

Primary Sources

**“A History of U.S. Communications Intelligence during World War II: Policy and Administration ” *NSA.gov*, NSA,
www.nsa.gov/Portals/70/documents/about/cryptologic-heritage/historical-figures-publications/publications/wwii/history_us_comms.pdf.**

A History of U.S. Communications Intelligence during World War II provides crucial information on how the United States interacted with Britain’s intelligence network during WWII. We are able to incorporate this information when presenting the British-American communications and interactions in regard to the Enigma and Ultra. This was extremely helpful in building our page titled American Production.

“Alfred Dillwyn (Dilly) Knox.” *Dilly Knox*, cryptomuseum.com/people/dilly_knox.htm.

Alfred Dillwyn (Dilly) Knox gave us a picture of Alfred Dilly Knox. The portrait allows us to provide a personal connection with our website information. We also use it to introduce Dilly Knox on our website. The portrait is included in the section titled Polish Bomba on our website.

**“AMT/K/7/4: Image 4.” *Browse the Turing Digital Archive*,
www.turingarchive.org/viewer/?id=521&title=4.**

Alan Turing is shown as a codebreaker at Bletchley Park in this photograph. This is used to emphasise the importance of Alan Turing in the effort to break the Enigma code and to introduce him into our project. We added this picture to the section detailing the British Bombe on our project.

**“An Overview of American Intelligence Until World War II.” *Central Intelligence Agency*, Central Intelligence Agency, 20 June 2008,
www.cia.gov/news-information/featured-story-archive/2007-featured-story-archive/overview-of-american-intelligence.html.**

An Overview of American Intelligence Until World War II is a report by the CIA that describes America’s work in intelligence and cryptology before WWII. This provides historical context, showing the leadup to America’s contribution in breaking the Enigma code. This helped us to build our background page and to give historical context to our American Intelligence page.

**“Arthur Scherbius, Enigma Machine Inventor.” *Science Source*,
www.sciencesource.com/archive/Arthur-Scherbius--Enigma-machine-inventor-S2322600.html.**

This portrait of Arthur Scherbius illustrates his importance and significance in creating the Enigma machine, and we use it to introduce him into our website. This picture is utilized in the Creating the Barrier section of our website.

**Balchin, Dorinda. “The Only Thing That Ever Really Frightened Churchill – The Battle of the Atlantic.” *Dorinda Balchin - Author*, 10 Oct. 2017,
dorindabalchin.com/2017/10/10/the-only-thing-that-ever-really-frightened-churchill-the-battle-of-the-atlantic/.**

This picture of the HMS Barham exploding shows the danger of the Battle of the Atlantic. It helps to illustrate the destructive capabilities of U-boats, and of the importance of breaking the Enigma code. We use this picture in the Thesis portion of our website.

“Boat Archive - Index of ASW Incidents.” *U*, www.uboaarchive.net/Uboatlist.htm.

From this website we gained a picture of the crew members from the HMS Bulldog boarding the U-boat 110. This is used to convey both the danger and importance of the crew obtaining the Enigma machine and codebooks. We use this picture in Capturing the Enigma part of our website.

**“Churchill Considered Making Peace with Hitler in 1940? - Revisiting Historical Memory about Britain and World War II.” *Busy*, 15 May 2018,
busy.org/@andras.becker/churchill-considered-making-peace-with-hitler-in-1940-revisiting-historical-memory-about-britain-and-world-war-ii.**

Using this source, we were able to find and incorporate a picture of Winston Churchill. We use this photograph to illustrate how even the Prime Minister was involved with Ultra intelligence, highlighting its importance. We incorporate this photograph in the Ultra section of our website.

“Codebreaker Alan Turing Will Be the New Face of the £50 Note.” Bletchley Park, bletchleypark.org.uk/news/alan-turing.

This source details Alan Turing’s time at Bletchley Park, and both includes pictures and background information. It explains why breaking the Enigma code was so vital, and how that success has contributed to his posthumous newfound celebrity, enabling him to be memorialized on Britain’s 50 Pound note. This information is used in the lasting effect page, showing the cryptological work during WWII, and in Britain’s contributions to it.

“Denniston's Approach to the Growing Cryptanalytic Challenge.” *Gchq.gov.uk*, www.gchq.gov.uk/information/dennistons-approach-growing-cryptanalytic-challenge.

This is a portrait of Alastair Denniston, the British intelligence officer. Showing this image helps to better emphasize Denniston’s importance during the breaking of the Enigma machine. We use this photograph in the Polish Bomba portion of our website.

Doyle, Sabrina. “That Time the U.S. Government Made All Bars in America Close At Midnight.” *Smithsonian.com*, Smithsonian Institution, 27 Feb. 2014, www.smithsonianmag.com/smart-news/that-time-the-government-made-all-bars-in-america-close-at-midnight-180949915/.

The Smithsonian provides a photograph of ecstatic citizens celebrating after the end of WWII. We use this picture to show how important this event was, and to bring a feeling of excitement to the end of the war. We use this in our Lasting Effects page.

Enigma and a Way to Its Decryption, www.cs.miami.edu/home/harald/enigma/.

Enigma and a Way to Its Decryption contains information on how the Germans used the Enigma machine and how they coded and decoded messages. This site contains diagrams and copies of letters that helped Britain break the code. It also describes how the intercepted information could only be utilized for a limited amount of things so the Germans wouldn’t know that the Allies had broken the Enigma code. We incorporated this to illustrate the complexity and importance of the breaking of the Enigma in our website, specifically in the background page.

**“'ENIGMA' -- Cipher Machine A Three-Rotor Enigma Machine, Num...” *LotSearch*,
Christie's, 20 June 2017,
www.lotsearch.de/lot/enigma-cipher-machine-a-three-rotor-enigma-machine-num-25177420.**

From this website we were able to obtain an image of an Enigma machine. This picture gives us and the viewer a better understanding of what an enigma machine looked like and helps to introduce the idea of what an Enigma machine is. We use this image in the thesis portion of our website.

**“ENIGMA IN ACTION.” ENIGMA MUSEUM: CIPHER MACHINES FIALKA
NEMA AND OTHER CIPHER MACHINES, enigmamuseum.com/em.htm.**

This photograph of three Nazi's decyphering an encrypted Enigma message helped us to show how the Germans used the Enigma machine. This picture shows that the Enigma was small enough to transport and required a minimal crew to operate. We use the photograph in the thesis part of our website.

***From Bombe 'Stops' to Enigma Keys. Bletchley Park,*
web.archive.org/web/20100108030414/www.bletchleypark.org.uk/content/bombe_stops.pdf.**

The Bletchley Park Archive provided many images and quotes, as well as primary source accounts for our website. We found charts of Enigma encryptions and diagrams of how the Bombe machine worked. Bletchley Park also let us conduct a personal interview with one of their historians. This information was essential when creating the British Bombe page.

**“H-019-4 ‘Black May’: Battle of the Atlantic 1943.” *Naval History and Heritage Command*,
www.history.navy.mil/about-us/leadership/director/directors-corner/h-grams/h-gram-019/h-019-4.html.**

The German U-boat in the image is being destroyed after Enigma intelligence was given to the Allied Forces' bombers. This details the importance of decrypted Enigma messages which provided information that facilitated the sinking of U-boats. We use this photograph on the Impact of World War II page.

“Halifax.” *John Knifton*, johnknifton.com/tag/halifax/.

This image of a U-boat being destroyed is useful in showing how the breaking of the Enigma Code helped the Allies in destroying U-boats. The picture gives a graphic visual of the realities of the Battle of the Atlantic. We use this image in the Thesis part of our website.

Hamer, David, and Geoff Sullivan. *Enigma Variations: An Extended Family of Machines*.

www.math.utoledo.edu/~codenth/Cryptanalysis/crypt_machs/ESIM/enigvar2.PDF

Enigma Variations: An Extended Family of Machines is a record of the different types and variations of the Enigma. This website clarifies how the Enigma machine worked, and details how and why the machine was changed. This is used in building our background page when we display what the Enigma was and how it worked.

HELLMAN, MARTIN E. 1.martydevoe@gmail.co. “Cybersecurity, Nuclear Security, Alan Turing, and Illogical Logic.” *Communications of the ACM*, vol. 60, no. 12, Dec. 2017, pp. 52–59. EBSCOhost, doi:10.1145/3104985.

Cybersecurity, Nuclear Security, Alan Turing, and Illogical Logic by Martin Hellman, an American cryptologist, explains the use of data encryption to protect unclassified but also sensitive documents from the public. He connects this to Alan Turing and the work done at Bletchley Park winning him the Turing Award for the speech. We implemented this information in the Lasting Effect tab of our project.

Hensley, Harry. *The Influence of ULTRA in the Second World War*.

www.cdpa.co.uk/UoP/HoC/Lectures/HoC_08e.PDF

This is a transcript of a seminar by Harry Hinsley, a codebreaker at Bletchley Park during WWII. He explained the importance of Ultra in the war, and gives specific examples of how Ultra intelligence was used. From this, we were able to find several quotes, which are utilized throughout our website.

“Home.” *National Security Agency Central Security Service > News & Features > Declassified Documents > UKUSA,*
www.nsa.gov/news-features/declassified-documents/ukusa/.

The primary source documents of the UKUSA agreement provided by this website yielded visuals and information for our project. This website has copies of all the versions of the UKUSA agreement and of the other associated arrangements that went with it. We use this in our lasting effects page, to show how breaking the Enigma code has influenced modern cryptographical accords.

“Joan Clarke: Facts, Summary, Life, Achievements, Post War & Death.” *School History,* schoolhistory.co.uk/notes/joan-clarke/.

The Bombe machine in this picture illustrates what the machine that Alan Turing and his team made to break the Enigma code looked like. This is used to show the importance of this machine and to introduce how it was critical to breaking the Enigma code. We use this picture in the British Bombe page of our website.

Magazine, Argunners. “Lt.Cmdr. David Balme, Captor of First Enigma, Passed Away.” *Argunners,* 3 Apr. 2016,
www.argunners.com/lt-cmdr-david-balme-captor-of-first-enigma-passed-away/.

This picture of U-110 and the HMS Bulldog demonstrates what the U-boat looked like and the Allied forces closing in to capture an Enigma machine. This illustrates the importance of capturing U-110 and introduces it into our website. We use this picture in the Capturing the Enigma page of our website.

Newman, William1, wmn@pobox.co. “Alan Turing Remembered.” *Communications of the ACM,* vol. 55, no. 12, Dec. 2012, pp. 39–40. EBSCOhost, [doi:10.1145/2380656.2380682](https://doi.org/10.1145/2380656.2380682).

Alan Turing Remembered is the firsthand account by William Newman. He included his interactions with Turing, and how Turing influenced his life. This gives a unique account of a personable Turing, and how he acted in social situations, and we use this to understand how Turing interacted with others when working on breaking the Enigma code.

Personal Interview with Peter Turney, Senior Research Scientist at Allen Institute of Artificial Intelligence 25 September, 2019

Dr. Peter Turney, a scientist who specializes in studying Alan Turing and his work, gave us a modern perspective into Alan Turing's work. He discussed how others affected and helped Turing and why the work was so important. This information was extremely helpful in developing our page about the British Bombe. He gave us his personal opinion on many of Turing and the breaking of the Enigma's impact on today.

**“Search.” *The Enigma Message Breaking Project - Latest News*,
enigma.hoerenberg.com/index.php?cat=Welcome&page=News.**

In this photograph, an encrypted Enigma message is shown. This helps to illustrate how complex and unusual Enigma messages were. We use this in our tab Creating the Code to demonstrate how intricate the Enigma code was.

**“Six Facts You Need to Know about The Bombe Machines.” *Bletchley Park, Bletchley Park*, 23 Mar. 2018,
bletchleypark.org.uk/cms/2017/05/Six-Bombe-facts-PDF.pdf.**

Six Facts You Need to Know about the Bombe Machines provided information about the English Bombe machine and gave us ideas of where to focus our research in this area. The information we gathered from this website provided historical perspective and information into the background of our topic. We use this on our page about Britain's role in breaking the Enigma code.

**Taylor, Alan. “World War II: The North African Campaign.” *The Atlantic*, Atlantic Media Company, 4 Sept. 2011,
www.theatlantic.com/photo/2011/09/world-war-ii-the-north-african-campaign/100140/#img45.**

This picture shows an American bomber flying over the Great Pyramids of Giza. This demonstrates how the war was truly global. If the Allies and Axis powers were in Egypt they could be able to fight almost anywhere in the world. We use this photograph in the Impact on WWII page of our website.

Taylor, Ian. Alan M. Turing: The Applications of Probability to Cryptography. May 2015.

This article contains the figures, text and annotations of a recently declassified paper written by Alan Turing, *The Applications of Probability to Cryptography*. This details some new ideas Britain brought to breaking the Enigma code, and algorithms that helped break German communications. This also gives descriptions and explanations of this primary source information. This helps us to understand and show the importance of Britain's contributions to cryptography during WWII.

“The US 6812 Bombe Report 1944.” Tony Sales Codes and Ciphers, www.codesandciphers.org.uk/documents/bmbrpt/usbmbrpt.pdf.

The US 6812 Bombe Report 1944 by the United States Army is an analysis of the British Bombe machine. It also demonstrates how the US utilized replicas of the Bombe machine to make their own machines. This document goes on to explain why it was so hard to crack the German code, which further demonstrates the importance of breaking it. This information is incorporated into the British Bombe page.

Toi, et al. “Nazi Surrender Agreement on Sale.” *The Times of Israel*, 12 Nov. 2019, www.timesofisrael.com/nazi-surrender-agreement-on-sale-report/.

Nazi Surrender Agreement on Sale displays the NAZIs surrendering. We use this to illustrate the millions of lives saved by the end of the war in Europe. We use this image on our Lasting Effects tab.

Turing, Sara. *Alan M. Turing. Centenary edition.*, Cambridge University Press, 2012.

The book *Alan M. Turing*, by his mother Sara Turing, mainly focuses on Alan Turing's childhood and how that influenced his later life. The book includes pictures of Turing in his childhood and contained details surrounding his young death. We used the information from the book to gain a better understanding of the codebreakers who worked throughout World War II and incorporated this information into the British Bombe page of our website

**“US1657411A - CIPHERING MACHINE.” *Google Patents*, Google,
patents.google.com/patent/US1657411.**

This image of Arthur Schurbius’ Patent, the Handelsmaschine, is very useful in showing what details of the machine looked like, and some of the mechanisms in it. We use this picture in our Creating the Barrier page.

**“Virtual Wartime Bletchley Park by Tony Sale.” *Virtual Bletchley Park*,
www.codesandciphers.org.uk/virtualbp/tbombe/tbombe.htm.**

Virtual Wartime Bletchley Park gives in-depth information on how the Enigma Code was broken, including information on letter pairs, letter loops, and how the Bombe Machine exploited these. This allows us to understand how the Bombe worked, and how unconventional this type of machine was. We use this to emphasize how important the Bombe was during WWII, and use it in the British Bombe page.

**Walton, Victoria. “Commemorating the 74th Anniversary of the Battle of the Atlantic.” *HalifaxToday.ca*, HalifaxToday.ca, 4 May 2019, 1:57,
www.halifaxtoday.ca/local-news/commemorating-the-74th-anniversary-of-the-battle-of-the-atlantic-1428888.**

HalifaxToday used a high definition picture of a merchant convoy to give a reference to the battle that shaped World War Two. We used it on the Capturing the Enigma page. It helped convey the tactic the Allies used to protect the large amount of ships.

**“War of Secrets: Cryptology in WWII.” *National Museum of the United States Air Force*™, 1 May 2015,
www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/Article/196193/war-of-secrets-cryptology-in-wwii/.**

This is an exhibit from the United States Air Force’s official collection of data that was compiled from Ultra through the Enigma machine. It detailed how the air war was influenced by Enigma transmissions and how the Allies used them to increase damages and minimize losses due to German Luftwaffe. We use this website to show the impact breaking the Enigma code had on WWII, and use a picture from this website.

**“WW2 People's War - My Years at Bletchley Park – Station X.” BBC, BBC,
www.bbc.co.uk/history/ww2peopleswar/stories/60/a2377460.shtml.**

WW2 People's War - My Years at Bletchley Park is by a codebreaker at Bletchley Park, and is of her experiences there. This helps to set forth the day-to-day activities at Bletchley Park, and gives examples of how different people contributed to the overall mission at Bletchley Park. This is used during our page on Britain.

Secondary Sources

Abramson, Darren¹, da@dal. c. “Turing’s Responses to Two Objections.” *Minds & Machines*, vol. 18, no. 2, May 2008, pp. 147–167. EBSCOhost, doi:10.1007/s11023-008-9094-6.

In Abramson’s paper, he explains how important the British codebreaker Alan Turing was. He shows how Turing responded to and defended himself against criticism. We used this in the Bletchley Park page to introduce a more personal aspect to the people that worked at this secret facility.

Alan Turing - a Short Biography, www.turing.org.uk/publications/dnb.html.

Through this short biography of Alan Turing, we learned about his work in cryptography. It helped us to understand the significance of Turing’s contributions, and how mathematics helped to build the British Bombe and decode Enigma communications. This is used in explaining Britain’s work in Breaking the Enigma on the British Bombe tab of our website.

"Alan Turing's Legacy." *New York Times* (1923-Current file), Jun 23, 2012, pp. 1. ProQuest, <http://libezp.nmsu.edu:2048/login?url=https://search.proquest.com/docview/1705859475?accountid=12810>.

Alan Turing’s Legacy includes information on Alan Turing’s work in cryptography. It shows what new ideas Turing introduced to breaking the Enigma code, and why his work was important. This helps to give weight to the page on Britain’s efforts in breaking the Enigma code.

“Alan Turing’s Other Universal Machine.” *Communications of the ACM*, vol. 55, no. 7, July 2012, pp. 31–33. EBSCOhost, doi:10.1145/2209249.2209277.

Alan Turing’s Other Universal Machine has to do with not only Alan Turing’s work on breaking the Enigma code, but also the ACE, a computer Turing helped develop after WWII. This article details the results of the ACE and the spinoffs and copies of it. This is used to exhibit how breaking the Enigma code led to the creation of other machines, and is incorporated into our lasting effect.

Copeland, B.Jack, and Oron Shagrir. “The Church-Turing Thesis.” *Communications of the ACM*, vol. 62, no. 1, Jan. 2019, pp. 66–74. EBSCOhost, doi:10.1145/3198448.

The Church-Turing Thesis helps to convey what Turing worked on before the war. It helps to explain how his previous work in mathematics was essential to improving the Polish Bomba and creating a truly effective code-breaking machine. We use this to help add historical context to our work and build our British Bombe page.

Chanter, Alan. “Bletchley Park.” *WW2DB, World War II Database*, ww2db.com/facility/Bletchley_Park/.

Bletchley Park is an article about Bletchley Park before, during, and after WWII. It displays what changes were made to the building to incorporate codebreakers, and what happened to the building after the war. We use this in showing both the background and lasting effect of Bletchley Park.

Daylight, Edgar G. “A Turing Tale.” *Communications of the ACM*, vol. 57, no. 10, Oct. 2014, pp. 36–38. EBSCOhost, doi:10.1145/2629499.

A Turing Tale is about the history of Turing, comparing and contrasting three biographies of him. It helps us to separate truth from fiction in his work during WWII, and helps to clarify what the code breakers did. It also further defines what Turing’s primary accomplishments were in breaking the Enigma code. We used this while building our British Bombe page.

Gams, Matjaž1, matjaz.gams@ijs. s. “Alan Turing, Turing Machines and Stronger.” *Informatica (03505596)*, vol. 37, no. 1, Mar. 2013, pp. 9–14. EBSCOhost, search.ebscohost.com/login.aspx?direct=true&db=aci&AN=90449673&site=ehost-live&scope=site.

This gave a detailed description of the Enigma machine and how it worked. The website also details Turing’s contributions to breaking its code. This information is used to clarify what improvements Britain made to cracking the Enigma code. We use this on British Bombe tab of our website.

Gilbert, Martin. "Churchill and Enigma." *Sir Martin Gilbert*, 24 May 2016, www.martingilbert.com/blog/churchill-and-enigma/.

Churchill and Enigma is an article by the official biographer of Churchill, and displays how Churchill was involved in Ultra Intelligence. This helps us to see how the Prime Minister contributed to Ultra. We use it to show how the information was so significant that Churchill himself utilized the decrypts to make war altering decisions. This used this while building our page about Ultra.

"Gordon Welchman, No Longer a Forgotten Hero." *Downend Voice*, 28 Oct. 2016, www.downendvoice.co.uk/gordon-welchman,-no-longer-a-forgotten-hero.

Gordon Welchman, No Longer a Forgotten Hero, is an account of Gordon Welchman and his contributions to the English Bombe. It acknowledges the importance of his diagonal board, while also telling the incredible story of a man who went unrecognized for over seventy-five years. The information was incorporated in our website when describing the diagonal board.

Hastings, Max. *The Secret War: Spies, Ciphers, and Guerrillas 1939-1945*. Harper Perennial, an Imprint of HarperCollins Publishers, 2017.

The Secret War: Spies, Ciphers, and Guerrillas 1939-1945 by Max Hastings dictates the stories of the intelligence networks used during WWII. This book goes into detail about Bletchley Park and Ultra Intelligence but also shows the German side of codebreaking, helping us to better put our project in historical perspective. This book also shows the implementation of Enigma decrypts, which we use in our Impact on WWII page.

Hautala, Laura. “Enigma Machines Created Fiendishly Complex Secret Codes, and They Weren't Even Computers.” CNET, CNET, 1 Mar. 2018, www.cnet.com/news/enigma-up-close-with-a-nazi-cypher-machine-bombe-bletchley-park/.

Laura Hautala, CNETs’ chief correspondent on cybersecurity describes how the Enigma machine operated and how the Germans countered by then using different switchboards every time they encrypted a message. It gave data about how difficult it was to break the Enigma code. This gives a representation of how little of a chance these people had to break this code and helps us to demonstrate the difficulty and importance of the codebreakers work during World War II.

Hautala, Laura. “Enigma: Why the Fight to Break Nazi Encryption Still Matters.” CNET, Cnet, www.cnet.com/news/enigma-why-the-fight-to-break-nazi-encryption-still-matters/.

Enigma: Why the Fight to Break Nazi Encryption Still Matters is an article on the process of breaking the Enigma code and the value of the information. This source places special emphasis on the connection to today, and we use this in our website to show the same.

Howard, Toby. “Alan M. Turing (1912 - 1954).” *Alan Turing*, curation.cs.manchester.ac.uk/computer50/www.computer50.org/mark1/turing.html.

Toby Howard’s biography of Alan Turing focuses on his contribution to the electronic computer. This website is especially helpful as it links his work during World War II to his work on computers. This information is used on the pages about his accomplishments on our website.

Johnson, George. "Enigmatic: David Leavitt Revisits the Life and Mysterious Death of the Cryptanalyst Alan Turing." *New York Times* (1923-Current file), Dec 18, 2005, pp. 1. ProQuest, <http://libezp.nmsu.edu:2048/login?url=https://search.proquest.com/docview/92957883?accountid=12810>.

In the article *Enigmatic*, George Johnson writes about Turing's accomplishments in breaking the Enigma code. It helps to show the importance of the information, and helps us to go into more detail on Alan Turing's accomplishments and ideas.

Kerrigan, Michael. *Enigma Code Breakers: How Breaking the Nazi Code Helped Win World War II*. Amber Books Ltd, 2018.

Enigma Code Breakers: How Breaking the Nazi Code Helped Win World War II by Michael Kerrigan provided a wealth of information about the Enigma, Bletchley Park, and WWII, focusing on Bletchley Park's role in breaking the Enigma code. Specific examples of how Bletchley Park affected WWII are provided in the book, and the stories of important people at Bletchley Park are told. We use this information on our pages about Bletchley Park and the Impact on WWII.

Knighton, Andrew. "Four British Intelligence Agents of World War Two and Their Very Different Civilian Lives." *WAR HISTORY ONLINE*, War History Online, 24 Dec. 2017, www.warhistoryonline.com/world-war-ii/british-intelligence-analysts-wwii.html.

The four unique stories of each of the intelligence officers mentioned in this article help to display the many facets of the work done on breaking the Enigma code. They cover many different areas of intelligence work, and help to exhibit how individual people contributed. We use this to give context to our work and to emphasize their contributions.

"MilitaryHistoryNow.com -." *MilitaryHistoryNow.com*, militaryhistorynow.com/.

This website provides articles and pictures on military events throughout history. By using this website, we gained information into the utilization of intelligence during WWII and gained a visual used on our Impact on WWII page.

“NOVA | Transcripts | Decoding Nazi Secrets.” *PBS, Public Broadcasting Service*, 9 Nov. 1999, www.pbs.org/wgbh/nova/transcripts/2615decoding.html.

This is a transcript of a program by PBS on deciphering the Enigma code, and carefully details the events that took place and the importance of deciphering this code. We use this information in our page about the British Bombe machine.

Personal Interview with Barbra Keremedjiev, cofounder of the American Computer and Robotics Museum 5 September, 2019

Keremedjiev explained the details of the Enigma machine including how the Allies weaponized it after breaking the code against the Axis Powers. She also gave us insight on the British element, Alan Turing and how his upbringing affected his future and how the world might have been different today. She was the first interview for our project, and helped enormously in starting us off.

Personal Interview with Bernd von Kostka, Research Associate and Curator for the Allied Museum 27 February, 2020

Using this interview, we were able to get answers to some questions we could not find on the internet. Kostka also had many contacts that we also got in touch with, and we use several quotes from him on our website. From this interview, we gained a German perspective into the breaking of the Enigma code, and were able to use this information throughout the website.

Personal Interview with Catherine Holden, manager of the Bletchley Park Trust 4 September, 2019

Catherine Holden was extremely useful in providing an understanding of the operations at Bletchley Park, why it was important, and how Alan Turing was involved. She told us the fundamental statistics and mechanics of the Enigma machine. As one of our first personal interviews, she provided a great foundation for our later research into Bletchley Park, the Enigma machine and its code. Catherine Holden gave a wealth of information, which we use when describing the work of Bletchley Park.

Personal Interview with Darren Abramson, Professor at Dalhousie University, 23 September, 2019

Dr. Darren Abramson is an expert on Alan Turing and the scientific field of psychology. In this personal interview, he discussed the philosophical implications of Turing's work, and how his work still affects us today. We were able to use this information in the lasting effects portion of our website.

Personal Interview with David Simpatico, Playwright of "The Life and Death(s) of Alan Turing" 21 September, 2019

David Simpatico was a great help in giving us more simplistic terms to describe the Enigma machine. He led us to find a substantial amount of information and other people to help with our project, including more people in the field of drama and research. Simpatico gave us a unique view into Alan Turing and the work he performed during WWII.

Personal Interview with Dr Alessandro Di Nuovo PhD, senior academic with a distinguished international reputation in research, 29 December, 2019

Dr. Alessandro Di Nuovo was an excellent source in explaining the technological aspects of the Enigma machine and the way its system works. He emphasized the importance of Turing's contributions to the war and of how his work still matters today. This was useful in building the lasting effects page of our website and our page on the British Bombe.

Personal Interview with Gregory J. Nedved, historian at the National Cryptologic Museum 14 September, 2019

An employee of the National Security Agency at the National Cryptologic Museum, Gregory Nedved gave an in-depth account of the importance of breaking the Enigma code during WWII. He explained Turing's role and the far reaching effects of Ultra. He was especially helpful in explaining Poland's role in breaking the Enigma code, guiding our research in that area. He gave his view on what would have happened if the Enigma code had not been broken and the Axis powers were allowed to keep the stranglehold on both North Africa and Great Britain. We used the information from this interview throughout the website, specifically when showing Poland's contributions.

Personal Interview with Jeremy Green PH.D., Vice Dean of International Research at King's College London 17 November, 2019

This personal interview with Jeremy Green gave us insight on how Alan Turing's early work in biology and other sciences translated into how he could decipher codes and break barriers in his later life. Turing developed groundbreaking theorems for patterns in animals such as the spots on a leopard and translated that to the war efforts. This interview was extremely helpful in gaining historical perspective and results of Alan Turing's work in codebreaking.

Personal Interview with Julian Wagstaff, composer of "The Turing Test" and historian on Alan Turing 17 September, 2019

Mr. Wagstaff, the Scottish music composer, spent years focusing all his efforts to write an opera on Turing and what he accomplished along with the barriers broken with the Enigma machine. We used his analysis and opinions to explain how the backgrounds of the codebreakers mattered in addition to their mindset of trying to defeat the NAZIs in World War Two.

Personal Interview with Kyle Richardson PhD, Research Scientist at Allen Institute of Artificial Intelligence 27 September, 2019

Kyle Richardson was very helpful, as he gave us some examples of Turing's work along with breaking the Enigma code. He explained the significance of Turing's work and explained what had to be done to implement Turing's ideas into reality. From him, we were able to gain historical context, build a lasting effect, and understand the

Personal Interview with Martin E. Hellman, Professor Emeritus of Electrical Engineering at Stanford, 29 September, 2019

An expert in electrical engineering, Martin E. Hellman gave us insight into the technological aspect of breaking the Enigma code. He explained the mechanical application of Turing's ideas, and of how his contributions still affect us today. We asked his opinion on if the Enigma is still a feasible encryption device. This was helpful in building our pages on the British Bombe and the lasting effect of breaking the Enigma code.

importance of Turing's work.

Purdue, A. W. "The Transformative Impact of World War II World War II." *EGO*, 2016, ieg-ego.eu/en/threads/alliances-and-wars/war-as-an-agent-of-transfer/a-w-purdue-the-transformative-impact-of-world-war-ii

The Transformative Impact of World War II is an article that describes how World War II changed and improved Europe and the world. It helps to show how important stopping Hitler was, and the results of doing so. We use this in our Lasting Effects

"Short Biography of Alan Turing." Alan Turing, www.macs.hw.ac.uk/~foss/valentin/Alan_Turning.html.

Short Biography of Alan Turing provided us with additional knowledge on Turing's childhood and his life. We learned of Alan Turing's schooling and the key dates of his life. Through this biography we found interesting perspectives on Alan Turing's personal life and how it affected his accomplishments. We used it in Bletchley Park

Sebag-Montefiore, Hugh. "The Boarding of U-559 Changed the War – Now Both Sides Tell Their Story." *The Guardian*, Guardian News and Media, 20 Oct. 2017, www.theguardian.com/world/2017/oct/20/enigma-code-u-boat-u559-hms-petard-sebag-montefiori.

This article "The Boarding of U-559 Changed the War" provided knowledge about how the seizing of the Enigma took place. It also gives an explanation of how this event influenced the rest of WWII. We used this website to give the reader a deeper understanding on the capturing of the Enigma machine.

Sheffield, Dr Gary. "History - World Wars: The Battle of the Atlantic: The U-Boat Peril." *BBC*, BBC, 30 Mar. 2011, www.bbc.co.uk/history/worldwars/wwtwo/battle_atlantic_01.shtml.

History - World Wars: The Battle of the Atlantic: The U-Boat Peril is an article that helps to give the significance and danger that U-boats posed during WWII. This article helps us to understand why deciphering Enigma messages was essential in the Allies struggle to combat the U-boat threat. We use this in our pages about Capturing the Enigma and Impact on WWII.

Smith, Chris. "Cracking the Enigma Code: How Turing's Bombe Turned the Tide of WWII." *BT.com*, home.bt.com/tech-gadgets/cracking-the-enigma-code-how-turings-bombe-turned-the-tide-of-wwii-11363990654704.

Chris Smith's article about the Bombe and the Enigma machine includes information on the importance and functions of the Bombe. This helps us to understand the role of the Bombe in the war, and how the Bombe worked. We used this information to build our page on the Bombe and the Enigma.

"THE BATTLE OF THE ATLANTIC, 1939-1945." *Imperial War Museums*, www.iwm.org.uk/collections/item/object/205022049.

The Imperial War Museums' website helped us to understand the history of both Alan Turing and the Enigma machine. It also gave us information on how the Enigma machine worked. In the end, this helped us a considerable amount in creating our website, specifically the British Bombe page.

**“The Enigma of Alan Turing.” Central Intelligence Agency, Central Intelligence Agency, 10 Apr. 2015,
www.cia.gov/news-information/featured-story-archive/2015-featured-story-archive/the-enigma-of-alan-turing.html.**

The CIA website provided information on how Americans made and implemented the Bombe machine and how the other code breaking information at Bletchley Park during World War II was used. The page contains diagrams of the US four-wheel encoding machines that were made possible because of the work done at Bletchley Park. This helped us understand that Breaking the Enigma code influenced not only the European war effort, but the American as well. We use the information that we learned on the page titled American Production.page.

**“The Turing Bombe.” The Turing Bombe - Cribs and Menus,
www.ellsbury.com/bombe1.htm.**

The article *Turing Bombe* gives a face to the workings of the Bombe, as well as the complexity of the machine. This helps us to better understand how the Bombe works, as well as the necessity of Turing’s contributions. This was useful in explaining in layman’s terms Turing's contributions and the details of the Bombs. We incorporate this information in the British Bombe page of our website.

**Turner, Robin. “Bletchley Park Uncovered: The Secret Life of the Welsh World War II Codebreaker.” *Walesonline*, 26 July 2014,
www.walesonline.co.uk/news/wales-news/mair-russell-jones-headhunted-bletchley-7509061.**

Bletchley Park Uncovered: The Secret Life of the Welsh World II Codebreaker tells the story of Mair Russel Jones and her experiences at Bletchley Park. This website gives us a woman’s view into Bletchley Park, and helps to illustrate how hard the work there was. We use this information to gain a unique perspective into Bletchley Park, and to show the amount of pressure put on those working there.

Winks, Robin W. “Kemper Lecture 1995 - Robin W Winks.” *National Churchill Museum* | *Winston Churchill Kemper Lecture Robin W Winks*, National Churchill Museum, www.nationalchurchillmuseum.org/kemper-lecture-winks.html.

This website contained information on Churchill and his contributions to the Ultra secret and other British intelligence issues. It helped us to understand how much Churchill stressed the importance of intelligence, and how big of a role he played in gaining it during WWII. We use this in our page on Ultra to show his contributions to Ultra.