

Fritz Haber: Flawed Greatness of Person and Country**

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Haber, Fritz · History of Science

We are here to commemorate the first hundred years of an extraordinary institution deeply embedded in the history of our time, in the history of science and of Germany, and indeed of Europe generally. The Institute was founded in the last days of the peaceful triumph of science. It then lived through the terrors of the second Thirty Years' War from 1914 to 1945, it served many masters, it capitulated to the worst of them, and in the last half century of unique peace in Europe, it flourished in the fulfillment of its original destiny of science, or *Wissenschaft*. It was Fritz Haber for whom and by whom the Institute was created, in recognition of the scientific genius who had met the great scientific and humanitarian challenge of the time: the fixation of nitrogen from the air. His discovery was quickly developed into the technological feat of producing ammonia, essential for fertilizers and, though not generally realized at the time, essential for the manufacture of explosives as well—the Janus face of science already in evidence. The result: from that time on, millions were saved from death by famine, while in Europe's catastrophe, in the Great War, countless others died or were maimed from the explosives produced with the help of the Haber-Bosch process. Haber further did not hesitate to mobilize the Institute for war, and he was the first to introduce poison gas to warfare, a weapon soon used by both sides. The half million men who died of tortuous asphyxiation, and the still larger number who survived—blinded, choking, afflicted with gruesome pain and mutilated somehow, often for life—remain an ineradicable part of our collective memory of that war.

Haber's life encompassed triumph and tragedy, in the context of a country that was itself in convulsion, that in Haber's lifetime began in triumph and ended in tragedy, a tragedy it inflicted on the rest of the world. We live in the aftermath of Germany's rise, fall, and recovery: in hindsight, we see that Haber, so immensely gifted and committed, also at times made lamentable choices and, as was his nature, did so with passion and inexhaustible energy. In our world so fond of denigration, of alleged honesty honed by political correctness, Haber is often remembered as a vain chauvinist, ruthlessly ambitious, serving his country unconditionally while disregarding or violating the needs and rights of those

closest to him. The country he served eventually rejected him, forced him into exile, and murdered millions of his tribe.

His life story is easily twisted into a morality play, and simplistic, often sensationalist, mystification ensues; the media in its many forms have stripped his life of its complexity, and even well-intentioned critics and ideologues have given us ahistorical judgments. It is because of that pervasive mystification, that rush to judgment, that a historian's view may be useful. Is it really true, as Shakespeare put it, that "*The evil that men do lives after them; the good is oft interred with their bones*"? We need and Haber deserves a more balanced view.

Allow me a digression. In America today it has become customary to append a note of what is called full disclosure, in which the writer acknowledges any private ties or connections he has to his public argument. In this instance, full disclosure is heavy. Fritz Haber was an intimate friend and mentor of both my parents, and my father was his physician-confidant. Haber's oldest son, Hermann, married my father's sister Marga, and their children and grandchildren have been good friends of my family. The Haber family was a grand presence in my life, and I am delighted to see Haber's daughter Eva Lewis here, and the grandchildren of Hermann and Marga, Isabelle Traeger and Edouard Feller. Fritz Haber was my godfather; I was named after him. So there are these private links to my subject.

Years ago I began studying the lives of Fritz Haber and some of his colleagues—Max Planck, Albert Einstein, and Paul Ehrlich—as public and historic figures, among the first modern scientists who commanded authority beyond the cloistered world of science, who became public figures, indeed public heroes, vital presences in the world at large. In an uneasily secular modern Germany they took their place among the humanists who had for so long been a kind of substitute clergy. My research took me to many great archives, public and private, to conversations with contemporaries of that past, including Vicky Weisskopf and Otto Stern and his student I. I. Rabi. I had access to private correspondence, and I had my parents' rich collection of letters.

(Let me say to the younger members of the audience that for earlier generations, letter-writing was of the deepest importance, the means for many to break out of the normal rules of reticence and pour out some of their innermost thoughts and sorrows to friends: the Haber-Willstätter correspondence, now published, is a perfect example in point. Today's technology maximizes instant exchanges but perhaps minimizes the cultivation of enduring intimacy and the

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literate path to self-discovery. Letters often take on a life of their own; they ripen in time.)

A final confession: I am an illiterate in the natural sciences, ignorant beyond decency, but I developed a great interest in these scientists and their world, their outer and to the extent possible their inner worlds. Realizing that in the past century they gained such authority in the public realm, I concentrated on these individuals outside their work, as private people with public presences, on their ethos and their public roles, on their means of achievement, on their many burdens. This was personally congenial and professionally perhaps even useful work: the biographies of these great scientists were yet to be written. Ignorance may have heightened my awe—awe for the enterprise of science, awe of its devout practitioners. And in the community of scientists I was studying, I sensed their awe at what science meant, their faith in the knowability of the universe but recognition of the many mysteries or secrets in the natural world, their minds ever-open to consider differing views.

Many of them lived the scientific ethos, as austere in those days as a religious commitment; as I. I. Rabi, the great American physicist who had studied in Germany, wrote, “*When I discovered physics, I realized it transcended religion. It was the higher truth. It filled me with awe. ... Physics brought me closer to God.*”^[1] Haber was hailed not only for his own achievements but also for his tireless furtherance of others, for the quick brilliance with which he grasped the core of a problem and intuited a solution. I suspect that this awe that I felt for their work, their ethos, their unswerving commitment to science may have misled me more than family feelings did, but in any case, I hope fidelity to the historians’ discipline overruled the lure of family piety. What deeply interests me is the intersection of the public and private in the lives of these individuals.

There is of course an ineffable connection between them and their historic times: they explicate each other, and for none is this truer than for Fritz Haber, who exemplified so much that was great and so much that was flawed in his society. His life illustrates the human drama of biography, the connections between deep historic forces, private aspirations, and sheer contingency.

Sometimes coincidences carry special meaning: Fritz Haber was born on December 9, 1868, into a prosperous, liberal Jewish family; his father was a dye merchant in vibrant Breslau, now Wrocław; less than three years later, the German Empire was born—proclaimed in Versailles, the choice of venue underscoring Germany’s gratuitous humiliation of its defeated foe, France. It had been above all Prussian arms that realized the dream of German unity, Prussia’s military thus achieving at the very beginning an almost sacred status in the new state; even Bismarck, the political genius-architect of German unity, appeared in Versailles in uniform, his political skill undervalued amidst the glory of victorious arms. This humiliation of France marked the ultimate revenge for centuries of German subservience; now the first Napoleon was finally slain; German lands would no longer be the anvil on which European politics were hammered out. For all of Europe, this was a dramatic reversal; French predominance was

shaken, and German power had to be assimilated into European politics; as a British statesman noted: “Europe has lost a mistress and gained a master.” And what a master! The new German Reich, autocratic in essence but with democratic trappings, feudal in rule and modern, almost hyper-modern in its economic-technological life, became the country in ascendancy. The history of Europe had always been the history of successive supremacies: Spain, France, Britain. The new Germany was a latecomer to the race.

Bismarck gave the new Germany a clever Bismarckian constitution: the powers of the monarch somewhat curtailed, many weak parliamentary bodies elected by different forms of suffrage, these bodies endowed with very limited powers, very different, say, from the British House of Commons. The struggle between military and civilian powers was virtually preordained. But it was a *Rechtsstaat*; the rule of law was prescribed—even if in practice the law reflected class divisions. The old classes retained formal power and prestige, the new classes, including the captains of industry, provided the material sinews of power, made the Reich the rival of Britain, celebrated workshop of the world, the vast empire on which the sun never set.

Imperial Germany flourished in a new phase of dynamic industrial capitalism, favored inter alia by an emerging scientific-technological complex and by an enviably well-educated and disciplined workforce. There was much that the Reich could to be proud of—and Haber’s family, secular and successful, shared in that collective pride—with one painful reservation: they were Jewish. In the new Reich, Jews were granted legal equality, but reality belied law. Old prejudices persisted, and Jews were excluded from the most prestigious positions: from the officer corps and from much of the civil service. There was no Dreyfus Affair in Germany because the notion of a Jew as an officer in the General Staff was unthinkable, but let me quickly add that anti-Semitism was far from being a German specialty. It took different forms in different countries; it certainly set rules in American life of that time. And German Jews were disproportionately successful in other realms: in academic, especially scientific and medical pursuits, in finance, in the free professions, and in fields associated with modernity, such as journalism.

The founding of the Reich coincided with the birth of a new type of populist, partly racial anti-Semitism, an old prejudice infinitely heated up by what appeared to be the preeminence and power of Jews in Germany. There were some Jews in politics but no Disraeli—Bismarck’s only rival in cunning statesmanship. As yet, in the 1870s, the contradictions and flaws of this emerging giant were understood by only a few, by none more incisively than by Nietzsche, who wasn’t “discovered” until 1890, when he was already stricken by his fatal illness.

I am suggesting that 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 and to some extent the opposite applies as well. They illuminate each other.

It was a heady time to grow up but the contingent shadows in Haber’s life appeared at once, long before he could have

articulated them. His mother died days after his birth; he was a half-orphan growing up without maternal affection, instead with a strong paternal authority, a father whose grief at the loss of his wife may have darkened his feelings for his son, though his second wife cherished the precocious firstborn in the family. Did young Haber crave love? Was there from the beginning a psychic fragility expressing itself already in his youth as physical vulnerability? Did public acclaim and practical success carry a special allure for him? Were they substitute props? No need to indulge in murky guesswork: ambition was the norm in German life along with aspirations of many kinds. And surely public recognition in an obsessively stratified society was part of aspiration; the translation of achievement into titles and decorations mattered as well. Ambition pervaded rigorous, competitive life, and hard work, though it was somehow softened by proper concern for cultural goods, was the norm.

Fritz grew up with the best institutions of Prussian life, and a distinguished pedagogic system that had just begun to expand into the new fields of the natural sciences. He was exceptionally gifted, he developed a passion for chemistry, and he spurned his father's wish to have him join the paternal business. Instead he did what many children of successful parents did: he struck out for himself—he entered the academic world, in which he sensed the centrality of chemistry for scientific progress.

In 1888, when Haber was twenty, the Reich entered a new phase. The old Prussian king, William I, who had with some reluctance added the title of German Emperor to his historic Prussian crown, died. After the briefest reign of his liberal son, who ascended the throne mortally ill, almost voiceless—his enfeebled reign an almost excessive symbol in the history of German liberalism—the 29-year-old grandson assumed the crown. William II was a misfortune in history. His long reign, known as the Wilhelmine period, marked the development of a new, imperial style. The great Prussian virtues of rectitude, modesty, and frugality—virtues that may have been exaggerated by the nostalgia for Prussian austerity—were replaced by a militaristic tone, by the dreadful *Schneidigkeit*, mindless virility. Wilhelmine came to stand for pompous extravagance and the search for prestige, for modernity modified by still powerful remnants of feudal customs and classes. William himself embodied the contradictions: craving popularity while insisting that he ruled by divine authority. His genuine interest in material-technological progress as manifest in science and economic power made for an orientation that coincided with Haber's own passions.

Ambition, whether contained or unbounded, was the hallmark of the new Germany. It fitted Haber's own predilection, and as he advanced in the academic world, he came up against the exclusion of Jews from the highest posts—as Jews were excluded generally from positions of authority. As Max Weber wrote a little later, a Jew should abandon all hope of attaining the pinnacle of academic life—a chair, or a full professorship. But Jewishness was still defined as a religious identity, not a racial category. And for Jews who had found in German *Bildung*, in the love of culture, the near equivalent of religion, and who in any case were estranged from Jewish traditions, the temptation of full assimilation into

German life beckoned via conversion to what was then often called *Kultur-Protestantismus*.

In Haber's life, religion was not a decisive presence, since for him there was little left of Jewish traditions—and hence in 1894 he took the final step of assimilation: he converted to Protestantism. There had been many predecessors on that road in earlier years beginning with Heine and the children of Moses Mendelssohn. It was an undemanding Protestantism then, even for those born into the faith: church had become a decorous part of bourgeois-rational life, a place that simply registered the great moments of life—baptism, marriage, and death. Haber's conversion was the very gesture of opportunistic conformity that his best friend Richard Willstätter spurned: a spiritual act that brings practical advantage was for Willstätter unacceptable. Haber embraced the new religion with more fervor than inner faith—in the service, I think, of one overriding genuine passion: his pride in being German, his loyalty, even subservience to Germany's rulers. Put more accurately, he was a German patriot committed to an international enterprise, science; it too enveloped with a special, almost religious aura.

Early on Haber developed a special knack for combining science with practical life. And early on he discovered a facility with words, a poetical strain which to his death had him writing enchanting verses, doggerels. The genial literary side of him fitted into a milieu that placed high value on cultural accomplishments, on *Kultur*, in the classics, in poetry, in music, in all the realms where one could live in the higher spheres. (One of the great achievements of the end of the century was the success in making cultural goods such as theater, particularly in Britain and in Germany, available to the working classes, which reduced class discrimination and the danger of culture being a privilege for the privileged.)

Haber flourished in Wilhelmine Germany; the Kaiser set the tone and Haber played to the tune. Success pushed him ever further, indeed to the complicated story of the founding of the *Kaiser-Wilhelm-Gesellschaft*, that historic innovation which combined scientific brilliance, Jewish money, and imperial nimbus. The professoriate was the Kaiser's spiritual elite corps, and some of its members were content to stick to the old routines. It took great reformers for progress to be made, and if time permitted, I would wish to talk of Althoff and Harnack, men who, like Haber, sought to recruit the greatest talents to their model research institutions. Germans did have a special knack for coaxing talent into achievement.

It would be hard to exaggerate the centrality of work for Haber; for its sake he sacrificed a great deal and no doubt made others sacrifice as well. In some ways it was both curse and cure—cure in Tolstoy's sense of "*Arbeitskur*", and curse because throughout his life he suffered through endless cycles of work, overwork, and utter exhaustion, all at the expense of his fragile nerves and constitution. But for much of his life he was also a person of great exuberance and high spirits; perhaps the humor was a way of mastering his melancholy streak.

In 1901 he married Clara Immerwahr, offspring of a prosperous Jewish family in Breslau and like him a convert to Protestantism. She was without doubt an exceptional woman, highly talented and accomplished as borne out by the fact that

she was the first woman to receive a doctorate in chemistry in Breslau. That Fritz was a self-absorbed egotistical husband who simply assumed that his work and his ambition had priority corresponded to the lamentable norm of the time, and Clara must have known this, even as, for example Christine Bonhoeffer, some twenty years later, remonstrated at having to give up her university career upon marriage. Clara had an early taste of Haber's privileged priorities. After a difficult pregnancy, she gave birth to their son Hermann in June 1902. In September of that year Haber left for the United States as a delegate to the meeting of the American Electrochemical Society. His absence was painful for his wife, but his American months were an enriching experience for him—and for posterity. His published impressions of America were perhaps even more revealing than he realized. He understood, he wrote, that technical development “*in that wonderful country*” was connected with deep human and social factors. “*We all know the caricature of the American who tirelessly runs after the dollar and who because of his wish for self-enrichment loses a sense for law and order as well as an interest in any kind of intellectual culture.*” And, he added, “*Americans have a caricature of Germans ... We are looked upon as a people that are good at military parades and bad at lyric poetry, that bow to the top and are rough to the people below, that regard medals and civil-service positions as goals most devoutly to be wished for, that are comfortable in voluntary political nonage and that pass on the pressure from officialdom, which they gladly accept, to their wives and daughters, whom in marriage as in life they shortchange when it comes to freedom and educational rights.*” Odd: Haber's caricature of the American would strike the extraordinary men and women of today's “Occupy Wall Street” movement as obvious: the caricature has turned into unbearable reality. As for the Americans' view of Germans: didn't it take a long time to prove it wrong?

Haber returned to Karlsruhe, the most liberal polity in the new Reich. It was here in the next decade that he found a stunning answer to one of the greatest problems that the western world faced at the time, that is, the fixation of nitrogen from the air, which allowed for a vast increase in the manufacture of fertilizers. At the time it was perhaps hardly noted that it also provided the means for explosives: the Janus face of science at its clearest. But as *Ordinarius* in Karlsruhe he built up an exceptional international network. He was a brilliant mentor to German and foreign chemists, and many people benefited from his gifts as colleague and friend.

He was an intensely practical man, and his great invention proved highly profitable to industry, specifically to BASF and to himself. The next great step in Haber's career and in German scientific life proved that Haber was a key architect of what we might call Germany's scientific-industrial-military complex. He was involved in the founding of the *Kaiser-Wilhelm-Gesellschaft* and of course centrally so in the founding of this institute.

His most important ally was Adolf Harnack, theologian and head of the Royal Library; when he needed additional funds to purchase scientific literature, he argued: “*Our importance in the circle of cultured nations rests ultimately on our armed strength [Wehrkraft] and on our science, which in turn is most closely connected to our industry and*

technology. Because we are different from other nations, our efforts have become applied science.”^[2] The defense of scientific research as fundamental to national defense was an argument that Haber was to use throughout his career—and if you'll forgive an aside, doesn't the fact that in Europe today efforts on behalf of science don't need such an argument, doesn't that bespeak the greatness of European unity, however fragile it might appear at the moment?

The well-known story of the *Kaiser-Wilhelm-Gesellschaft* and Haber's institute incorporated all the elements of Wilhelmine society: scientific preeminence, capitalist-philanthropists hungry for highest recognition, and an imperial aura shown in decorations and titles. Haber's Institute epitomized the promise of a seemingly triumphant era.

But it was not to be. The First World War, that Ur-catastrophe of the century, extinguished promise in unprecedented killing. The question of determining who was responsible for its outbreak riled peoples for decades and has occupied historians for generations. My shorthand observation: the conflicts in German society, among them the alienation of the proletariat, had deforming effects on Germany's terrifyingly imprudent foreign policy. In July 1914, as the danger of war came closer and closer, Germany's circumspect chancellor, Bethmann-Hollweg, asked himself privately whether it had to come to this. And his answer: “*The earlier errors: simultaneously Turkish policy against Russia, Morocco against France, the navy against England—challenge everyone, put yourself in everyone's path, and actually weaken no one in this fashion. Reason: aimlessness, the need for little prestige successes, and solicitude for every current of public opinion; the 'national' parties which with their racket [Radau] about foreign policy want to preserve and strengthen their party positions.*”^[3]

The new Germany's position in a heavily armed Europe would perhaps have been difficult, even precarious, in any case. But the fact that her leaders were captives of grand illusions and that their idealistic rhetoric cloaked the most powerful material interests from the eyes of the populace—all this facilitated a bellicose, “manly” stance. The clearest example of Germany's military-industrial complex at work was in the building of the high sea fleet, designed to challenge Britain; then a carefully constructed propaganda machine lulled many middle-class Germans into enthusiastic support. Germans coveted recognition, and some thought that nations could be bullied into friendship. Again the contradictions: the Kaiser, basking in bellicosity, indulged in promises of a grand national future, while he was actually shy of war itself. Let me just say that Germany's mistakes prior to and during the Great War could be used as case studies for other countries of how not to behave.

As we know at the outbreak of the war, German academics, intellectuals, and clergymen delivered themselves of the most appalling celebrations of the coming test. The country that had issued declarations of war and that had invaded Belgium, violating its guaranteed neutrality, now believed it had been the victim of envious enemies and forced into a war of pure self-defense. The struggle was glorified as a sacred chance, as the means of truly unifying the country, cleansing the nation, a time for heroes who would risk their

lives, knowing that dying for one's country was a divinely sanctioned sacrifice and gift. Haber was not free of these illusions of innocence and instantly committed himself to enlisting unconditionally in the great struggle. The notorious "Manifesto of the 93" issued in October 1914 was signed by some of Germany's greatest scientists, writers, and artists: it avowed Germany's innocence, denied all wrongdoing as Allied inventions, and affirmed that German arms and German culture were identical, indeed essential to each other. The Manifesto, which was drafted by a Jewish writer and secretly streamlined by the government's naval department, was intended as a major weapon in Germany's wartime propaganda, especially directed toward neutral countries. Haber signed, as did Max Planck, Paul Ehrlich, and Richard Willstätter, as did Adolf Harnack, Max Liebermann, and many other luminaries. It was a defiant, arrogant statement which had the exact opposite effect from what had been intended. Foreign intellectuals, including many in the United States, dismissed the Manifesto as a sign of German mendacity, as a betrayal of the intellectual's honor. In other belligerent countries similar, if somewhat more restrained, instances of "treason of the intellectual" occurred. The war plunged Europe into an utterly poisoned atmosphere. Beginning in August 1914 the long-established process of converting gentle patriotism into hypernationalism, long fostered by rightwing forces, became a generalized deformation of the European spirit.

But more was to be poisoned. Haber instantly understood that in this war science needed to be a central element in strategy and he placed his institute totally at the service of the military. But German generals were not so enamored of new-fangled technology or weapons. (This was true for Allied lands as well: as late as 1917 Lord Kitchener referred to tanks as "*pretty mechanical toys with which you don't win wars.*") The generals were fighting the old wars, and it took Haber and Rathenau to force them to take a more realistic, comprehensive view. Given the skepticism of the officers it was left to the Kaiser to promote Haber to the coveted rank of Captain in the army. And Haber fell with distressing speed into the habit of appearing in uniform at almost all occasions. That he was intensely proud of his new responsibilities, of his access to the highest rungs of power, was very much part of the man's ambition. For Jews or for those of Jewish descent the chance to demonstrate their undivided loyalty was a matter of special urgency.

We come to the most tragic moments in Haber's life during the war. It was he who in April 1915 introduced poison gas as a new weapon, used first against the Allies in Ypres. The use of poison weapons had been forbidden by several Hague conventions; the fact that the military commanders in all the belligerent countries were preparing for such an innovation offers no justification for Haber's feverishly organizing and directing its first use. Nor do his own justifications suffice: that the new weapon would bring the horrible killing of trench warfare to a quick end, that gas attacks would immobilize but not necessarily kill or maim enemy troops, as the conventional weapons were doing to millions. Nor does it help to know that he was able to enlist some of the most peaceful of German scientists such as James

Franck to contribute to the planned assault. It was a British chemist who wrote: "*It is a hateful and terrible sensation to be choked and suffocated and unable to get breath: a casualty from gunfire may be dying from his wounds, but they don't give him the sensation that his life is being strangled out of him.*"^[4] George Grosz's drawing of Jesus on the cross with a gas mask conveys something of the all-encompassing brutalization associated with gas. Its introduction was utterly abhorrent—in an abhorrent time.

Here let me mention the recent and admirably balanced study of Haber by Magda Dunikowska and Ludwik Turko, our Polish colleagues.^[5] Let me also recall what the great American entomologist Thomas Eisner wrote about his father, Hans, a liberal colleague and friend of Haber's, who was outraged by gas warfare yet "*remained devoted to Fritz Haber all his life. ... The devotion he had to Haber was a dilemma. He somehow separated this person into two, because there was no way he could have sanctioned what Haber did in the First World War.*"^[6] It was a ghastly thing to have done, a clear example of science put to satanic use, a further step in the brutalization of the Western world. But to judge the deed while neglecting the historic context is impossible, and moralizing in hindsight is dangerous, especially after the Second World War proved even more if differently destructive.

We know of Clara Immerwahr's tragic end in early May 1915. Her suicide has been mythologized, I believe. I think a reverential reserve in explaining a suicide is called for, and we should not forget that the Habers' marriage was unhappy even before the war. Is it not fair to think of her at the end also a victim of the war?

Germany's most authoritative voice for pacifism was Albert Einstein, who in the post-1918 era again became Haber's close friend, and they were co-workers for peace. Are we really so much more ethically grounded than Einstein that we can deny Haber the same generosity, the same perhaps intuitive understanding of some of his contemporaries? To judge a life by one disastrous deformation, which in some ways epitomized his and his country's worst faults? It was a hideous act in a most brutal, hideous war. But a man with great gifts, with a genius for friendship, for mentoring and helping, who, admittedly without explicit acknowledgment, spent the Weimar years trying to reknit the international ties of science which he had helped in wartime to break—does he really not deserve a balanced judgment?

A quick aside: I regret that we live in an age of denigration, and I want to mention an American instance of blemished greatness now being distorted in a faintly analogous process. Thomas Jefferson, revered Founding Father, wrote the Declaration of Independence, with the words once enshrined in the minds of most Americans: "*We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.*" That same man had slaves, found them profitable property, and turned a deaf ear to his European friends who reminded him of the deep contradiction in his own conduct. He also sired six children with one of his slaves. I fear that in future American students will more easily remember these

misdoings than his political and moral wisdom. Haber was no Jefferson, but the reluctance to acknowledge that greatness, it itself rare, might be deeply flawed—that is worrisome.

We have no record of when Haber recognized that Germany was losing the war; censorship, official mendacity, and the well-practiced art of not *wanting* to know gave most Germans the sense that their armies would hold, especially after Russia's defeat in the fall of 1917. Thus the country, very much including its political leaders, was utterly unprepared for General Ludendorff's insistence, at the end of September 1918, that a new and somewhat democratic government must instantly appeal to President Woodrow Wilson for an immediate armistice. The alternative was a military collapse. Illusions that had fed dreams of a quick war and early victory now concentrated on a quick and easy Wilsonian peace. It was not to be. Four years of victories at terrible costs ill-prepared the Germans for what followed. Forgotten was the Carthaginian peace the Germans had dictated to Bolshevik Russia in the spring of 1918, unaware of the rage and fear the French and British felt. By November 9, the Kaiser finally abdicated; a revolution at home—at least in name—toppled the old regime and brought about the birth of a German republic whose first act had to be to sign a crushing armistice. Worse was to come: the French repaid their humiliation at Versailles in 1871 in dreadful multiples in the Treaty of Versailles in 1919. The treaty was wounding to Germany in every respect, materially and, perhaps even worse, psychologically. The notorious "War-Guilt Clause" outraged virtually all Germans, even those who had been critical of the Kaiser's regime.

Haber suffered the pangs of demobilization that all Germans suffered, only more so. Gone were his hopes and illusions, and instead he feared, given certain uncertainties of the treaty, that he might be among the Germans to be hauled as a war criminal before some Allied court. (In fact the Allies tried no Germans, and Haber was not even touched by the German courts that did try alleged war criminals.) But he was devastated nevertheless, exhausted and afraid, and his new and at the time happy marriage to Charlotte Nathan brought little relief. Even the Nobel Prize in Chemistry for 1918, given to him in recognition of his "method of synthesizing ammonia from its elements, nitrogen and hydrogen" and awarded in 1919, was darkened by the fact that Allied scientists nevertheless treated him as an outcast. To protect himself he fled to Switzerland for a while but returned to Germany and embraced the only cure he knew: work.

And of that there was plenty. He returned to his post at the Institute. He helped it become one of the world's great international centers of research, still quietly associated with industry and the much-reduced military. The Institute attracted a galaxy of young scientists, including many foreigners and future Nobel laureates. Haber was once again in his element as mentor to all: the biweekly colloquium, which he ran, was a high point of German science, and Haber, as always, was by nature and commitment interdisciplinary and international. He was an impresario of scientific genius. He stunned friends and colleagues by the quick profundity of his mind with its practical bent: he would follow a presenter's argument and leap forward to spell out its implications. From all accounts it must have been a thrilling experience.

And more than that, in the young Weimar Republic he was a key figure in the rebuilding of German science at a time of utter penury. It was he who together with old colleagues, above all Harnack, created the Emergency Society (*Notgemeinschaft*) of German science, and it was Haber who directed an ultimately successful effort to restore something like an international comity in science. His efforts took him early on to France and England, where he could win over Allied scientists to renewed cooperation more easily than many of his German colleagues, who in German stubbornness (*Trotzigkeit*) didn't want to collaborate with foreign colleagues. He also built special connections to Japan—being a globalist before the term existed. Unlike most German professors, Haber became a loyal supporter of the Republic, close in spirit to Rathenau and Stresemann, though very much aware—especially through his friends Einstein and Willstätter—of the virulent anti-Semitism that was one of the legacies of the Great War. As Jews became prominent in every aspect of Weimar life, hatred of them became fiercer and more pervasive.

Haber's public disappointments were further embittered by private sadness. His marriage to Charlotte ended in divorce; he was aware of his own failures as husband. But his loneliness was lightened by intimate friendships and of course by work. He changed his views of the place of women, and wrote to my father to make allowances for his wife's work which was "*in every respect as important as his own*".

With Stresemann's death in 1929 and the onset of the Great Depression, Haber recognized the immense dangers threatening Weimar. Between 1930 and 1933 German democracy died slowly—the poor in desperate anguish, the powerful in delusions that somehow their interests could be protected by a new semi-authoritarianism. In the end the delusory right persuaded an exasperated Hindenburg, at heart a reactionary, to appoint Hitler as chancellor; he would be a captive, so they thought, of the conservatives who would constitute a majority in the cabinet.

The rest is familiar: with astounding psychological acumen and unspeakable violence, Hitler's new regime established its totalitarian rule with terrifying speed. In the Enabling Act, an intimidated Reichstag, with only the Socialists in opposition, voted Hitler virtually absolute power. By early April 1933, with the law cynically called "The Restoration of the Professional Civil Service," any presumed equality of Jews was abolished. Jewish or "non-Aryan" civil servants—which of course included the entire professoriate—were to be removed at once—exceptions only made, at Hindenburg's request, for veterans of the Great War.

Haber occupied a unique position in German science and society. He could have stayed at his post, as Planck desperately hoped he would, but the moral price was much too high. Had he stayed, he would have had to dismiss his Jewish colleagues. He refused, asking instead for early retirement, and his earlier hope that his colleague and erstwhile member of the institute James Franck would be his successor were quickly dashed. Franck, a physicist in Göttingen and Nobel laureate, was in the same non-Aryan category and took the same stand that Haber did: he resigned. His departure actually aroused fleeting critical publicity, amid

a generally shameful silence. With some exceptions, the German academic elite quietly accepted the extrusions of their colleagues, betraying many academic and civic values. We will see that in some mysterious way Franck did become a kind of successor to Haber.

For Haber the rest was bitter tragedy. He felt too old, too sick, too heartbroken in every sense to start a new life in exile. And he also experienced the shameful silence of his German colleagues, that same silence, that same self-conformity which made the Nazi tyranny possible. Of course, there were a handful of exceptions. Among them was Karl Friedrich Bonhoeffer, who wrote to Haber of his sorrow and assured him, “*I shall always proudly and gratefully acknowledge that you have been my teacher and I shall tell the future generation of your achievements on behalf of German science and technology.*” (But then the entire Bonhoeffer family including their in-laws was almost unique in their decency and courage.) Haber took refuge in Cambridge, where British chemists, some themselves involved in gas warfare, provided him with a laboratory that gave him some opportunity for research, but his health was broken. The Jew who had so fully embraced Germanness, who like so many other Germans of Jewish descent had “loved not wisely but too well”, now found a great friend in Chaim Weizmann, fellow chemist and head of the Zionist movement, and both of them labored hard to find positions for German scientists who had lost their jobs and, worse, their *Heimat*.

Haber even thought of accepting a position in Palestine, but my father prescribed some rest in Switzerland first. At the very end of January 1934 en route to a Swiss sanitarium Haber met with Hermann and Marga and my parents in Basel, and characteristically Haber insisted on talking to each of them separately about their life choices under ominous circumstances. Hours later he called my father to his bedside—he was suffering a fatal heart attack.

The grief among Haber’s friends was immense and the German silence almost total. Planck organized a memorial in January 1935, but authorities both governmental and private-professional forbade attendance. It was Otto Hahn, now retired, who read the moving tribute composed by Bonhoeffer for the occasion, right here in the Harnack Haus; Bonhoeffer himself was forbidden to attend.

This is not the occasion to talk about the shameful history of the Institute under the Nazis or of the crimes committed by members of the *Kaiser-Wilhelm-Gesellschaft*, a task, nobly undertaken under the initiative of Hubert Markl. Nor is it the occasion to talk about the lamentable failures of so many German scientists after the end of National Socialism to acknowledge or to atone for crimes committed.

It was left to others, to be precise, to some of the scientists who were expelled from Germany and who eventually found sustenance and support in foreign realms to heed some of the lessons. James Franck, with the most painful sense of homelessness, went to the United States and eventually served

importantly in the Manhattan Project, motivated, as were his colleagues, by the fear that the Germans might be the first to construct a nuclear weapon and thus, as Franck knew, would be able to destroy Western civilization. After the bomb had been tested in New Mexico, Franck chaired a committee of fellow scientists who addressed themselves to the immediate political implications of America’s achievement. The Franck Report, as it came to be known, warned against using the new atomic weapon against Japan: “*If the United States would be the first to release this new means of indiscriminate destruction upon mankind, she would sacrifice public support throughout the world, precipitate the race of armaments, and prejudice the possibility of reaching an international agreement in the future control of such weapons.*”^[7]

For a while, Franck continued his admonishing efforts. He spoke for scientists who “*constitute a kind of international brotherhood, comparable in many respects to a religious order ... we are trying to atone in part for our previous sins, our lack of interest in social problems.*” (February 1947) In private letters Franck went further in acknowledging his own guilt: “*Under the Kaiser we always nicely kept our traps shut. ... We never took [the Kaiser’s rhetoric] seriously enough to see that it contributed hugely to catapulting the whole world into misery.*”^[7] But it is permissible to think that Franck’s effort to “atone for previous sins” sprang from the memory of the earlier weapon of mass destruction, the earlier use of science for lethal ends.

James Franck had learned from the past, and, I suggest in that sense, he was a successor to Haber. In a way we are all successors to earlier tragedies, and we all have endlessly so much more to learn.

I wish the Fritz Haber Institute another century of scientific success bound up with a commitment to honor the moral legacy of Fritz Haber’s life. The scientist’s ethical and civic responsibilities must be heeded, honored, and taught—to the benefit of science and mankind and as a tribute to a great man, to Onkel Fritz.

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- [1] J. S. Rigden, *Rabi: Scientist and Citizen*, Basic Books, New York, **1987**, p. 73.
- [2] C. Nottmeier, *Adolf von Harnack und die deutsche Politik 1890–1930*, Mohr Siebeck, Tübingen, **2004**, p. 266.
- [3] Karl-Dietrich Erdmann, *Kurt Riezler, Tagebücher, Aufsätze, Dokumente*, Göttingen, **1972**.
- [4] L. F. Haber, *The Poisonous Cloud. Chemical Warfare in the First World War*, Oxford University Press, Oxford, **1986**, p. 292.
- [5] M. Dunikowska, L. Turko, *Angew. Chem. Int. Ed. Engl.* **2011**, *50*, 10050–10062; *Angew. Chem.* **2011**, *123*, 10226–10240.
- [6] U. Deichmann, *Flüchten, Mitmachen, Vergessen: Chemiker und Biochemiker in der NS-Zeit*, Wiley-VCH, Weinheim, **2001**, p. 101.
- [7] J. Lemmerich, *Science and Conscience. The Life of James Franck*, Stanford, **2011**, pp. 249, 263, 283.