Red Prometheus
Engineering and Dictatorship in East Germany, 1945–1990

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The MIT Press
Cambridge, Massachusetts
London, England
German scientists and engineers entered into a new relationship with the Soviet Union quite suddenly at the end of the Second World War. From the beginning of the Red Army invasion of Germany to the end of Soviet occupation in 1949, Soviet authorities captured, coerced, and recruited German scientists and engineers to go to the USSR to work on the atomic bomb and other essential technical projects. Virtually all, even those who had gone voluntarily, felt like prisoners at least part of the time. They experienced extreme rupture in their personal and professional lives, and were confronted with tremendous difficulties and hardships. Amazingly, despite these traumatic experiences, a large percentage of them, upon their release, decided not to flee to the capitalist West, but to make their lives in Communist East Germany. Their exact numbers will never be known, but they made themselves felt in every corner of the GDR. Indeed, many of these deported Germans rose into positions of prominence in East Germany. During their time in the Soviet Union, they entered into a complex relationship with the Communist system, one that would have a profound impact not only on their professional lives, but also on the engineering profession and industrial research in the GDR. The roots of their decisions to go to work for the Communists and their understanding of their position within the system can only be understood against the background of their experiences in the Soviet Union, so it is to this chapter in their lives that we turn.

“A Piece of Familiar Home in a Continually Changing Landscape”

On October 22, 1946, Werner Albring, an aerodynamics expert working at the Soviet-run rocketry research center in the Thuringian village of Bleicherode, was shaken awake by his wife and sister-in-law just before 6:00 a.m. Groggy after a night of hard drinking at a banquet orchestrated by the Soviet authorities, he was startled by the words of a friend, a Soviet officer who had come to prepare him for a very unexpected turn of events: “You must travel to Moscow today. . . . At 6
Albring’s escorts arrived punctually. An interpreter translated their written orders: *Zentralwerke*—the research center where Albring worked—was to be moved for five years to the Soviet Union, and some of its employees were required under the Potsdam Agreement to go along to continue their work under Soviet supervision as a kind of reparation.¹

All over the Soviet zone of occupation, similar scenes were playing out. This was the beginning of *Osoaviakhim*, the Russian code name by which this deportation action has come to be known.² A big military research and production complex that the Soviets had built up in their zone of occupation in Germany from Nazi-era corporations and research institutes—clandestinely, and in violation of four-power agreements—was now moved to the Soviet Union. Laboratories, factories, and documents were disassembled or gathered up and loaded onto trains. The thousands of scientists and engineers who were rounded up were welcome to bring along employees, family members, even lovers, along with personal effects, household items, heavy furniture, pets, livestock, and house plants. Adults, children, animals, and goods were carefully loaded on to ninety-two Soviet trains. Many specialists protested vociferously, but, convinced of the hopelessness of their situation, resigned themselves to their fate. Few were given a contract, and so began a long period of living in a legal limbo.³

This was the beginning of a temporary migration to the great “socialist motherland,” a collective experience shared by about 300 scientists, 1,300 engineers, and 1,300 skilled workers, along with some 5,000 family members.⁴ They were called “specialists,” a term that in Russian referred not only to engineers and scientists, but also to skilled workers. Later, when they returned to East Germany, a mystique surrounded them, admired as they were for having helped rebuild the Soviet Union. According to historian Burghard Ciesla, over 80 percent initially returned to the German Democratic Republic when they were permitted to do so, though many later fled to the West.⁵ The roster of those who attained key positions in the East German technical and scientific elite or even (in a few cases) in the party leadership is impressive. They include: Peter Adolf Thiessen (head of the Research Council [*Forschungsrat*] in 1957–1965 and member of the State Council [*Staatsrat*] in 1960–1963), Max Volmer (head of the Academy of Sciences [*Deutsche Akademie der Wissenschaften*] in 1955–1958), Manfred von Ardenne (top researcher in many areas, head of a private institute, and member of the Research Council [*Forschungsrat*]), Erich Apel (member of the Central Committee of the SED and head of the State Planning Commission), Matthias Falter (an important figure in early semiconductor research), Werner Hartmann (head of the first major institute
for microelectronics research), Paul Görlich (head of research at Carl Zeiss Jena), Herbert Kortum (who built the first computer in the GDR), Nikolaus Joachim Lehmann (another computer pioneer), and many of the founders of the East German aviation industry (which attained considerable prominence in the 1950s). The “specialists” played an important role in East German industrial research, and had a major impact on technological culture in East Germany.

This roster of “alumni” reflects the degree to which scientists and engineers found their relationships with the powerful congenial, or at least workable. Coercion obviously played a major role in the interaction between experts and Soviet authorities. But in many cases, there was also a strong element of consent. Some went to the Soviet Union voluntarily. Ossoviakhim swept up those who were already working—directly or indirectly—for the Soviets. A process of negotiation began immediately upon their deportation. Most German scientists and engineers accommodated the expectations of the Soviets, but also felt themselves lucky to have the opportunity to continue their research.

Werner Albring’s account of deportation to the Soviet Union is one of the most positive. Very much colored by loyalty to the Communist system, he depicts his trip to the Soviet Union as the beginning of a very constructive phase of his life. Inspired by Sputnik, Albring began writing his memoirs in 1957, although he did not complete them until 1988 and did not publish them until 1991, when they were published free of GDR censorship. This account is shaped by a desire to find meaning in a life dedicated to East Germany. For Albring, the normalization of an extraordinary situation came surprisingly early in his “great eastward trek,” as he calls it in his memoirs. Albring’s wife’s twenty-year-old sister, Liddy, who had been living with the Albrings, decided to go along out of a sense of adventure. The sisters, having made their preparations for the unexpected move “with bravado,” seemed very much at ease with the sudden turn of events. The journey to Moscow took nearly three weeks on the completely overwhelmed and still badly damaged Eastern European rail system. Reminders of the war and the privations of the post-war period were subtle: a field of sun-browned wheat left unharvested since 1944, unseen Polish bandits who were kept out at night by tying the handles of the train cars from the inside. Although the trip was tiring, the food was good, the compartments pleasantly heated, and the company congenial. Two cows in the freight compartment provided the small children with milk. Liddy was soon being courted by two admirers. Albring’s three-year-old daughter played happily, day after day, feeling secure in the midst of her family. Soon the train became “a piece of familiar home in a continually changing landscape.” Blown-up tanks and damaged planes lay strewn around fields in Belorussia, but grass had already covered the grenade craters.6
Albring’s eastward journey had actually begun before his deportation, shortly after the war, as it had for many others in armaments production. A former employee of the wartime Institute for Aerodynamics and Aviation, he found himself unemployed and living in the British zone of occupation. His first crossing over into the Soviet zone in 1946, on his way to a job interview, felt to him “as adventurous as an expedition of the legendary Baron Münchhausen” (an eighteenth-century figure made famous by a Nazi-era film). Like other engineers, he feared the Soviets, partly because of Nazi propaganda, but also partly because he knew of the Stalin-era show trials and persecution of engineers. However, Albring felt compelled by circumstances to overcome these fears. Thirty-two years of age, with a young wife and three-year-old daughter, Albring faced unemployment or life abroad, away from his family. The Albring family (which included Werner Albring’s sister-in-law) lived in two small rooms, with inadequate facilities. During the winter (a winter of bitter hunger in Britain as well), food rations in the British zone were reduced to a thousand calories per person per day. Many German children died that winter due to privations of various sorts. The Albrings augmented their rations with mushrooms and berries from the woods, often preserved in jam jars, and spent a good deal of time gathering fire wood. On the other hand, the Soviets offered the family 4,500 calories worth of daily rations per person and offered Albring the chance to work on the V-2 rocket, Hitler’s much-vaunted Wunderwaffe, which was used during the last days of the Second World War to terrorize the civilian population of Britain. This was an enticing prospect for Albring, as it represented a professional advancement.\footnote{7}

The Soviets offered him a job at Zentralwerke, a rocket research center that had been evacuated by the Nazis from Peenemünde (where Wernher von Braun conducted rocketry research for the Nazis) to Bleicherode, a small village in Thuringia, and was renamed and converted into a SAG (Sovietische Aktiengesellschaft, an enterprise directly run and controlled by Soviet authorities) in 1946. Helmut Gröttrup, the head of Zentralwerke, inspired confidence in Albring, as evidently did the Soviet officers present at the first meeting, whose calm demeanor and excellent German made a positive impression on Albring. Albring claims that he believed the Russians when they asserted the rocket research would be used for peaceful purposes, such as mail transport and space exploration.\footnote{8}

Working and living conditions in Bleicherode fully lived up to the researchers’ expectations. Sergei Pavlovich Korolev, who was to become the father of the Soviet space program, was assigned to Bleicherode with the rank of major. Albring describes him as “a talented engineer, a figure of authority, decisive, possessing a precise knowledge of engineering coupled with common sense.” Germans and Russians
socialized with each other, visiting each other’s homes along with their families. The specialists’ optimism burst forth in daydreams of a futuristic, technocratic nature. One evening, Hoch is reported to have said: “We are now in our most productive years... And it is important to work on a meaningful task... I sometimes think that sometime in the far distant future our earth could become uninhabitable. And we are the ones who are doing the pioneering work on the future means of transportation, the rocket.” The dawning realization that the rockets developed at Bleicherode would, indeed, be used for military purposes did not deter him or his colleagues from continuing their research with great enthusiasm. He rationalized his decision to stay with the arguments that other professional possibilities were no longer available, and that he could not let down his colleagues by leaving.  

“Du, Dokument. Ich, Revolver”: Werner Hartmann’s Trip to the Soviet Union  

Werner Hartmann, a thirty-three-year-old physicist who had participated in pioneering industrial research on television, electronics, and solid-state physics during the Nazi period, had been commandeered to go to the Soviet Union to work on the atomic bomb project over a year before Albring. His unpublished memoirs, secretly written by hand between the 1960s and early 1980s, give insight into the chaotic and dangerous situation that scientists and engineers faced at the end of the Second World War and the decisions that led to their migration to the Soviet Union.  

Although living in Zehlendorf, an affluent suburban area of Berlin, Hartmann was caught up in the struggle to survive after the Red Army occupied Berlin. His fear of Soviet soldiers is palpable in his descriptions of their “habit” of shooting aimlessly all day and all night. Once, when they entered and took him down to the basement of his house with a rifle (MP) to his back, he thought they were going to shoot him; it turned out they were only looking for objects of value. He took in a secretary of the television company, Fernseh GmbH, where he worked, as well as her husband. The two men told her to always keep her back to Soviet soldiers so that they would not see her physical beauty. Hartmann recalls the long lines outside of doctors’ offices of women who had been raped by soldiers. Hartmann’s bicycle—even though he had papers allowing him to keep it—was confiscated with the words, “Du Dokument, ich Revolver!” Hartmann’s depiction of Soviet soldiers very much follows the pattern of many post-war accounts, colored by racialized perceptions. He recalls that one day, two Soviet soldiers with “Asiatic” features showed up at the home of a former Nazi. They played in a very kind way with the man’s dachshund, then walked into the house and smashed all the furniture in the parlor.
with their rifle butts, came out again, and again petted and fed the little dog. “Not until much later did I learn that this behavior demonstrated the two sides of the Slavic-Asiatic soul: brutality and tenderness.”

In downtown Berlin terrible devastation and chaos were everywhere. “The most terrible sight was the stream of people—often women with several small children or very old people with a cane—carrying those few possessions that they had been able to save in backpacks, bags, suitcases, cardboard boxes, baby carriages or small carts. All of them had lost their homes and all their belongings in the inner city, along with family members, and were now marching out of Berlin, toward an uncertain future, most without a destination.” Like these people, Hartmann did not know what to do after his old company and other places where he might have been able to work were shut down by the Soviets. It was rumored that all factories were to be disassembled and taken to the Soviet Union as reparations or plunder. “What should I do now?” he asked himself. Like many Germans in that period, Hartmann suffered from hunger. When he came upon a crowd looting a grocery store, he helped himself. Decades later, he still remembered with pleasure a meal of fried potatoes and bacon that he ate in this period at the home of Gustav Hertz.

Through Hertz, Hartmann received what he saw as a chance to escape this miserable situation. Hertz, winner of the 1925 Nobel Prize in physics and Hartmann’s mentor at the Technical University (TU) of Berlin-Charlottenburg, had been considered a “quarter-Jew” during the Nazi period. A Mischling (a person of mixed racial ancestry) under the Nuremberg Laws, but too famous to be rounded up, Hertz was forced out of the TU, but was invited by the Siemens Corporation to conduct industrial research as the scientific head of Siemens Laboratories. Sickened by the crimes of the Nazis, Hertz accepted an invitation to go to the Soviet Union after the war to set up a physics institute and to run it for two years. Hertz put Hartmann’s name on a list of assistants he would like to take along. Hartmann signed on the day after he learned of this, motivated primarily by a desire to continue his research.

Hartmann flew with the Hertzes on a two-motor Douglas plane to Moscow. From the air one could see “fires, the whole extent of the destruction.” During a refueling stop in Germany he put a handful of soil in his pocket, which he threw away in the late 1940s, after he lost hope of ever returning home. Images of a confrontation with wrathful Russians passed through his mind on the truck-ride from the Moscow airport: “Five weeks after the surrender of Hitler’s Germany, which had attacked the USSR and inflicted gigantic losses on her . . . My only wish was that the truck not break down. If it did, I would probably have to get out, and someone could recognize me as a German; how would the population react?”
The Soviet Seizure of Scientists and Engineers

It is quite surprising how so many German engineers and scientists quickly accustomed themselves to their new lives in a land they hardly knew, given that they had very different agendas from that of their Soviet captors. The Soviet seizure of German scientists and engineers must be seen both in the context of the Soviet push for reparations and in the context of the early Cold-War scramble to grab specialists who might otherwise end up developing military hardware for the other side. At Yalta, Roosevelt and Churchill agreed that forced labor was to be included as a form of reparations, which were to total $20 billion, half of which was to go to the Soviet Union. At the same time, the Soviets vied with American and British forces to capture or recruit as many scientists and leading technical experts as possible. The German nuclear program was a principal target. The secret Anglo-American Alsos mission (whose name derived from the Greek work for “groves,” a bilingual pun of sorts on the name of the head of the Manhattan Project, General Leslie Groves) was charged with capturing leading German scientists, especially atomic physicists. Another Anglo-American program, code-named Operation Paperclip, recruited German scientists such as Wernher von Braun to work for the United States and Britain. Occupying parts of Thuringia and Saxony that were later to be turned over to the Soviets, American forces seized laboratories and papers from military research facilities and were able to induce technical personnel to go west (not always using the gentlest of methods). The Soviets tried to recruit scientists and engineers living in the American and British zones, as well as to win over the cooperation of technical and scientific experts in the Soviet zone of occupation, offering the unemployed among them jobs and offering the former Nazis leniency. Generous food rations and good housing sweetened the deal, as did the prospect of living with their families and receiving open-ended contracts (as opposed to the temporary contracts offered by the Americans and British). The Soviet contracts even stipulated that the Germans could resign if their place of work was moved.\(^\text{14}\)

The first group of German scientists sent to the Soviet Union (May to September 1945) consisted of about a hundred scientists who were to work on the atom bomb. The importance attached to this project by the Soviets is reflected in the fact that the NKVD (the Soviet secret police, headed by Lavrenty Beria) was put in charge of it. A number of nuclear physicists surrendered to the Soviets, among them Gustav Hertz and former students of his such as Heinz Barwich, as well as Professor Max Volmer and Baron Manfred von Ardenne, who had built a cyclotron at his institute in Berlin-Lichterfeld. Their hopes for Soviet leniency proved well founded. Peter Adolf Thiessen, the director of the Institute for Physical Chemistry and an “ardent Nazi” who had joined the party in the 1920s, only underwent pro forma
de-Nazification. Anti-Nazi feelings, bitterness over their experiences in the Nazi period, and leftist leanings (particularly in Barwich’s case) motivated Hertz, Barwich, and Volmer to agree to go voluntarily to the Soviet Union. They were also anxious to continue their work, together with their colleagues, using their own laboratory equipment and notes, which had been confiscated by the Soviets. Two institutes were established in September 1945 at the Soviet Black Sea resort, Sukhumi (now capital of the breakaway republic of Abkhazia): one in Agudseri, headed by Gustav Hertz, and one in Sinop, where Ardenne, Thiessen, and Max Steenbeck worked. Nikolaus Riehl, who had worked on uranium purification and heavy water for Auer Company in Rheinsberg (Brandenburg), was taken to Elektrostal, near Moscow, along with the Auer Company laboratories and staff. At his institute there, Riehl continued work on the production of purified uranium.¹⁵

A year later, Osoaviakhim relied much more exclusively on compulsion than had the seizure of specialists for the atomic program. Without contracts or valid passports and bereft of the protection of international agreements or international law, these Germans were forced to stay in the Soviet Union as long as the Soviet leadership so desired. The immediate goal of the October 22, 1946, action was to move huge aviation, rocketry, and other weapons research and production facilities in Saxony and Thuringia to the Soviet Union. These Nazi-era facilities had been rebuilt by the Soviets, who were well aware of the perils of conducting military research in Germany, given the open frontiers among the United States, British, French, and Soviet zones of occupation in Germany and the four-power prohibition of such research. The heart of the Nazi aviation industry was also located in the Soviet zone of occupation. The Soviets were quite interested in jet research, which had been more advanced in Nazi Germany than in the Soviet Union. The Soviets scoured the ranks of BMW, AEG, and Junkers employees for engineers and scientists who could work on aviation programs.¹⁶

The Soviets also put recruits from POW and civilian prison camps (many of the latter former Nazis) to work in atomic research and in the development of aircraft parts. German specialists were recruited to set up and run dismantled German factories, as well as to supply qualified technical specialists that the Soviet Union lacked.¹⁷

For most of these Germans, this was the first direct encounter with the Soviet Union: Most of the top scientists and engineers had worked on high-priority research projects during the war and had not seen the battlefield (least of all on the Eastern Front). Fewer still had been to the Soviet Union during the period of the Hitler-Stalin Pact, or had gone to live there in the Weimar or Nazi periods.¹⁸ How did these specialists experience the Soviet Union, its culture, its research system, its political system? How did they negotiate this system? What impact did this have
on the way they approached the situation in the GDR upon their return from the
Soviet Union?

A One-Way Street: German Specialists and the Transfer of Technology to the
Soviet Union

One-way technological transfer was what the Soviets sought: the transfer of know-
how from Germany to the Soviet Union. Indeed, the Germans made significant con-
tributions to Soviet technological development. However, recent studies such as that
by Christoph Mick show that popular assumptions about the extent of those
contributions are greatly exaggerated. Albring emphasizes that Sputnik was not
German-built. It is now generally agreed that the espionage activities of Klaus Fuchs
and others at Los Alamos made a far greater contribution to the Soviet atomic
program than did the German nuclear physicists in the Soviet Union.19

But the Germans learned little from Soviet research, according to Mick. They
were not allowed to interact with their Soviet counterparts, nor were they given
access to Soviet research results. This is particularly odd since Soviet research teams
were conducting parallel research. However, the parallel research gave the Soviet
leadership a method for checking German results for signs of deception, sabotage,
lack of motivation, or incompetence, while spurring Soviet scientists and engineers
to a maximal effort. Members of the Soviet research groups were allowed to visit
the German groups and to question them about their research, at times gaining
insights that helped them solve key research problems. By contrast, the Germans
almost never received help from Soviet engineers or scientists. According to Albring,
Korolev and others ended personal friendships begun in East Germany after their
transfer to the Soviet Union: “The beloved acquaintances from Bleicherode had
turned into monosyllabic people.” The German rocketry team provided interesting
ideas to Soviet researchers, but ultimately lost out to Korolev’s team.20 Too few
bridges were built between Soviet and German technical experts. This prevented the
forging of Soviet-German links that could have provided a firm foundation for long-
term German-Soviet technological collaboration.

Confronted with tremendous hurdles, many German researchers felt over-
whelmed. The atomic scientists reacted to a report about the accomplishments of
the Manhattan Project in the United States with anxiety: “Compared with the huge
army of scientific personnel, the capacity of laboratories which had been operating
for five years, we looked to ourselves like castaways who, in order to save them-
selves, had to build an ocean liner.” However, they displayed ingenuity and energy
in confronting the problems posed by isolation, poor working conditions, the lack
of materials and skilled workers, the indifference of factory management, and the
inefficiencies of the planning system. They improvised and built their own equipment and parts. They simplified design. Forced to work with pen and paper—sheets cut off of a big roll of brown paper—and isolated from other research institutes or libraries, the rocket research team nonetheless did very good work.  

Hardship, coupled with the opportunity to devote themselves to interesting and challenging technical projects, actually seems to have unleashed tremendous energy in the Germans. Many of them felt a great deal of pride in their hard-won accomplishments. Herbert Kortum, suffering greatly from the privations of life in the Soviet Union, wrote to a colleague at Carl Zeiss that he and others were working hard on the projects assigned to them because they wanted to prove the value of their company and of German culture to the Soviets: “If we again and again pull ourselves together and try to accomplish something, despite all the difficulties, we do so out of a feeling that we stand here as representatives of our old, world-renowned company and of our German people, and that everything that we do or leave undone will be seen from this perspective.” Barwich and Hartmann savor moments of triumph over Soviet rivals in their memoirs. Barwich was subjected to a scathing and brutal attack by a rival when, at a talk at an isotope separation plant in Siberia, he presented new techniques that he had developed. But afterward, the rival became quite friendly. Barwich remarks, “The cold war between the two sides was familiar to all the participants; it was nothing but a mock battle.” At the end of the day, Barwich was offered a new job at the plant. Successes such as this contributed to a sense of professional satisfaction as well as to a feeling of normalcy in the working lives of these Germans. They proved to be adaptable in other regards as well.

Isolation and the Re-Creation of the Heimat

The physical isolation of the Germans is quite striking. Many were sent to remote locations. Whatever hopes the Germans may have had of being associated with the premium research institutes of the Soviet Union were in most cases dashed at the outset. The rocketry specialists were bitterly disappointed to learn, soon after their arrival, that most were to be sent to a remote island, Gorodomliya. Most of the Germans in the Soviet Union had little or no access to Soviet research institutes or research libraries. German specialists were also unhappy to find themselves confined to relatively small compounds or perimeters around their places of work and residence, generally well patrolled and ringed with barbed wire. They were seldom allowed to visit Moscow or other cities, and then only in the company of a member of the NKVD, or, from 1946 onward, the MGB, or Ministry for State Security.
Censorship was another irritant. Hartmann once received a letter from his father, of which the censor had blackened out all but two lines: “Dear Werner” and “Love, Father.” However, Hartmann’s father sent a second copy of each letter a few weeks after the first, and the censor usually censored different parts of the letter the second time around. The censorship of letters virtually ceased in 1952. Germans in the atomic bomb project received copies of West German publications such as Stern and Der Spiegel and listened to Western radio broadcasts. Nonetheless, many at Agudseri felt profoundly frustrated by restrictions on mobility, professional isolation, and restrictions on contacts between Germans and Soviets. Hertz told Beria about the discontent of the Germans. The infamous head of the secret police did not punish Hertz for complaining, but neither did he loosen security restrictions.25

However, isolation also had its advantages. Isolation was, for some, a welcome escape from the chaos of post-war Germany. Coming from a Germany lying in ruins, suffering from hunger and hopelessness, most of the German specialists found themselves in relatively unscarred, remote areas, where they were provided with good housing, food, and pay as well as a kind of security, albeit behind barbed wire. Knowing that Soviet vengeance had rained down on women who had fallen victim to mass rapes, on the hapless conscripted labor put to work in the dreadful uranium mines, as well as on those sent off to NKVD/MVD “special camps,”26 the German “specialists” felt relatively well off. And although the experience of captivity and relative isolation seems to have caused some of the Germans great suffering, for others, such as Werner Hartmann, isolation brought the opportunity to totally immerse themselves in their work. Hartmann writes, “I never during my professional life—neither earlier in Germany nor later in the GDR—was able to work with such concentration . . . in a congenial atmosphere that was never disturbed.” Reduced to “subservient work animals,” many of the Germans got used to being taken care of by the Soviets, and in fact thrived professionally. They coped well with their situation and, rather than succumbing to feelings of claustrophobia, got along remarkably well, displaying a high degree of solidarity. Some had become accustomed to working in high-security facilities during the Nazi period, where they had developed a kind of “military comradeship” with fellow engineers.27

Two factors seem to have been central to the well-being of the Germans: their ability to work effectively and their ability to re-create a Heimat (hometown or homeland) away from home. Family and familiar gender relations were an important part of this portable Heimat. Traditional gender roles were the norm among the Germans, who expressed considerable disapproval over the employment of Soviet women in heavy work, such as construction work. The occasional female scientist or engineer among the Germans was marginalized. Hartmann writes, for example, that one female physicist from Germany was “a dried out, pimply old
maid.” Virtually all experts were allowed to bring along their families. The Germans were initially not allowed to divorce or marry in the Soviet Union, but this did not prevent them from setting up house in marriage-like relationships. But Soviet authorities did not allow friendships or romantic relationships between Germans and Soviets until at least 1951 or 1952. If there appeared to be a romantic interest between a German man and a Soviet woman, the woman was moved to another job. However, there seem to have been enough German women along to provide a pool of possible partners, at least in Agudseri and Suchumi.28

While the men appeared content with their domestic set-up, the wives felt differently. In her memoirs, Irmgard Gröttrup depicted the lives of the women who went along to the Soviet Union as arduous and full of self-sacrifice. Getting and preparing food was exhausting work, involving on at least one occasion a two-hour march in minus-forty degree weather to an open-air market. Caring for her children was also difficult, particularly given her son’s poor health and the lack of good medical care. As a “poor female creature without intellect,” hardly ever seeing her workaholic husband, she suffered from depression and constantly longed to return to Germany.29

Heinz Barwich, unlike most of the men, gladly escaped an unhappy marriage in the Soviet Union, leaving his wife in Suchumi (on the Black Sea) and moving to a job in Kieferstadt, an industrial town in Siberia. He discovered that the few available women there were off limits to him because they were Soviet citizens. Although this made a relationship with a woman he had met at a ballroom dance class impossible, he seems not to have minded very much because he was happy in the egalitarian, work-centered environment of Kieferstadt. This deprivation was also made more bearable by the belief that it was a fact of life for many: The living conditions were such that none of the single men (who shared living quarters) seemed to have a sex life. Barwich was happy that Germans were treated the same as Soviets there, and could freely move around in the town and its environs. There was a tremendous sense of camaraderie among his plant’s employees: “We often got together with the Russians in the evening for casual social gatherings. We drank tea and vodka, ate cookies and candies, chatted, sang and danced to records.” Thus for him, the company of men (temporarily) replaced conventional family life.30

One of the ways that the Germans sought to re-create the Heimat in the Soviet Union was through a romantic escape into nature—a predilection of middle-class Germans. Hartmann portrays Agudseri as a semi-tropical paradise. The main house, a former sanatorium that had once been the fifty-room summer home of a wealthy businessman, looked out over the Black Sea. The gardens were filled with palm and mandarin trees, camellias, bamboo, magnolias, eucalyptus trees, box trees, and agaves. However, taste and temperament varied, as did the circumstances under
which individuals were forced to live and work. Barwich preferred life in Siberia to that in Suchumi: “Here, I found not just the work, but also life more romantic. Perhaps I was enchanted by the Siberian winters, with their great masses of snow and temperatures down to minus forty degrees Centigrade. In that clear air, one could breathe better and more deeply than in the humid climate of the Black Sea coast.” At Gorodomliya, the Germans related to the natural beauty of the island in ways typical of the German bourgeoisie. They set up a tennis court and parallel bars for gymnastics, went skiing and swimming, sunbathed in the nude (discreetly), and camped out. However, many of the Germans probably lived under far more difficult circumstances. According to Riehl, in Elektrostal entire German families lived in single, bug-infested rooms. German engineers and scientists working for the Soviets while interned in POW or other camps were particularly badly off. Industrial physicist Kurt Berner found these camps an improvement over the prison camps in Soviet-occupied Germany, where he (a former Nazi Party member) had spent over two years. However, hunger and deprivation were part and parcel of the hard lives of rocketry researchers in Berner’s camp in the Soviet Union. For German such as these, the Heimat remained at the far horizon.31

Dealing with Communism, Encountering Russia

German memoir writers tend to depict the Soviet system and Russian culture as two distinctive entities, and their accounts of the two reveal interesting things about the strategies they developed in trying to deal with the power the Soviets had over them and in coming to an understanding of their place in that system. These memoirists had few illusions concerning the nature of the Stalinist system, although they saw some positive aspects to Soviet-style socialism. Hartmann and other Germans knew of the persecution in the Soviet Union of those who disagreed with the biologist Lysenko. They were also shocked and dismayed to learn that quantum mechanics (as developed by Niels Bohr, Werner Heisenberg, and others) was officially rejected. Riehl (figure 1.1), who grew up in St. Petersburg as the son of a German father and a Russian mother, rejected the Soviet system on a profound level: “I was free from illusions from the start. As a firsthand witness to the October Revolution in 1917 and of the first years of Soviet communism, I knew the devastation Communism inflicted on the living standard.” During his time in the Soviet Union, Riehl worked with two Soviet scientists who had been sent to a gulag during the Second World War. Of Alexander Solzhenitsyn’s Gulag Archipelago Riehl writes, “I can confirm the accuracy of his descriptions and evaluations both from my own experiences and from those of many individuals mentioned in the book whom I have known.”32
Figure 1.1
Nikolaus Riehl during his stay in the Soviet Union. Photo credit: Chemical Heritage Foundation
By contrast, Barwich, a non-Communist socialist from childhood, went to the Soviet Union with vaguely positive feelings and a desire to get to know “the grandiose historical experiment of building socialism according to a theoretical plan.” Barwich comments positively on some aspects of the system, such as free medical care, but is more critical of the economic system, which he saw as wasteful and inefficient, although he was very impressed by the effectiveness of the Soviet atomic program and the highly motivated people who worked on it. Nonetheless, he became bitterly disillusioned with the Soviet system because of what he saw as its basic dishonesty. (Soviet rivals succeeded in discrediting his work through unjustified accusations of “moral failings.”) He was also perturbed by what he saw as a pattern of lies on the part of the authorities in their dealings with the Germans. He indicates that the other Germans at Agudseri had come to see things in a similar way: “Of the seventeen German scientists at the institute in Agudseri, not one later became a member of the German Communist Party. And those from the other institutes who today loudly proclaim themselves to be Communists—most of these are former Nazi party members or collaborators—do not really believe Soviet promises.” Barwich felt more profoundly disappointed than other Germans because he had positive feelings toward the Russians, and had not come to the USSR expecting the worst, as they had.33

Despite these overwhelmingly negative perceptions regarding the nature of the Soviet system, many German experts became convinced that they could function within this system. One reason is that they were convinced that the Soviet authorities treated technology and politics as two separate categories, not allowing politics to impinge on technical rationality: “When the Soviet government sets itself a technological goal, it sets politics aside. One knows that one cannot ‘build power plants with ideology.’”34 As far as ideology is concerned, most Germans were left alone, although a few groups were subjected to political indoctrination. Germans also found grounds for optimism in the apparent lack of enmity against them among Soviets, a phenomenon that bewildered them. This astonishment can be seen in a passage in Hartmann’s memoirs:

It would not have been surprising if the Soviets had treated us with hatred and disdain after this war was forced on them. In all the ten years [that we spent in the Soviet Union], none of us ever experienced an unfriendly encounter. We were astonished about that, and I still am today. The soul of these Slavic and Asiatic peoples is for us very difficult or impossible to understand. In the opposite case, that is, if Soviet specialists had come to a Germany attacked and devastated by the Soviet Union, we Germans would out of understandable hatred not have behaved in such a conciliatory manner.35

Hartmann evidently believed in the cultural incommensurability of Germans and Russians, and yet he devoted considerable time and energy to learning the Russian
language. He was fascinated by the Soviets’ exoticism, which he illustrates with depictions of Russians singing, dancing, and playing the accordion at every opportunity. Barwich asserts that the Russians themselves cultivated an image of exoticism: “This is how the Russians defused the German group’s fear of the old ‘Bolshevik peril,’ [an idea] which they themselves had strenuously propagated. This doubtlessly evidences their skill in playing primitive/natural to win over the other side; and their success is so resounding because at that moment they themselves are quite convinced of the genuineness of their sentiments.” Indeed, the implied dichotomy of the Communist system and Russian culture helped Germans to overcome fears of Communism.

Another factor that helped the German experts to become accustomed to working in the Soviet Union was their privileged position. A few were given major prizes, notably the Stalin Prize. In many cases, their pay was very generous, allowing them to save a considerable amount of money or to help loved ones in Germany. They were also provided with “chocolate, tobacco, and other glorious things.” They (rightly) felt protected from the most repressive aspects of the system. They were generally treated with great respect, while their Soviet counterparts worked in a “tension-loaded atmosphere” and were subject to crude tongue-lashings laced with obscenities and even jail sentences for professional failings. The Germans were insulated from these practices. They did imitate some aspects of their Soviet counterparts’ behavior, for example by indulging in heavy drinking, a habit that according to Barwich made life under Stalin’s regime more bearable. At Agudseri, nightly vodka-drinking competitions were accompanied by the imbibing of large quantities of champagne and cognac.

Most importantly, the Germans came to believe that the Soviet authorities would treat them with respect if they demanded respect. When the deputy minister of the interior of the USSR, General Swerjew, failed to respond as Hartmann hoped to his complaints about pay and restrictions, Hartmann reacted with great anger, pounding his fist on the general’s fine, polished desk, sending pens rolling. The general walked over to him and grabbed his arm to prevent him from leaving. They drank together, and in the end Hartmann got what he wanted. After that, whenever the general saw Hartmann, he slapped him on the shoulder and asked, “Well, how is it going, my friend?” Hartmann drew the following conclusions from this relationship: “The Soviets give greater recognition to contradiction than to constant servility and fearful compliance—naturally without openly saying so.” The Germans working on the atomic bomb project were very frank in their criticism of Soviet policies and life in the Soviet Union as well as in their complaints to the MVD. They even spoke to Beria with great candor, and came to respect and trust this man who had terrorized a nation. In fact, their negotiating style was not unlike that of top
Soviet scientists, although they may not have known this. Hartmann and others believed that their special status and working relationship with the Communist authorities could be carried over into a new life in Communist East Germany.

Meanings of Migration: The Migration of Exiled Engineers and Scientists to the GDR

Those German specialists who decided to go back to East Germany had to overcome bitter feelings over their long fight for release. For years on end, they were kept in ignorance of their fate, as their numerous letters and verbal requests for release went unanswered. Unable to negotiate, they mutinied. By 1951, many of those who had not yet been allowed to leave the Soviet Union had become quite desperate, leading to a rash of suicides and threats of suicide. Protest took other forms as well. Steenbeck threatened to withhold further cooperation if the Soviet authorities did not allow his fifteen-year-old daughter to return to Germany. Beria first allowed Steenbeck’s family, then Steenbeck himself, to leave. Riehl struggled to not become ensnared in a “trap” baited with privileges and luxuries, such as a mansion in Moscow, which he and his family refused to move into. He wrote Zavenyagin that he was not prepared to work for the Soviet Union after July 1, 1952. He, along with others in atomic and military research, were allowed to leave after a quarantine period of two to three years, during which they were moved to unclassified work. Thousands of Germans were able to leave the Soviet Union prior to Stalin’s death in 1953, but most of the atomic scientists were not allowed to leave until March or April of 1955. Hartmann believed they would not have been allowed to go at all if Stalin had still been alive. At a party the night before their departure, “the mood was exuberant,” and they drank champagne to celebrate their crossing over the River Oder by train on April 2. Only a handful of Germans were forced to stay until 1957 or 1958. A few unlucky ones died before they were released.

The prospect of life in the newly founded GDR appeared bleak to some. GDR representatives who visited Suchumi and Sinop made a strange impression on the Germans there. Rather than meeting with the specialists to discuss issues such as their professional futures, the officials went on an outing with the general in charge of the institutes. Upset over being snubbed, some decided to go to West Germany. Afterward, the Germans discovered that no ministries would admit to having sent the emissaries from the GDR—they were presumably from the secret police.

However, many of the Germans were not deterred by the indistinct shadow of future problems with Communist authorities in the USSR and the GDR, particularly in the hopeful era after Stalin’s death, when Beria was put on trial and the general in charge of the Black Sea institutes was sent off to be a clubhouse
director in a small town. Ciesla estimates that about three-quarters of the German specialists in the Soviet Union went to the GDR. Some even put a positive spin on the 1953 uprising: “Even the life-threatening revolt of the GDR population against the Ulbricht régime took a positive turn: There was no blood-bath because the Russians did not shoot. The government of the GDR admitted many shortcomings. They not only promised improvements, but actually came through with a series of not minor concessions.” Barwich, like others, assumed that German reunification was around the corner. In addition, he assumed that German-style Communism had to be different from Russian-style Communism, an attitude that was reinforced by many Germans’ cultural attitudes toward the Russians: “We had gotten to know Stalinism fairly well and were ready to downplay many things as ‘typically Russian’ and to forget them, and we gave ourselves over to the hope that the methods of the German Communists had little in common with those of the Russian Communists.” By contrast, Riehl, who called Russia his “native land,” placed his experiences in the Soviet Union in an ideological rather than a cultural context and, drawing his conclusions, decided to migrate to West Germany.43

Only a small minority of the “specialists” became Communists. Two later members of the East German research establishment, Steenbeck and Thiessen (the latter a former Nazi), wrote in memoirs published in the GDR that they had been converted to socialism during their stays in the Soviet Union. A period of personal crisis in Leningrad led Steenbeck to introspection—or at least so he wrote in his memoir—out of which emerged a sense that it was better to do good for others than to concentrate on his own personal advancement in the West and a belief that there was a deeper meaning in helping the GDR to overcome its problems than to go to the more advanced West Germany. Bothered by the competitive, profit-oriented spirit in West German industry, Steenbeck felt that there were greater prospects for the evolution of a better system in the GDR than in the Federal Republic. However, one should not overlook more prosaic, career-oriented motives. A former Nazi, Thiessen had been treated leniently in the East, but did not know what to expect in the West. Steenbeck was very hurt that the Siemens Corporation showed little interest in him and that Hermann von Siemens did not acknowledge a letter in which Steenbeck wrote about the death of Hermann’s brother, whom Steenbeck had gotten to know in a Soviet prison camp. By contrast, the GDR made a major effort to recruit him, flying him to Moscow for a meeting with an East German minister who spoke with him for hours. Steenbeck went to the GDR, where he became a university professor, the director of a research institute and a member of the Academy of Sciences, and where he remained until he died in 1981.44

Barwich, Hartmann, and most of the others were drawn to East Germany primarily by two factors: professional prospects and strong nationalist sentiments.
Heinz Barwich was offered a full professorship at the University of Halle, and was later named director of an atomic research center and professor at the Technical University of Dresden. He was given a lovely house in an idyllic residential neighborhood of Dresden, where one mansion stood next to another. The East Germany he returned to seemed very prosperous and affluent, indeed a “Schlaraffenland” (land of milk and honey) in comparison with the Soviet Union. The atmosphere seemed “liberal” (again, in comparison with the Soviet Union): In East Germany, the Communist Party ruled in coalition with four “democratic” parties; scientists and engineers were not required to join a party; they could attend conferences in the West and bring back Western literature; and there was no East German army. Skeptical about Western-style parliamentary democracy, Barwich was willing to give the East German system a chance. He looked to the future with considerable optimism: “East Germany had not only welcomed me with open arms, had offered me living and working conditions that I found attractive; I also had the impression that the course of liberalization and rapprochement with the Federal Republic would be successful.” However, unhappy about the building of the Berlin Wall and the increasing political pressure on scientists in the GDR, Barwich fled to the West in 1964. As a result, his children were imprisoned in East Germany. Only able to secure freedom for his daughter, he died in 1966, not knowing that his son, too, would eventually be released.45

Nationalism also played a role in the decision to go to East Germany. Specifically, the specialists who went there saw the German-ness of East Germany as the country’s overriding characteristic. When family ties and regional loyalty entered the mix, the GDR could appear to be a reasonable choice. As one of the “specialists behind barbed wire” (the title of his memoirs), Kurt Berner (figure 1.2) was very bitter over his years in Soviet internment camps (1945–1951) and as an involuntary rocketry researcher in the USSR (in 1951–1958), during which time he was separated from his family. (His wife died during his absence, and he did not see his children again until they joined him in 1958.) Initially he planned to migrate to West Germany after his release. But fearing that if he gave the Federal Republic as his destination, his departure would be delayed even more than it already had been, he declared that he planned to move to the GDR after his release. However, his very emotional arrival in East Germany opened up the possibility of actually staying there. All that mattered to him in those first moments was that he was in Germany—the political system was irrelevant: “The train rolled into the station at Frankfurt an der Oder. I saw German signs, and people were speaking German. I was back in Germany. My blood rushed to my heart, and tears burst out of my eyes. It was an incredible moment, all my wishes of ten years were fulfilled. I opened the window and stuck my head out, I had to see German people. My children came out of the
Figure 1.2
Kurt Berner and Bruno Golecki during their stay in the Soviet Union. Photo credit: Unknown. Originally published by Brandenburgisches Verlagshaus
compartment; they didn’t understand why I was crying.” He took a first-rate job at
the Central Institute for Atomic Research in Dresden. He claimed that his decision
to stay in the East was motivated by the fear that the Americans would force him
to write detailed reports on his time in the Soviet Union and to go to work in the
defense industry. He quickly decided to forget his second wife, a Russian whose
papers had not arrived in time to leave the Soviet Union with him. Settled in East
Germany, life again became blissfully “normal.”  

Paul Görlich’s widow (Irmgard Görlich) provides a simple explanation for the
Görlichs’ decision to return to Jena (where her husband resumed work at Carl Zeiss,
now a socialist corporation): “We wanted to go home. There was nothing to
discuss.” Here, “home” (Heimat) meant one’s home town, the place one had
dreamed of during the long years in the Soviet Union. That this hometown was now
under Communist control did not outweigh their urge to return to their roots.

A letter that Herbert Kortum wrote from the Soviet Union makes clear that both
memories of Germany and memories of his company drew him back to Jena. He
longed to return to Carl Zeiss: “With great interest we have read, how with great
effort and with encouraging successes, it has been possible to keep our company
alive, despite everything. It is unnecessary to say how strongly we feel that we once
had a protector—our company—and that for us it is bitter that we cannot partici-
pate in the difficult task of rebuilding. If I can make just one request, it is to hear
. . . about our company and our town and perhaps—if thought has been given to
this—whether, when we return to Germany, we will be received again by our
company, and what our relationship to the company is—this is a question which
understandably excites everyone.” Kortum also hoped that “Germany will succeed,
through hard work, in making up for the past and again winning a place in the sun
(Platz an der Sonne).” Dedication to a quest for renewed German greatness, love
of one’s hometown, and company loyalty—these were the basic values that Kortum
and other German engineers and scientists held dear, and that blinded them to
difficulties that a life in the GDR might hold in store.

The third major factor in the decision to go to the GDR was the conviction that
in the Soviet system—as in Nazi Germany—politics and the scientific-technological
realm were separate spheres. The bargain was simple: Scientists and engineers would
leave politics to the politicians and, in return, would be shielded, would be allowed
full freedom to develop the desired technologies or conduct basic research without
outside interference, and would enjoy a special status distinct from that of the
normal citizen. Though informed by their experiences in the Soviet Union, this
expectation was also molded by the history of the engineering profession and indus-
trial science in Germany. Thus, to understand the mentality of the first generation
of scientific and technical experts in East Germany, we need to look at their
professional lives before 1945, and to place their careers, ideologies, and professional ambitions within a larger historical context.

The “Apolitical” Expert: A Short History of an “Anti-Ideological” Ideology in Germany

The German concept of the “apolitical” expert grew out of the quest for professionalization. Germany was a country with a strong tradition of professionalization. According to historians Jürgen Kocka and Konrad Jarasch, nineteenth- and early twentieth-century German professionals had a good deal in common with their counterparts in the United States and elsewhere: schooling or academic training that imparts a body of specialized theoretical knowledge; procedures for admission to the profession, generally involving examinations; a state-enforced monopoly in the area of expertise; a professional ethos that claims the common good as its goal; freedom from supervision by persons or institutions outside the profession; self-regulation (usually involving a code of professional conduct); claims to high status and income; and the formation of professional associations.49 The professions were traditionally associated with the public, male sphere of activity, and with male rationality and self-realization.50 In Germany, the state played a more prominent role in professionalization than in the Anglo-Saxon world. State certification and regulation of professions was more invasive and central to group identity, and in some cases, professionals became state employees, at least during a particular phase of their professional lives. Another peculiarity of German professionalism was class consciousness, which centered on the linked ideals of a bourgeois lifestyle and educational attainments that involved a humanistic education, available only at elite schools.51

Professionalism was weaker among engineers than in the “classic” professions, such as law or medicine, due in large part to the fact that most engineers were employees, and thus torn between loyalties to their profession and to their employer.52 In Germany (as in the United States), the rise of higher technical education in the nineteenth century—particularly the founding of the technical universities (Technische Hochschulen)—greatly encouraged professionalization, which went hand in hand with a scientific model of engineering. However, many engineers continued to be recruited from the ranks and trained on the job. Despite the ascendance of “school culture” (associated with a science-based educational ideal), “shop culture” (which saw engineering as rooted in practical skills learned on the shop floor) nonetheless continued to flourish for decades. Before the First World War, the German term Ingenieur carried the connotation of professional responsibilities, technical knowledge, and a certain measure of social respectability, but did not necessarily have anything to do with educational attainments. The term Techniker
(technician) did exist to denote those performing engineering work who did not possess an engineering degree of some kind, but the term was applied very inconsistently. The growth of nonacademic engineering education (higher technical schools, for example, Fachschulen and Ingenieurschulen) led to increasing diversity in the profession as a whole. Up until 1945, there was considerable “balkanization” of the profession in terms of education, level of work, and kind of employer, both in Germany and in the United States.\textsuperscript{53}

Roadblocks to professionalization were, however, particularly daunting in Germany (and in Great Britain, though for different reasons). In Germany, engineering was not fully accepted as a higher profession by more established segments of the educated middle classes before the Second World War. German engineers were much more on the defensive than in other countries, forced to come to terms with assertions that technology was part of soulless, modern “civilization” (Zivilisation), spread by the English, the French, and the Americans, as opposed to superior, spiritually deep “culture” (Kultur), to be found primarily among Germans.\textsuperscript{54} Engineers faced more prosaic problems as well. They had little access to careers in the civil service, which was dominated by lawyers. Moreover, a virtual “proletarization” of engineers took place in the years leading up to the First World War, as an oversupply of engineering graduates from universities and higher technical schools led to the employment of many in low-paying jobs that did not involve real engineering work, a trend compounded by bureaucratization and resulting segmentation and standardization of work in private industry.\textsuperscript{55}

These developments did not lead to political activism. An ideology, claimed not to be an ideology, emerged among German engineers.\textsuperscript{56} In Imperial Germany, most of the engineering profession developed an “apolitical” but strongly statist stance that had a tremendous impact on the profession well into the twentieth century. Faced with the difficulties of organizing so diverse a mass profession as engineering, the Association of German Engineers (Verein Deutscher Ingenieure, or VDI, founded in 1856) embarked in the 1870s on a policy of studied neutrality on political issues as well as professional issues. The VDI promoted scientific objectivity and political abstinence as core values for engineers. This tied in with the idea that the engineer was predestined to play the role of arbiter, particularly in conflicts between labor and management, due to the engineer’s position between the two, as well as due to his supposed scientific objectivity. The VDI managed to project the image of an organization without a political or social agenda, promoting technology and industry for the common good of the nation, while in actuality pursuing policies friendly to business. The VDI’s loyalty to the state was perceived as apolitical, just as the state was conceived as standing “above politics.” Technology was seen as value-neutral in Germany, and engineering ideology was generally not tied
to a sense of social or political responsibility.\textsuperscript{57} This contrasts markedly with the social and political involvement of progressive engineers in early twentieth-century America, and the similar progressivism among Russian engineers.\textsuperscript{58}

In the nineteenth and early twentieth centuries, science became far more securely professionalized than engineering. Being part of the German tradition of education and culture, scientists were also more fully integrated into the bourgeoisie than engineers, and tended to be recruited from the upper-middle class (\textit{Bürgertum}). Historian Gabriele Metzler has shown that German physicists saw themselves as theoretically part of an international scientific community, but that in fact they put the promotion of national interests and prestige above scientific internationalism. Science became closely tied to the state and dependent upon state funding of research and the universities. During the First World War, but particularly under the Nazis, science served the state, overcoming older prejudices against practical, often military, applications of science. Nonetheless, many scientists continued to cling to the fiction that their work was “apolitical.”\textsuperscript{59}

Coming out of a supposedly “apolitical” tradition that in fact involved support of the authoritarian system, engineers of the Imperial and Weimar periods were receptive to the ideas of “reactionary modernism.” As defined by Jeffrey Herf, this was an ideological and philosophical position that rejected one side of modernity—democracy and rationality—while embracing another: technology. At their most extreme, these thinkers argued that technology did not belong to the realm of rationality, science, capitalism, and materialism—said by anti-modernist thinkers to alienate human beings from what was best in them—but (using the ideas of Nietzsche and Schopenhauer) to the realm of the spirit, creativity, the will, the power instinct. Irrationality even invaded the bastions of a science-based conception of professionalism—the universities. Technology was draped with the banner of national greatness.\textsuperscript{60}

Another prominent aspect of engineering ideology was technocratic thinking. Pervasive in engineering circles before the First World War, it manifested itself in the idea that engineers were particularly suited to a public role because their scientific training gave them an “objective” understanding of public affairs.\textsuperscript{61} This idea had its origins outside of Germany. The utopian socialist Henri de Saint-Simon was a technocrat, as was engineer Frederick W. Taylor, whose system of “scientific management,” or Taylorism, gave engineers a central role in the running of the factory. As agents of scientific change, engineers were to bring to bear the laws of science and nature in the factory and beyond, thus contributing to the lasting solution of basic problems of human society. Another important advocate of technocracy, Thorstein Veblen, had visions of the formation of a “soviet of engineers” that would take over the running of the economy. Only briefly in the 1920s, in the United States
and Germany, did self-proclaimed “technocrats,” such as the American Howard Scott, lay claim to political power. Despite their failure, technocratic thinking lived on, not as a coherent ideology, but as a subterranean source of images, attitudes, and ideological predispositions.

Various elements of engineering ideology before 1933 turned a majority of engineers against the Weimar Republic and, in the long run, made them vulnerable to National Socialism: an acceptance (at least on some level) of anti-rational arguments; a rejection of politics (and thus of democracy); loyalty to a state seen as being “above politics”; dedication to a “neutral” technological mission; and simple anger over social and economic problems. According to historian Karl-Heinz Ludwig, there were somewhat fewer Nazi sympathizers, party members, and officials among engineers than among other segments of the middle class both before and after 1933. If not avowed Nazis, a crucial segment of the engineering profession was, however, very willing to loyally serve the Nazi regime. From 1937 onwards, members of the VDI and many other engineering organizations automatically became members of the National Socialist League of German Technology (NS-Bund Deutscher Technik, or NSBDT), while purely professional organizations such as the Association of German University Engineers (Verband Deutscher Diplom-Ingenieure, or VDDI) were abolished. There were no protests; there was no mass exodus of those who found themselves NSBDT members, now comprising a third of all German engineers.

At the same time that this Gleichschaltung (establishment of Nazi control) of engineering organizations took place, engineers gained a measure of economic security and social status that had been denied them before 1933. The title of engineer (Ingenieur) was granted state protection, although experience and achievement could qualify a practicing engineer without a higher education for this title. Unemployment declined as the state lent support to the engineering service (Ingenieurdienst), which provided engineers with temporary, virtually unpaid jobs, and this sometimes led to permanent, paid employment. Enrollments in college and university engineering programs dropped, partly due to the mandatory labor service and the draft. Moreover, rearmament brought about a tremendous expansion of jobs for engineers in industry. In fact, by the late 1930s, there was a shortage of engineers. Nazi policies and projects—not only rearmament, but also import substitution, public works projects, the Autobahn, and settlement schemes—held the promise of growing professional opportunities for engineers and applied scientists, both in terms of numbers of jobs and power. Becoming heavily involved in the production of military hardware, corporations such as Volkswagen gained tremendous opportunities to develop their products technologically. Scientists in areas such as aeronautical research were given resources that they had only dreamed of before the Nazi era. Engineers were
also very gratified by Hitler’s enthusiasm for technology and the Nazi depiction of technology as an aspect of the creative force of the Aryan race, a thesis that fit in well with the old technology-as-culture engineering ideology. According to Konrad Jarausch, this illusion of a “reprofessionalization” consolidated the cooperation of engineers with the Nazi regime, although engineers clung to the illusion that the nature of this cooperation was apolitical.64

Some engineers had the illusion that the Nazis were fulfilling a long-time wish: the subordination of the economy to the dictates of technology, rather than the dictates of profitability. An engineer and president of the VDI, as well as Hitler’s Autobahn czar, Fritz Todt was put in charge of military production and the Four Year Plan in 1940. He became quite disillusioned, however. “Fortified by an engineer’s calculation,” he tried to convince Hitler that Germany could not win the war, according to historian Karl-Heinz Ludwig. Todt’s successor, Albert Speer, did not represent the interests of engineers as Todt had, but was primarily concerned with increasing the production of military hardware.65 Engineers remained largely ignorant of what was going on, accepting Speer with respect.

After the Second World War, Speer popularized the idea of the apolitical expert. Using a strategy developed with his lawyer, Speer argued at the Nuremberg War Crimes Trials that the Nazi system was the first dictatorship to make full use of technology, using technical experts as tools, and unleashing the destructive, unstoppable power of technology in pursuit of the aims of the dictatorship. Asserting that politics and technology were separate, autonomous spheres, Speer claimed that as a technical specialist, he had had little insight into political events, and that his work had been “purely” technical. Gitta Sereny, his biographer, has revealed that Speer knew much more about the use of slave labor than he let on. Nonetheless, this line of defense was taken up by many engineers who had collaborated with the Nazis. As Orland and others have made clear, the conception of the apolitical engineer is the product of a specific system of values. In particular, it is part of the legacy of engineering politics of the Imperial and Weimar periods, rooted in an ideological tradition of loyalty to a state conceived as “above politics.”66

According to historian Andreas Heinemann-Grüder, a “retreat into purely technical work” was widespread among engineers and scientists in military research. They claimed that their huge workload kept them from knowing about the Holocaust or thinking about the use of slave labor, which took place in front of them in many cases. Their value system was dominated by a “cult of technical feasibility.” The quest for professional advancement and job security also played a role in their unwillingness to question the purpose of their work. Although few of these engineers were avowed Nazis, they were well aware of the important role assigned to them as part of the war effort: “National Socialism integrated engineers into its
political and military goals and policies by elevating them explicitly to the rank of ideological soldiers.”

The Nazis were also very receptive to the needs and demands of engineers and applied scientists. Helmuth Trischler has, for example, demonstrated this with regard to aeronautical research. Until 1939, aeronautical experts retained considerable autonomy, while enjoying a large increase in funding that led to a proliferation of small projects. During the early years of the war, research was centralized, forcing scientists and engineers to concentrate on projects thought by the central authorities to be of immediate help to the war effort. Researchers were frustrated. Encountering growing problems in the air war, the Nazi leadership again remolded the system in a way much more to the scientists’ liking, giving them considerable leeway in their research. Big science coexisted with smaller projects, which, it was hoped, might yield new Wunderwaffen.

Recent research on the history of the Kaiser Wilhelm Institute under National Socialism contradicts earlier assumptions that the Nazis were hostile to science, and casts serious doubt on the thesis that Nazi science was characterized by “polycratic chaos.” The theory of polycracy posits that Nazi Germany was rocked by fierce rivalries between the Nazis, the military, and industry, resulting in crippling chaos. Instead, Florian Schmaltz found in a study on research on chemical weapons, “Despite the partially divergent interests of the economy, the military, and science, the research and development of chemical weapons in the Nazi regime was characterized by an astonishingly high degree of cooperation among the different actors, as the smooth teamwork in the area of nerve gas research shows.” Here lies, in his estimation, the explanation for the murderous efficiency of Nazi military research. Scientists were with few exceptions happy to work for the Nazis, who provided massive funding and professional opportunities. Sufficient elements of self-organization were preserved among scientists working on this and other projects to maintain the illusion of having preserved the “purity” of science and not having given in to the ideologization of science.

Among the numerous actors competing for resources within the complex Nazi system, engineers and scientists enjoyed major successes in their negotiations with the state. Professional organizations were disbanded or greatly weakened, but engineers felt fully compensated by the return to full employment and dramatically improved prospects for their careers, institutes, or firms, and lines of research. They participated fully in the building and expansion of the Nazi war machine, welcoming what appeared to be the chance to exercise greater political influence. Plunging into extreme forms of denial concerning the political or ethical impact of their work, they became deeply enmeshed in the use of technology for mass destruction. Indeed, they saw their work as serving the German nation.
In memoirs, engineers and scientists who were sent to work in the Soviet Union developed different strategies in dealing with their collaboration with the Nazis.

The Search for Self-Justification: Specialists’ Autobiographical Accounts of Work in Nazi Germany and the Soviet Union

An interesting photograph appears in the autobiography of engineer Kurt Berner (figure 1.3). The caption reads in part: “The specialists often thought of loved ones at home.” The picture is of a rather formal gathering (an anniversary party) at which well-dressed people sit at a long table. The swastika banners in the background and the Nazi uniform of one of the participants are not commented upon either in the caption or in the text. Presumably, Berner took this photo with him to the Soviet Union, and never gave the Nazi symbols in the picture much thought. Berner, who spent years in Soviet camps because of his membership in the Nazi Party, admits to no wrongdoings in his memoir. Indeed, he depicts himself as a victim of the Soviets.
The Nazi past loomed over the past of all the specialists, but self-critical reflections on this subject are rare in their memoirs.\textsuperscript{72}

Werner Hartmann, Heinz Barwich, Werner Albring, and Nikolaus Riehl, along with most of the other German specialists who went to the Soviet Union in 1945–1950, had worked for the Nazis. They developed elaborate strategies of self-justification to explain to themselves and others their work on military technologies for the Nazis, and later the Soviets. Peter Adolf Thiessen, who can be called a war criminal for his role in the development of nerve gases such as sarin, did not mention his Nazi past in his memoirs.\textsuperscript{73} At Siemens, Max Steenbeck worked on projects for the military, notably mine removal. Riehl, a student of Lise Meitner, directed the manufacture of nuclear reactor-grade uranium for Werner Heisenberg’s research team, which was trying to develop an atomic bomb during the Second World War. It is not Riehl himself, but the commentator and translator of his memoirs who writes, “Riehl had nothing but disdain for the leaders of the National Socialist Party.” Ardenne, the scion of a wealthy aristocratic family, had his own private laboratory for atomic research from 1928 to 1945. He later portrayed himself as an outsider who in the Nazi period had been involved in a struggle against the corporate world and the official science establishment.\textsuperscript{74} In his memoirs, he argues that his work on military technologies was driven by his humanitarian desire to defend the German people.\textsuperscript{75}

Heinz Barwich was the son of a socialist and pacifist who, as a deserter in the First World War, had spent five years in prison. Barwich, himself a socialist, greatly admired his father, whom he saw as “a symbol of resistance of the individual against the power of injustice.” However, after the Nazi takeover, Heinz Barwich (then a student) told a suspicious student leader that “I had recognized the enormity of the Jewish and Communist peril.” A former student of Gustav Hertz, Barwich took a job at Siemens when Hertz was hired there, having been expelled from the university as a \textit{Mischling}. Barwich loyally served Siemens and the Nazi state, working on projects “important to the war [effort],” such as signaling devices, detonators, and a device to detect underwater mines. He expresses concern about this contribution to the war effort in his memoirs, but attempts to excuse his activities by the failure of his projects due to technical difficulties. Barwich convinced himself that he had been a kind of dissident, both under the Nazis and in his time in the Soviet Union, because he had “hostile or skeptical” attitudes toward the “authoritarian” regimes he had served, “partly voluntarily, partly under compulsion.” He claims to have “violated” laws and regulations of these regimes so as to “be able to live more or less in spiritual freedom,” although no concrete example of such a transgression is given in his memoirs. He argues that by upholding science, he worked against the goals of the party leadership:
And yet this did not cause me bitterness and disillusionment; on the contrary: a life without contradictions, without a fight against social ills, solely dedicated to research, would hardly have satisfied me. Certainly, the joy in scientific discovery often compensated for the disappointments in daily life. But science had also trained me to strive for objectivity, including in the attitudes towards the world around me, so that I almost automatically became an opponent of the methods of the politicians. I sometimes tried to encroach upon their domain and call forth rationality and humanity.

Again, there is little or nothing in his memoirs that would bear out this portrayal of the impact of his work.

Werner Hartmann does not resort to this sort of attempted justification of his actions. Rather, in an unvarnished account, he depicts himself as an average German, one of millions who supported Hitler because he had restored German greatness, recounting “that I listened to Hitler with great enthusiasm and was very happy about Germany’s slowly growing new authority in the world, much like millions of other Germans: One was proud again to be a German.” Clearly, Hartmann believes that he and others were mistaken, primarily because of the harm done to the nation: “We had no idea what Hitler was doing to Germany: bringing ruin upon Germany for a long, long time!” In this unpublished memoir, he does not directly apologize for his actions or reflect upon the mistakes of millions of Germans. This is very much in keeping with the very dry, dispassionate tone of the account, which largely focuses on his professional life. He does, however, speak of the “sadness and shame” that he and his German companions felt when they saw the areas of the Soviet Union that had been laid waste by the Nazis. By contrast, he was professionally very happy during the Nazi period, when he was at Siemens. (He, like Barwich, took a job at Siemens to be able to work for his former mentor, Hertz.) He contrasts the “honesty” and “trust” that he sees as typical of industrial research in that era with the inflexibility and overly bureaucratic system of the GDR: “By today’s standards, particularly in comparison with the overly bureaucratized and inflexible mode of operation in the GDR—whether in industry, universities, or other entities—such a flexible organization which is based on flexibility, honesty and trust, indeed must be based on those things, is a dream that appears unreachable and unrealistic. But it was reality.” Hartmann does not claim to have been apolitical. He joined the SA in 1935, leaving in 1936 only because he needed more time to work on his dissertation and prepare for his doctoral defense, as well as the National Socialist League of German Technology, the National Socialist Welfare for the People, the German Labor Front and the Nazi Air Raid Defense. Once, when an out-of-town friend visited him in Berlin, Hartmann took her to the Wilhelmsplatz, where the Reich chancellery was located. When Hitler appeared briefly on the balcony, the cheers of the crowd were too uncoordinated for Hartmann, who took
off his hat, using it in place of a baton to lead choruses of “Sieg Heil.” “The huge crowd shouted to my orders.” It is a moment in which the Prussian worship of authority with all of its fateful historical ramifications comes into sharp focus, a moment that would have been worthy of Heinrich Mann’s novel, Der Untertan (The Man of Straw). In 1937, Hartmann took a new job at Fernseh-AG (which became Fernseh-GmbH in 1939). There, he participated in the early development of television, as well as in the militarization of research and production under Aviation Ministry control during the Second World War. Hartmann was very happy to work in a high-tech area with a team of dedicated professionals. Ultimately, though, Hartmann justified his work not in purely technical terms, but as a form of service to the nation. Like Hartmann, many engineers and scientists in industry (along with many other Germans) thought of themselves as apolitical but loyal to a state that was above politics, and for which Hitler was the representative. Many later served the East German state in much the same spirit.

Conclusion

Although most German specialists in the Soviet Union did not have formal contracts, their relationship with the Soviet authorities was governed by an informal understanding not unlike that of Soviet specialists. According to historian of science Alexei Kojevnikov, the “pact” between scientists and the state changed during the years of Stalin’s rule. From 1929 onward, a division of labor took place between Communist functionaries and scientists. The understanding was that scientists would be allowed considerable freedom in their scientific work, but were not allowed to intervene in any way in the political realm. On the other hand, spasmodic acts of violence were committed against the scientific community by Soviet authorities in the pre-war period. The treatment of scientists improved during the Second World War and the Cold War atomic bomb program. However, although they were given privileges, they were still not given power. This chapter has shown that the Germans in the Soviet Union enjoyed roughly the same degree of autonomy and suffered under the same restrictions as their Soviet counterparts. They were told what projects to work on, were forced to live and work in particular places, could not leave the country, were forced to compete with rival research teams, and encountered the distrust of the Communist leadership, much like their Soviet colleagues. However, they were given considerable resources for their work, could design their research projects themselves, and were free to express their criticism of any and all aspects of their situation to the political leadership. The Germans accepted the division of labor between science and the state that they encountered in the Soviet Union. The only aspect of their situation that they rejected was that
the Soviet leadership long delayed their return to Germany. Once their demands in this regard were satisfied, returning German engineers and scientists were willing to consider living under the rule of German Communists.

The experiences in the Soviet Union converted few to socialism, but did convince many that they could live in East Germany. Due to their Nazi past, they were predisposed to get along tolerably well in the Soviet Union. They were accustomed to being the privileged but politically impotent helpers of a dictatorship, and to putting ethical concerns regarding military research out of mind. Although critical of some aspects of the Soviet system, particularly overly tight security measures, those who decided to go to the GDR believed that they could function well within that system. Their experiences showed them that whatever hardships they might encounter due to the poverty of the East bloc could be overcome, and that they could compete with the best the Soviet Union had to offer. Moreover, they believed that they would continue to be shielded from the worst aspects of the socialist system: terror and hardship. The lack of animosity against them was an unexpected reprieve for them. If Joseph Stalin had treated them with great respect, would not Stalin’s more liberal successors, along with their East German colleagues? The GDR promised top positions and a continuation of the relatively privileged existence the specialists had enjoyed in the Soviet Union. Having been largely spared political reeducation in the Soviet Union, most hoped not to become involved in politics, but to continue to function as “apolitical” technical and scientific experts. Moreover, what counted the most was that they would be returning to their Heimat, a homeland that they had kept alive during their stay in the Soviet Union. The image of Russian exoticism led some German specialists to believe that East German socialism had to be very different—more rational, more German. East Germany seemed liberal in comparison with the USSR. The lack of democracy there did not disturb those who had become disillusioned with democracy during the Weimar Republic. And German reunification seemed like a real possibility in the early 1950s. So it was with this optimism that Hartmann, Barwich, and many others returned to East Germany. If they were not believing socialists, they were at least open to an alternative to the defeated and discredited Nazi system.

Notes
2. It is unclear whether this code name was really used at the time. See Burghard Ciesla, “Der Spezialistentransfer in die UdSSR und seine Auswirkungen in der SBZ und DDR,” Aus Politik und Zeitgeschichte. Beilage zur Wochenzeitung, Das Parlament, B49–50/93 (December 3, 1993): 24.

3. See Mick, Forschen für Stalin 43–45, 83–85, 94.


6. See Albring, Gorodomlia. For a far more negative depiction of the trip east, see Kurt Magnus, Raketensklaven (Stuttgart: Deutsche Verlags-Anstalt, 1993), 37–56.

7. See Albring, Gorodomlia, 31–37. On the persecution of engineers in the Stalin era, see Graham, Science in Russia and the Soviet Union, 93–94; Bailes, Technology and Society under Lenin and Stalin, 64–120.


9. See Albring, Gorodomlia, 46–47; quotations on pp. 46, 44.

10. TSD, Nachlaß Hartmann, vol. F, 4; see 1–4.


17. See Albrecht, Die Spezialisten, 11; Mick, Forschen für Stalin, 93–95, 210–219.


19. See Mick, Forschen für Stalin, esp. 148–154; Albring, Gorodomlia, esp. 9, 11.


30. See Barwich and Barwich, *Das rote Atom*, 96–97.


33. Barwich and Barwich, *Das rote Atom*, 16, 116; see also 22, 56, 121–122, 126, 133.

34. Barwich and Barwich, *Das rote Atom*, 86.


36. Barwich and Barwich, *Das rote Atom*, 37; see also 21, 41.


40. See Kojevnikov, *Stalin’s Great Science*, 111–124, 292–293. However, Soviet scientists were put on a shorter leash after the end of the Second World War.


47. Paul Görlich was actually a Saxon, from Dresden, but had moved to the Thuringian town of Jena in 1932 to begin work at Zeiss. His wife, however, was from Jena. Interview with Irmgard Görlich, November 12, 2004.


56. In this study, the term “ideology” is used in a neutral, not a pejorative sense. I understand ideology to mean any program for the improvement of the world, society, or individuals—systematic in its intentions and connected both to a discourse that molds meanings linguistically, as well as to a field or potential field of action. See Terry Eagleton, *Ideology: An Introduction* (London and New York: Verso, 1991).


61. In the German context, technocratic thinking is often taken to mean not only the advocacy of an out-and-out replacement of democratic (or monarchical) institutions by the rule
of technical experts, but also simply the push for a privileged political or economic role for engineers.


68. See Trischler, “Aeronautical Research.”


75. See Ardenne, *En glückliches Leben*, 151, 160, 177. Concerning the régime’s rejection of his 1940 suggestion to pursue radar research, he writes, “Today, our honest wish to help defend the lives of German people must seem suspect, an illusion, associated as it was with those aggressive policies [of the Nazis]. . . . However, the cold-hearted ignorance with which the brown members of the master race disregarded the interests of the people angered me tremendously” (151). He claims that his goals in pursuing atomic research were of a non-military nature, although he clearly knew of the possibility of building an atomic bomb (153–156).

76. See Barwich and Barwich, *Das rote Atom*, 7–16, quotations on pp. 7, 8, 14.
