monitored and Broke the Nazi Top-Secret Code.* New York, NY: Pantheon Books, 1980.

Calvocoressi, a cryptanalyst during the war, recounts his experience working at Bletchley Park, the headquarters of secret program built to break the German Enigma code. The memoir described the program that Alan Turing took part in at Bletchley. Through the memoir, I was able to understand the short term impacts of Turing and Bletchley Park.

Hinsley, F. H., and Alan Stripp. *Codebreakers: The Inside Story of Bletchley Park*. New York, NY: Oxford University Press, 1993.

Hinsley and Stripp have compiled various memoirs of firsthand accounts of experiences at Bletchley Park. I focused mainly on description of Hut 8, the Naval Enigma, as well as the in depth details on the Enigma machine. Through these memoirs, I was able to understand the background on the workings of the Enigma, as well as the focus Hut 8 had on the Naval Enigma.

_____. "The Influence of ULTRA in the Second World War." CIX, http://www.cix.co.uk/~klockstone/hinsley.htm. Accessed 4 February 2015.

This source contained the transcript of an interview with Sir Harry Hinsley, a cryptanalyst who worked at Bletchley Park. Hinsley talked about the efforts that they had to take to conceal the fact that they had broken Enigma from the German. But the breaking of Enigma allowed them to easily know when the attacks would come and where the attacks would come, allowing them to evade the U-boats.

The Turing Digital Archive. http://www.turingarchive.org/. Accessed 13 January 2014.

This archive, where I got most of my information contains several hundred various personal letters, documents, publications, and papers of Turing. I looked through many of the them, but the prominent one that I used included Turing's "Treatise on the Enigma" and "Precis on Einstein's Theory of Relativity". They helped me gain information on Enigma and the method that Turing went about to do it. The summary of Einstein's theory gave me a perspective on Turing's intelligence at such a young age.

Turing, Alan M. "Systems of Logic Based on Ordinals." PhD diss., Princeton University, 1938.

_____. *The Essential Turing: Seminal Writings in Computing, Logic, Philosophy, Artificial Intelligence, and Artificial Life Plus the Secrets of Enigma.* Edited by B. Jack Copeland. New York, NY: Oxford University Press, 2004.

The book contains a collection of various documents written by Alan Turing, including letters, speeches, broadcasts, as well as details of the Enigma, the German code used in World War II. The collection helped me to understand the impact of Turing's work and the legacy he left on the technology through his work and personal communications. I mainly focused on his major three works in his lifetime and read through his arguments.

Turing, Sara. *Alan M Turing: Centenary Edition*. Cambridge, UK: Cambridge University Press, 2012.

In this biography of Alan Turing written by Sara Turing, I mainly focused on the sections regarding his childhood. By understanding the family relationships he had and his interactions as a child, it provided context for his interest in college, graduate school, and on. Sara Turing had extremely coherent quotes that helped me show the skill that Turing had at arguing his opinion on intelligent machinery and teaching and leading others in the field.

Secondary Sources

"Bombe: Breaking the Enigma Cipher." Crypto Museum, http://www.cryptomuseum.com/crypto/bombe/. Accessed 20 January 2015.

This source gave me significant amounts of information on what the Polish did before Turing and his colleagues. It helped me understand the improved efficiency of Turing's Bombe and work in generally. It also explained the innovations the Polish made that Turing based several of the functions of the Bombe after.

Brown, Brandi Dawn. "Enigma - German Machine – Broken by Polish Cryptologists." University of California San Diego, http://www.math.ucsd.edu/~crypto/students/enigma.html. Accessed 3 February 2015.

This source gave me further background information on the Polish efforts in breaking Enigma using the cyclometer, clock, and their "Bomba".

Brown, Gordon. "I'm proud to say sorry to a real war hero." *The Telegraph*, 10 September 2009. telegraph.co.uk. Accessed 5 February 2015.

This newspaper article contains Gordon Brown, the Labor Prime Minister in 2009, public apology to Turing for his treatment after his conviction. It highlights the effect that Turing's work and life had on modern day.

Budiansky, Stephen. *Battle of Wits: The Complete Story of Codebreaking in World War II*. New York, NY: The Free Press, 2000.

The book explores the role cryptanalysts played in the conflict of World War II, in terms of decrypting Enigma, as well as in World War I and earlier. Overall, this book helped me

understand the importance of the decryption process during the war and see the evolution of technology of the time.

Cooper, S. Barry, and Jan van Leeuwen. *Alan Turing: His Work and Impact.* Waltham, MA: Elsevier, 2013.

Cooper and Leeuwen explore the implications of Alan Turing's work in modern day artificial intelligence. Through the book, I was able to understand that the sophistication of modern technology was significantly impacted by Turing's work.

Copeland, B. Jack. *Turing: Pioneer of Information Age.* New York, NY: Oxford University Press, 2012.

Copeland's book allowed me to understand the motivation and inspiration of Turing's work. He was inspired by Newman's discussion of machines, as well as the workings of the brain. It also talked about the role the Bombe played in the Naval U-boat battle, and how Turing and Hut 8's work significantly impacted the battles.

"Enigma." BBC History, http://www.bbc.co.uk/history/topics/enigma. Accessed 21 January 2015.

This source is what I first went to to understand how Enigma worked and why it was so difficult. It gave me a basic understanding on the importance of Turing's machine to decrypt the Enigma code.

Erskine, Ralph. "Allied Breaking of Naval Enigma." UBoat.net, http://uboat.net/index.html. Accessed 1 February 2015.

This source discussed the role the decryption of the Naval Enigma, the most difficult of all the three had on the various U-boat attacks that was depriving the British from necessary supplies. It highlighted the timeline of the various decrypts, as well as the various variations of the Naval Enigma.

Fessenden, Marrissa. "Women Were Key to WWII Code-Breaking at Bletchley Park." *Smithsonian Magazine*, 27 January 2015. smithsonianmag.com, Accessed 5 February 2015.

This magazine article discussed the role the women had at Bletchley. There were few primary sources on them, as women's role at Bletchley had just been discovered, however this source gave good perspective on what the women did at Bletchley Park, such as recording intercepted messages and other clerical tasks. It also included excerpts from interviews with Jean Valentine, a woman who helped operate the Bombe machines.

GCHQ. "Beginnings." Government Communications Headquarters, http://www.gchq.gov.uk/Pages/homepage.aspx. Accessed 30 January 2015.

This website is the site of the Government Communication Headquaters, which, at the time, was known as the Government Code and Cipher School. It was where peace-time

cryptanalysis and training took place. It gave me context as to how Turing and Ultra affected the entire British cryptology program.

Hodges, Andrew. "The Alan Turing Internet Scrapbook." Alan Turing: The Enigma, http://www.turing.org.uk/. Accessed 24 January 2015.

This website is by a well known biographer of Alan Turing, as well as a gay activist. In the website, it contained various excerpts of Turing's work. It talked about Turing machines, Turing test, and focused largely on Turing's work during World War II at Bletchley.

"How Enigma Machines Work." Enigma, http://enigma.louisedade.co.uk/howitworks.html. Accessed 2 February 2015.

This source was another explanation on the complexity of the Enigma machine. I found several sources that described this, as the Enigma machine is a complex utility. Therefore by reading several different explanations, I was able to completely understand the function of the machine.

Millican, Peter, and Andy Clark. *Machines and Thought: The Legacy of Alan Turing*. New York, NY: Oxford University Press, 1996.

This books was not entirely what I was looking for, as it talked more about psychology and other concepts, but I did find helpful excerpts about the Turing machine and the Turing test. It relates it to the works of other scientists, but it helped me gain background information about Turing's work.

Sebag-Montefiore, Hugh. *Enigma: The Battle for the Code*. New York, NY: John Wiley & Sons, 2000.

I began reading this book expecting it to talk about the efforts to break the code. However, to my surprise, it talked more about the works of secret agents and spies who worked to retrieve copies of Enigma and the codebooks. Although it did not directly relate to my topic, I did allow me to understand the information that Turing had to receive to crack the Enigma code, as well as the importance of cracking the code to turn the tide of the war.

Sedgewick, Robert, and Kevin Wayne. "Turing Machines." Princeton University, http://introcs.cs.princeton.edu/java/74turing/. Accessed 5 February 2015.

This site went into extensive detail regarding the Turing machines, the precursors to the ACE machine as well as modern day computers. The information it presented was complex and very technical, however in several places, it described the basic foundation of the Turing machine, which I was able to understand use in my website.

"Teaching with Documents: The Zimmermann Telegram." National Archives, http://www.archives.gov/education/lessons/zimmermann/. Accessed 31 January 2015.

This site discussed the Zimmermann Telegram, an encrypted message that was broken in World War I. It gave me context to the formation of the Government Code and Cipher School, as well as the beginnings of the British cryptology program. It also showed the importance of encryption systems as well as decryption methods during a war.

"Battle of the Atlantic." The National Archives, http://www.nationalarchives.gov.uk/education/worldwar2/theatres-of-war/atlantic/investigation/battle-of-the-atlantic/sources/photos/2/. Accessed 5 February 2015.

This source further discussed the role Turing and the Bombe played in the Battle of the Atlantic.

Teuscher, Christof, ed. *Alan Turing: Life and Legacy of a Great Thinker*. New York, NY: Springer, 2004.

This book gave a plethora of information regarding Turing's impact in various fields. Even though it was very technical and much too advanced for my understanding, I was able to understand the basics of his impact in computer science, artificial intelligence, and computing through his works. Also, I provided information on the role the Polish had in breaking Enigma, which was difficult for me to find, as the Polish were never awarded for their efforts until recently.

"What is a Turing Machine?" Wolfram Science, https://www.wolframscience.com/prizes/tm23/turingmachine.html. Accessed 6 February 2015.

This gave a simplified description and analogy of Turing machines to modern day computers. Therefore the source gave me insight into the legacy of Turing and his machines on modern day technology, and how contemporary technology was propelled because of Turing's work.

Photographs

Crypto Museum. Collection of photographs of Polish cryptologists. http://www.cryptomuseum.com/people/. Accessed 5 February 2015.

Getty Images. Photograph of Turing with Colleagues. 1951. http://www.bbc.co.uk/history/people/alan_turing. Accessed 5 February 2015.

Getty Images. Photograph of women at Bletchley Park. http://www.forbes.com/sites/elizabethdoerr/2013/06/29/bremont-codebreaker-a-watch-made-with-world-war-ii-enigma-parts/. Accessed 5 February 2015.

Helge Fyske. Collection of photographs of Enigma machine. http://www.nationalmuseum.af.mil/factsheets/factsheet_media.asp?fsID=9722. Accessed 5 February 2015.

National Archives. Collection of Photographs of Zimmermann Telegram. http://www.archives.gov/education/lessons/zimmermann/. Accessed 5 February 2015.

National Portrait Gallery. Photograph of Alan Turing. 1951. http://www.npg.org.uk/collections/search/portrait/mw63680/Alan-Mathison-Turing?LinkID=mp18700&search=sas&sText=alan+turing&role=sit&rNo=2. Accessed 5 February 2015.

National World War II Museum. Collection of photographs of structure of Enigma machine. http://www.pbs.org/wgbh/nova/assets/img/how-enigma-works/image-02-large.jpg. Accessed 5 February 2015.

NPL Photographs. Photograph of Pilot Model ACE. 1950. http://www.alanturing.net/turing_archive/archive/infopages/london1st.html. Accessed 5 February 2015.

Photographer Unknown Photograph of Turing at King's College. Ca. 1931. http://www.thehindu.com/multimedia/dynamic/01124/turing_1124572g.jpg. Accessed 5 February 2015.

Photographer Unknown, Photograph of Ultra Bombe Machine. http://media-2.web.britannica.com/eb-media/03/134503-004-E3EBE4B2.jpg. Accessed 5 February 2015.

Photographer Unknown. Collection of photographs of Bletchley Park. http://www.bletchleypark.org.uk/. Accessed 5 February 2015.

Photographer Unknown. Collection of photographs of Polish inventions. http://www.ieeeghn.org/wiki/index.php/The_encryption_war_of_WWII:_the_Enigma_encryption_machine. Accessed 5 February 2015.

Photographer Unknown. Collection of photographs of works and life of Turing. http://www.turing.org.uk/. Accessed 5 February 2015.

Photographer Unknown. Photograph of a modern Turing Machine. http://aturingmachine.com/. Accessed 5 February 2015.

Photographer Unknown. Photograph of Alan Turing with Sherborne School Classmates. 1926. http://universal-machine.blogspot.com/2012/05/sherborne-formula-making-of-alan-turing.html . Accessed 5 February 2015.

Photographer Unknown. Photograph of Alan Turing's Office. http://www.headoflegal.com/2013/12/24/alan-turing-straind-quality-of-irrational-and-arbitrary-mercy/. Accessed 5 February 2015.

Photographer unknown. Photograph of Bletchley Park. http://www.bletchleypark.org.uk/. Accessed February 3, 2015.

Photographer Unknown. Photograph of British Code and Cipher School. http://www.gchq.gov.uk/history/Pages/Beginnings.aspx. Accessed 5 February 2015.

Photographer Unknown. Photograph of German Enigma Machine. http://www.bletchleypark.org.uk/content/hist/worldwartwo/enigma.rhtm. Accessed 4 February 2015.

Photographer Unknown. Photograph of German U-Boat attacks. http://www.ww2shots.com/gallery/d/15317-1/U-Boat+03+WWII+151-ww2shots-navy.jpg. Accessed 5 February 2015.

Photographer Unknown. Photograph of Hugh Alexander. http://www.awesomestories.com/images/user/a268ba7b43.jpg. Accessed 5 February 2015.

Photographer unknown. Photograph of Hut 8 at Bletchley Park. http://www.colindaylinks.com/bletchley/bletchley7.html. Accessed 4 February 2015.

Photographer Unknown. Photograph of Pilot ACE machine. http://www.npl.co.uk/about/history/notable-individuals/turing/the-pilot-ace-computer. Accessed 5 February 2015.

Photographer Unknown. Photograph of Polish Cryptanalysts Marian Rejewski, Henryk Zygalski, and Jerzy Różycki. http://theinstitute.ieee.org/technology-focus/technology-history/ieee-milestone-honors-polands-world-war-ii-code-breakers. Accessed 5 February 2015.

Photographer Unknown. Photograph of the Government Code and Cipher School. http://www.rutherfordjournal.org/article030109.html. Accessed 5 February 2015.

Photographer Unknown. Photograph of Turing at age 4. 1916. http://www.computerworlduk.com/in-depth/public-sector/3365811/remember-alan-turing-when-considering-the-young-genius-of-today/. Accessed 5 February 2015.

Photographer Unknown. Photograph of Turing statue. http://www.telegraph.co.uk/history/britain-at-war/9745612/We-seek-to-pardon-ourselves-not-the-hapless-mathematician-Alan-Turing.html. Accessed 5 February 2015.

Photographer Unknown. Photographs of Turing portraits. Ca. 1951. http://www.alanturing.net/turing_archive/graphics/photos%20of%20Turing/photoindex.htm. Accessed 5 February 2015.

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US Air Force. Photograph of a World War II Air Raid. http://www.nationalmuseum.af.mil/photos/media_search.asp?q=ploesti. Accessed 5 February 2015.