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*Chemical Discoveries, Patriotism, and Jewish Identity:
Assessing the German Nobel Laureate Fritz Haber (1868-1934)*

ABSTRACT: *This article suggests a methodology for the assessment of a scientist with a controversial legacy, in this case the German physical chemist Fritz Haber (1868-1934) who is known for his work on the nitrogen fixation, used to make fertilizer, but also for his support of chemical warfare in World War I. On the basis of lectures, letters, and media coverage, it explores three components of Haber's life as possible parameters, namely, Haber's scientific research, national identity, and religious heritage, to obtain a balanced assessment.*

KEYWORDS: *modern history; Germany; Europe; Fritz Haber; nitrogen fixation; chemical warfare; Nobel Prize; patriotism; Jewish heritage; National Socialism*

Introduction

Among the most prestigious awards that can be bestowed upon a scientist is the Nobel Prize. Conversely, one of the most denounced forms of warfare involves the use of chemicals and gases. Therefore, it would seem odd to have a Nobel Prize laureate associated with chemical warfare, but there is such a case, namely, the German chemist Fritz Haber (1868-1934).¹ Haber is considered one of the best physical chemists in the world. He was awarded the 1918 Nobel Prize in Chemistry for his work on nitrogen fixation, a chemical process used for the manufacture of fertilizer and, thus, agricultural food production. However, Haber is also infamously known as a proponent of chemical warfare, particularly the use of chlorine gas in trench warfare during World War I.² The focus of this article is not to condemn or defend Haber for his actions as a scientist regarding his role in food production and chemical warfare. Much scholarship has already been published to justify, rationalize, or denounce him for his role in World War I. Rather, this article provides a methodology—a set of parameters—to consider when assessing a scientist's actions before, during, and after a war.

Various types of primary sources are used here in an attempt to assess Haber as a scientist, as a German citizen, and as a Christian convert from Judaism.³ These include lectures, personal letters, and foreign newspaper articles. Haber's lectures

¹ For Fritz Haber, see Dietrich Stoltzenberg, *Fritz Haber: Chemist, Nobel Laureate, German, Jew* (Philadelphia: Chemical Heritage Press, 2004); and Morris Goran, *The Story of Fritz Haber* (Norman: University of Oklahoma Press, 1967). See also Fritz Stern, "Fritz Haber: Flawed Greatness of Person and Country," *Angewandte Chemie* (International Edition) 51, no. 1 (January 2012): 50-56.

² For chemical warfare, see Ludwig F. Haber, *The Poisonous Cloud: Chemical Warfare in the First World War* (New York: Oxford University Press/Oxford: Clarendon Press, 1986); and Michael Freemantle, *The Chemists' War: 1914-1918* (2014; Cambridge: Royal Society of Chemistry, 2015). For nitrogen fixation, see Vaclav Smil, *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production* (Cambridge, MA: MIT Press, 2001).

³ For Haber's Jewish heritage, see Thomas Hager, *The Alchemy of Air: A Jewish Genius, a Doomed Tycoon, and the Scientific Discovery That Fed the World but Fueled the Rise of Hitler* (New York: Harmony Books, 2008).

provide insight into his thought processes regarding the discovery of nitrogen fixation as well as his defense of the use of chemical warfare even after World War I; these lectures are mostly devoid of personal thoughts, framing Haber strictly as a scientist. Haber's letters, collected by his friend, the German physician Rudolf A. Stern (1895-1962), can help us understand Haber's thoughts on post-World War I Germany and his attempts to aid his home country. Finally, newspaper articles provide insight into what the foreign press, Haber's fellow Germans, and the Nazi regime thought about him. Both the letters and the newspaper articles offer personal details on Haber as more than a scientist, namely, as a patriotic German with a Jewish heritage.

Scholarship on Haber is diverse, ranging from scientific works to more traditional historical research articles. It appears to be common for scholars to examine only one area of Haber's life. For example, *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production*, a 2001 monograph by Czech-Canadian environmental scientist Vaclav Smil (b. 1943), only addresses Haber's role in the creation and use of his nitrogen fixation process,⁴ and while it is a comprehensive analysis of Haber's Nobel Prize-winning scientific research it does not mention Haber's relationship with chemical warfare. Alternatively, works by Ludwig F. Haber (1921-2004), a German-British economist and economic historian (and—it should be noted—Fritz Haber's own son), and Michael Freemantle, a British chemist and science writer, focus almost exclusively on Haber's involvement in World War I.⁵ This article argues that, to assess Haber and his actions holistically, we need to consider his research as a scientist, his national identity as a German, and his religious background as a Christian convert from Judaism. The first part examines Haber during the development of both his nitrogen fixation process and chemical weapons; the second part analyzes Haber's actions in postwar Germany, explaining how his sense of national identity played a role in Germany's recovery; and the third part looks at Haber's Jewish ancestry and what it meant, regardless of his conversion to Christianity, in Nazi Germany.

I. A Tale of Two Discoveries

Analyzing Haber's research offers clues as to what his thoughts and motivations were when he was working on nitrogen fixation and on chemical weapons. In April 1914, Haber gave a lecture on the state of the chemical industry, opening it by stating "there is more brilliancy around the accomplishment of the organic than of the inorganic industries."⁶ Haber offered this valuation because he had already developed his nitrogen fixation process, which was being used as a source of nitrate for fertilizers. For the rest of the lecture, Haber discussed different

⁴ Smil, *Enriching the Earth*.

⁵ Haber, *Poisonous Cloud*; Freemantle, *Chemists' War*.

⁶ Fritz Haber, "Modern Chemical Industry," *The Journal of Industrial and Engineering Chemistry* 6, no. 4 (April 1914): 325-331, here 325.

chemistry topics, ranging from oxides used in the enamel industry⁷ to the comparison of a blast lamp and a Bunsen burner.⁸ Toward the end of the lecture, when addressing the state of usable nitrogen in the chemical industry, Haber emphasized the importance of nitrogen fixation.⁹ In 1914, as the lecture shows, Haber was a scientist who had won recognition for his breakthrough in ammonia synthesis. He had not yet been awarded the Nobel Prize, but his reputation as a prominent physical chemist was on the rise. He had not yet developed chemical weapons, meaning his legacy up until that point was that of a peacetime chemist dedicated to chemical reactions, not weapons. According to Vaclav Smil, the discovery of nitrogen fixation was at least as important as that of flight or the light bulb.¹⁰ To this day, this discovery is a critical component in food production, and as his 1914 lecture indicates, Haber fully realized the importance of his discovery.

Haber was awarded the 1918 Nobel Prize in Chemistry for his development of what is known today as the Haber-Bosch process of nitrogen fixation. This process had catapulted him to scientific fame and was the primary reason why, after World War I, Haber was considered a Nobel Prize candidate. The process involved the combining of gaseous nitrogen with gaseous hydrogen to produce ammonia gas.¹¹ From this gas, the nitrates needed for farming were then extracted and used in industrial fertilizer. In his Nobel lecture of June 2, 1920, "The Synthesis of Ammonia from Its Elements," Haber acknowledged that "the three substances involved have been well known to the chemist for over a hundred years."¹² This was not a sideswipe at fellow scientists, but, rather, a testament to how difficult it had been to achieve the successful chemical process of combining the two inorganic gases into an organic one. Haber explained that it had been so difficult that "this gave rise to the prejudice that such a production of ammonia was impossible."¹³ There was no question in his (or probably anyone else's mind) that the Haber-Bosch process was a major scientific breakthrough.

Haber began his Nobel lecture by saying that it was a great honor to have been awarded the Nobel Prize and that it was his "obligation" to explain what had led to the development of the nitrogen fixation process.¹⁴ Haber then proceeded to explain in depth that agriculture played a part in his development of nitrogen fixation: "with the advent of the industrial age, the products of the soil are carried off from where the crops are grown to far-off places where they are consumed,

⁷ Haber, "Modern Chemical Industry," 326.

⁸ Haber, "Modern Chemical Industry," 327.

⁹ Haber, "Modern Chemical Industry," 328.

¹⁰ Smil, *Enriching the Earth*, 81.

¹¹ Fritz Haber, "The Synthesis of Ammonia from Its Elements: Nobel Lecture, June 2, 1920," *Resonance* 7, no. 9 (2002): 86-94, here 86. Also available [online](#), accessed May 23, 2020.

¹² Haber, "Synthesis of Ammonia," 86.

¹³ Haber, "Synthesis of Ammonia," 87.

¹⁴ Haber, "Synthesis of Ammonia," 86.

with the result that the bound nitrogen is no longer returned to the earth from which it was taken.”¹⁵ Haber understood that, due to increased food production (driven by the Industrial Revolution and necessitated by population growth), the amount of usable nitrogen or nitrate was depleting faster than it could be restored. He ended his lecture by stating that “improved nitrogen fertilization of the soil brings new nutritive riches to mankind and that the chemical industry comes to the aid of the farmer who, in good earth, changes stones into bread.”¹⁶ Haber’s Nobel lecture illustrates that Haber knew just how beneficial his fixation process had become. However, Haber’s Nobel lecture was given after World War I, and his scientific legacy was being contested at this time. In fact, as Israeli chemical engineer Jaime Wisniak explains, Haber is the only Nobel Prize recipient to ever have been contested.¹⁷ The reason for this was Haber’s role in the development of chemical weapons. By the end of World War I, Haber’s two discoveries were interacting with each other: one brought him widespread fame and recognition, while the other brought him infamy.

On November 11, 1920, five months after his Noble lecture, Haber spoke before officers of the German *Reichswehrministerium* (“Reich Ministry of Defense”). He began his lecture “Chemistry in War” by emphasizing the need for “cooperation between the officer, the scientist, and the technologist, so that the power of imagination and decision of the latter two could benefit the military preparation. But this cooperation was lacking [in World War I].”¹⁸ Haber explained that, due to a lack of cooperation between the military and the scientists, gas warfare had not been used effectively in combat. According to German-Canadian historian Ulrich Trumpener (1930-2017) the use of gas was indeed ineffective at the Second Battle of Ypres (April 22-May 25, 1915) because of the German army’s lack of faith in the new weapon.¹⁹ However, what must be noted here is that Haber was defending the use of gas weapons. He explained that to be killed by gas in combat was no crueler than death by “flying pieces of steel.”²⁰ Haber spent the rest of the lecture addressing his critics, stating “the field of chemical warfare is burdened with misgivings from an orthodox standpoint.”²¹ It was his continued defense of chemical weapons after World War I that painted Haber in a negative light to those in academia and the general public alike. Haber was unapologetic when it came

¹⁵ Haber, “Synthesis of Ammonia,” 88.

¹⁶ Haber, “Synthesis of Ammonia,” 94.

¹⁷ Jaime Wisniak, “Fritz Haber: A Conflicting Chemist,” *Indian Journal of History of Science* 37, no. 2 (November 2014): 153-173, here 170.

¹⁸ Fritz Haber, “Chemistry in War” (a lecture before officers of the “Reichswehrministerium” [Reich Ministry of Defense] on November 11, 1920), *Journal of Chemical Education* 22, no. 11 (November 1945): 526-529, 553, here 527.

¹⁹ Ulrich Trumpener, “The Road to Ypres: The Beginnings of Gas Warfare in World War I,” *The Journal of Modern History* 47, no. 3 (September 1975): 460-480, here 480.

²⁰ Haber, “Chemistry in War,” 528.

²¹ Haber, “Chemistry in War,” 528.

to the use of chemical weapons. From his perspective, in war, every member of society had a part to play to win the war. Thus, he did not just take pride in his discovery of the nitrogen fixation process (which, by extension, could help feed his country's soldiers and general populace) but also in his work on chemical weapons (which could aid his country's war effort directly). That he did not distance himself from the latter impacted his legacy. According to Haber's son Ludwig, at a ceremony held in 1968 to honor his father, two college students unfurled a sign stating "Haber = Vater des Gaskriegs" ("Haber = Father of Gas Warfare").²² When assessing a scientist's actions before, during, and after a war, it is not enough to consider the content and impact of that scientist's discoveries. One also needs to take into account any rationale and self-assessment such a scientist has to offer at various points in time for these discoveries. It is there, though, that we find just how complex and incomprehensible personalities are.

II. For the Love of Country

According to German-American historian and UNC-Chapel Hill professor Konrad Jarausch (b. 1941), post-World War I Germany found itself in a precarious position with massive debts as stipulated by the Paris Peace Conference (1919-1920).²³ This in turn allowed Haber to play a prominent role in Germany's economic recovery, which brings us to the second parameter suggested here to assess Haber, namely, his patriotism, particularly as viewed from abroad. To do so, this article utilizes press coverage from *The New York Times* and *The Times* of London. On October 19, 1930, *The New York Times* published an article by British science journalist James G. Crowther (1899-1983), titled "Fritz Haber's Clue to Germany's Revival: Famous Chemist Gives the Credit to Close Relation of Science and Business." In this article, published over a decade after World War I, Crowther expressed his amazement at how Germany's industry had been able to recover, calling it "one of the wonders of history."²⁴ As the article indicates, Crowther had been told repeatedly, not just by other scientists but by distinguished Germans as well, that Fritz Haber was one of the leaders of this recovery and that Germans were referring to him as "our greatest man."²⁵ Later in the article, Crowther explained that Haber was also responsible for the creation of the *Notgemeinschaft der Deutschen Wissenschaft* ("Emergency Association of German Science"), established in 1920 to save Germany's scientific institutions.²⁶ By 1930, this article suggests, Haber was considered a respected German and a heroic scientist. In his 1967 monograph, *The Story of Fritz Haber*, American science educator Morris Goran (1916-1987) provides

²² Haber, *Poisonous Cloud*, 1.

²³ Konrad H. Jarausch, *Out of Ashes: A New History of Europe in the Twentieth Century* (2015; Princeton: Princeton University Press, 2016), 150.

²⁴ James G. Crowther, "Fritz Haber's Clue to Germany's Revival: Famous Chemist Gives the Credit to Close Relation of Science and Business," *New York Times* (New York), October 19, 1930.

²⁵ Crowther, "Fritz Haber's Clue."

²⁶ Crowther, "Fritz Haber's Clue."

further details concerning Haber's engagement during this period. For example, Haber suggested the use of acetylene instead of gasoline due to the petroleum shortage.²⁷ The *Notgemeinschaft*, co-founded by Haber, provided research grants, established fellowships, bought scientific equipment, acquired scientific literature from other countries, and published worthy noncommercial manuscripts.²⁸ Haber supported all these efforts despite his own monetary problems which resulted from the fact that postwar inflation in Germany had rendered Haber's patent royalty agreement for the nitrogen fixation process nearly worthless, at least until his lawyers were able to secure more beneficial terms for this patent royalty agreement.²⁹ After World War I, Haber was doing everything he could to help Germany both in terms of its industry and its scientific community.

In 1935, one year after Haber's death, *The Times* of London published the article "A Fighter for Germany: Commemoration of Professor Haber," according to which fellow scientists at a memorial service had "laid emphasis on Haber's love of his country and services to it."³⁰ The article includes quotes from a speech delivered at the occasion by none other than German physicist and 1918 fellow Nobel Prize laureate Max Planck (1858-1947), at the time the president of the *Kaiser-Wilhelm-Gesellschaft zur Förderung der Wissenschaften* ("Kaiser Wilhelm Society for the Advancement of Science"). In his speech, Planck asserted that Haber and his nitrogen fixation process "had saved Germany from military and economic collapse in the first months of the war."³¹ His fellow scientists clearly viewed Haber as a patriot. It was Haber's patriotism, too, that had led him to work on chemical weapons, which he saw as his contribution to the German war effort.³²

This is, however, where Haber's legacy has encountered considerable scrutiny. A 2001 article, co-authored by Roald Hoffmann (b. 1937), a Holocaust survivor, Polish-American chemist, and 1981 recipient of the Nobel Prize in Chemistry, and French chemist Pierre Laszlo (b. 1938), challenges the notion that Fritz Haber's legacy should be assessed in the context of a post-Holocaust and post-Hiroshima world—a notion supported, among others, by the prominent German-American historian Fritz Stern (1926-2016), Fritz Haber's own godson.³³ According to Hoffmann and Laszlo, "Haber falls very much short."³⁴ The two chemists explain their methodology as follows: "We approach the issue here by way of an attentive

²⁷ Goran, *Story of Fritz Haber*, 86.

²⁸ Goran, *Story of Fritz Haber*, 87.

²⁹ Goran, *Story of Fritz Haber*, 87.

³⁰ "A Fighter for Germany: Commemoration of Professor Haber," *The Times* (London), February 1, 1935.

³¹ "Fighter for Germany," *The Times* (London).

³² Trumpener, "Road to Ypres," 468-469.

³³ Roald Hoffmann and Pierre Laszlo, "Coping with Fritz Haber's Somber Literary Shadow," *Angewandte Chemie* (International Edition) 40, no. 24 (December 2001): 4599-4604, here 4603.

³⁴ Hoffmann and Laszlo, "Coping with Fritz Haber's Somber Literary Shadow," 4603.

reading of a selection of the literary pieces featuring Haber, whether under his own name or in transparent disguise, and of recent biographies of Haber.”³⁵ Haber left a controversial legacy; however, one does not get the impression that Hoffmann and Laszlo were interested in viewing Haber holistically.

In considering patriotism as an assessment criterion, we now turn to a letter written by Fritz Haber in 1931 to the German *Finanzminister* (“Minister of Finance”) Hermann Dietrich. Haber shared a copy of this letter with his friend, the physician Rudolf Stern, who—according to his son Fritz (Haber’s godson and the aforementioned prominent historian)—was surprised by what he referred to as the “ardent patriotism” displayed by the disgruntled scientist.³⁶ Haber was dismayed by Germany’s economic climate and pleaded with the minister that something had to be done. Haber recognized that he did not possess the answers to Germany’s financial woes and told the minister: “[I]t cannot be my business to make one-on-one poetic suggestions to you in terms of your job, position, and experience.”³⁷ Haber then criticized the economic landscape: “It no longer believes in grandfather liberalism and the slow development path of trade union social democracy. It is filled with the conviction that it is behind the façade of capitalism.”³⁸ Haber wanted nothing more than to help his country. The post-World War I years were hard on Germany, and Haber was doing anything he could to help, even reaching out to members of the government. In his 2012 article, “Fritz Haber: Flawed Greatness of Person and Country,” Haber’s godson, the historian Fritz Stern, argued “there was a remarkable affinity between Haber and his country, an affinity in greatness and in failure. He experienced the flaws of his country, he could bend them, and he suffered from them. To understand Haber is to understand Germany.”³⁹ Stern did not publish this article in a historical journal but, rather, in the international edition of *Angewandte Chemie* (“Applied Chemistry”)—certainly a very public signal by the historian Stern to the two chemists Hoffmann and Laszlo, in an international journal of German provenance with a publication history since 1887/1888, that holistic context matters.

III. Jewish Identity vs. Nazi Ideology

The final criterion suggested here for assessing Haber involves his Jewish heritage which became an area of conflict between him and the Nazi regime. Even though Haber had converted to Protestantism by 1894, this was not enough to escape persecution by the Nazis,⁴⁰ both during his life and after his death. On May 4, 1933,

³⁵ Hoffmann and Laszlo, “Coping with Fritz Haber’s Somber Literary Shadow,” 4599.

³⁶ Rudolf A. Stern, “Fritz Haber: Personal Recollections,” *The Leo Baeck Institute Year Book* 8, no. 1 (January 1963): 70-102, here 96-97. Rudolf A. Stern died on November 9, 1962, so these “recollections” were published posthumously by Stern’s son (and Haber’s godson) Fritz.

³⁷ Stern, “Fritz Haber: Personal Recollections,” 96-97.

³⁸ Stern, “Fritz Haber: Personal Recollections,” 96-97.

³⁹ Stern, “Fritz Haber: Flawed Greatness,” 55.

⁴⁰ Stern, “Fritz Haber,” 52.

a mere three months after the Nazis had seized power in Germany, *The Times* of London reported that Haber had resigned his directorship at the “Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry” and his professorship at Berlin University. *The Times* attributed this to anti-Jewish legislation supported by the German Minister of Education, Dr. Bernhard Rust (1883-1945), exposed as a Nazi in the article. The article reported that student unions championing Aryan-only faculty were causing problems at the university, and that Dr. Rust was responsible for the removal of ten members of the faculty due to their Jewish heritage.⁴¹ Even though Haber was a Christian convert from Judaism, he did not turn his back on his former religion. In his 2008 monograph, *The Alchemy of Air: A Jewish Genius, a Doomed Tycoon, and the Scientific Discovery That Fed the World but Fueled the Rise of Hitler*, American science historian Thomas Hager (b. 1953) quotes from a letter that Haber wrote in 1933 to his friend, the German chemist and 1915 Nobel laureate Richard Willstätter, explaining that he was fighting “the feeling of having made serious mistakes in my [i.e., Haber’s] life.”⁴² Hager surmises that this might be a reference to Haber’s conversion to Protestantism and his attempt to assimilate, while witnessing other Jews being persecuted in Nazi Germany.

On January 21, 1935, *The New York Times* ran an article, titled “Memorial to Haber Forbidden by Nazis: Professors Told Not to Attend Services for Colleague Who Saved Reich in War,” illustrating that, as far as the Nazis were concerned, Haber was to be considered a Jew even after his passing, regardless of his conversion. The article explained that the Kaiser Wilhelm Institute and the German Chemical Society had jointly sent out invitations to an event commemorating the anniversary of Haber’s death but that the Nazi Minister of Education had prohibited anyone from attending the memorial service.⁴³ The article suggests that the Nazis felt it necessary to undermine Haber’s legacy and did not want a person of Jewish descent to be celebrated for his accomplishments, even if these accomplishments had been for the benefit of Germany. According to NPR writer Daniel Charles’s 2005 book, *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*, the Nazis considered a person Jewish based on ancestry,⁴⁴ not religious practice or denominational affiliation. To them, Haber was a Jew and not a German scientist or a German patriot.

Haber’s Jewish heritage was not a secret at home or abroad. Nine days after the article in *The New York Times* on the forbidden Haber memorial, *The Times* of

⁴¹ “Nazi Racial Ideals: University Changes: Famous Chemist’s Protest,” *The Times* (London), May 4, 1933.

⁴² Hager, *Alchemy of Air*, 235.

⁴³ “Memorial to Haber Forbidden by Nazis: Professors Told Not to Attend Services for Colleague Who Saved Reich in War,” *New York Times* (New York), January 21, 1935.

⁴⁴ Daniel Charles, *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare* (New York: Ecco, 2005), 221.

London printed a letter to the editor by the British chemist Philip Joseph Hartog (1864-1947) in which the author referred to “the great Jewish German chemist Fritz Haber.”⁴⁵ Hartog then proceeded to ask the question, “Who represent[s] the better Germany – her scientific men or her Nazi officials? Many educated Germans will be asking themselves that question to-day.”⁴⁶ In his 1992 article, “To Serve Mankind in Peace and the Fatherland in War: The Case of Fritz Haber,” Oxford University professor of Medicine Henry Harris (1925-2014) illustrates how Haber’s death was viewed among the educated; Harris quotes an obituary by German physicist and 1914 Nobel laureate Max von Laue (1879-1960), which ended by stating: “That’s how we remember Haber. For he was one of us.”⁴⁷ To Max von Laue, who did not hesitate to say so publicly despite the very real danger of Nazi retaliation, Haber was an accomplished fellow German scientist whose legacy was being tarnished by the Nazis because the latter chose to make Haber’s Jewish ancestry the sticking point.

It is clear from Haber’s actions in 1933 that he was not prepared to deny his Jewish heritage, even though he had converted to Protestantism forty years earlier: after resigning from his public posts in Germany, he emigrated to the UK and died on January 29, 1934, in Basel, Switzerland, *en route* to Mandatory Palestine where Zionist leader Chaim Weizmann had offered him a position. Foreign journalists and scholarly colleagues, both at home and abroad, were fully aware of Haber’s Jewish heritage but chose to emphasize his scientific accomplishments and his patriotic service to Germany.

Conclusion

The three criteria applied in this article should be viewed as suggested parameters for a holistic assessment of Fritz Haber. The first criterion, Haber’s scientific work, helps us understand how he viewed both his development of nitrogen fixation and chemical weapons. The second criterion, Haber’s patriotism, illustrates how Haber dedicated himself to aiding Germany both economically and scientifically during the interwar years. The third criterion, Haber’s religious background, sheds light on the tension between Haber’s Jewish heritage and Protestant denominational affiliation when the Nazis chose to focus on the former and discarded both Haber’s scientific accomplishments and his patriotism.

Since there are a number of other scientists with controversial legacies, developing similar parameters will be important to come to holistic assessments in their respective cases. One possible candidate for such an approach would be the German physicist Werner Heisenberg (1901-1976). Like Haber, Heisenberg was a prominent, yet controversial German scientist who worked during World

⁴⁵ Philip Joseph Hartog, “Professor Fritz Haber,” *The Times* (London), January 30, 1935.

⁴⁶ Hartog, “Professor Fritz Haber.”

⁴⁷ Henry Harris, “To Serve Mankind in Peace and the Fatherland in War: The Case of Fritz Haber,” *German History* 10, no. 1 (January 1992): 24-38, here 38.

War II and remained active into the Cold War period.⁴⁸ Another prospective candidate would be the German-American engineer and rocket scientist Wernher von Braun (1912-1977), even though the latter was different from Haber and Heisenberg in that he was extracted to the U.S. during “Operation Paperclip” and went on to play a prominent role in American Cold War history.⁴⁹

Humans are not perfect, for we are capable of both amazing and terrible things. We rarely encounter someone who would be universally considered good or evil – if such a binary is even helpful. Rather, most historical figures, indeed most humans, end up somewhere in the middle, in a gray area where the line between what is considered good and evil is subject to interpretation and to the assessment criteria we are willing to apply.

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⁴⁸ Michael Eckert, “Werner Heisenberg: Controversial Scientist,” *Physics World* 14, no. 12 (December 2001): 35-40, here 35.

⁴⁹ Jason L. O’Brien and Christine E. Sears, “Victor or Villain? Wernher von Braun and the Space Race,” *The Social Studies* 102, no. 2 (February 2011): 59-64, here 59.