Chapter 3

Distance of Fear

The closer to a hazardous industrial enterprise you live, the less afraid you are. Fear increases with geographical distance, so that from afar monstrous and even mythical characteristics are sometimes ascribed to an industrial activity. I posit that this paradoxical rule holds at least as long as no serious accidents occur at the industrial enterprise in question. This distance of fear has shaped some of the conflicts around commercial nuclear power, creating a "we" and a "them," representing fundamentally different worldviews between those living close to a nuclear power plant and those further away. The consequences of geographical distance are even more extreme when national borders are crossed, defining the understanding of a particular nuclear power plant as domestic or foreign, along with an assumed level of technological advancement and safety. Unsurprisingly, domestic plants are usually viewed in a more friendly light than foreign ones.

When it comes to the by-products of nuclear power, the distance of fear becomes more complicated. The immediate benefit of energy production is no longer present and the future prospects of contaminated ground where the power plant once stood, or the establishment of storage facilities for radioactive waste, evoke a wider range of reactions. The physical and mental landscapes scarred by radioactivity, by political conflict, and by fear are intertwined with preconceptions of the possibility to clean up, to control, and to exert responsibility. One response from the nuclear sector to the task of dismantling the first generation of commercial nuclear reactors has hitherto been to aim to restore the site to its previous condition. That is, the goal is to erase all traces of the plant, of the workplace, of the target of nuclear fear and instead reinstate a "natural" landscape. The physical scar is therefore meant to disappear, or at least become invisible. The mental

scar is indeed ambiguous and borne by groups with quite disparate views on nuclear power.

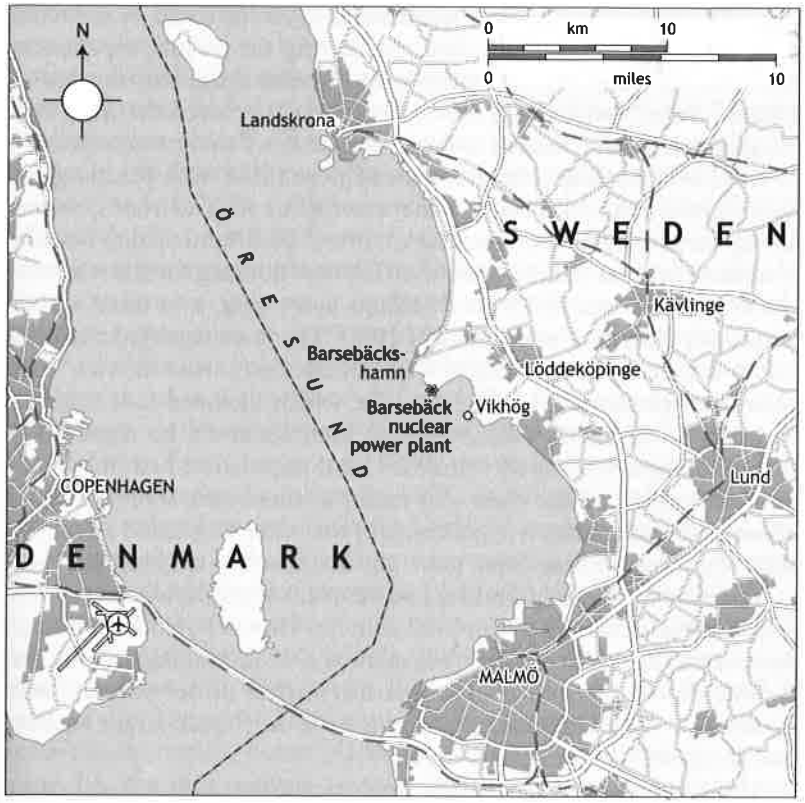
This chapter will explore the history of the Barsebäck nuclear power plant, located on the southwest coast of Sweden, and the trust, pride, and fear connected with it at various geographical distances. Barsebäck was planned and built in the 1960s and 1970s, initially a period of strong optimism in the future and belief in technological progress. Soon, however, political and public winds shifted, and Barsebäck came to symbolize the threats of nuclear power in both Sweden and neighboring Denmark. The story of Barsebäck is played out in between connotations of, on the one hand, a wonderful Christmas gift to the region, an appreciated workplace, and part of a major national scheme of nuclear power and, on the other hand, a hated silhouette from the viewpoint of the Danes and a key symbol for disputes about energy politics in Sweden.

A Christmas Gift

Two days before Christmas Eve 1965, representatives for the town of Löddeköpinge in southern Sweden were called to a meeting at the County Administrative Board to receive truly surprising news. After three years of secret preparations, the energy company Sydkraft was about to build a nuclear power plant in the municipality. The information came as a "bombshell" since nobody had known what was going on behind the scenes.[1] The municipal representatives expressed much enthusiasm and claimed to "stand affirmative in every respect" toward this "terrific Christmas gift."[2]

In the 1960s, the establishment of the Barsebäck nuclear power plant was explained by the increasing energy consumption in Sweden—of which "no limit can yet be discerned"—in combination with the expected scarcity of other types of energy such as hydropower, oil, and coal.[3] The nuclear power plant was furthermore seen as just one of several similar plants to be built in a "string of pearls" along the southwest coast of Sweden, preferably close to population centers where consumption was high.[4] The proximity to consumers was also crucial since there were plans to provide district heating from the nuclear plants.[5]

This part of Sweden is a relatively densely populated, flat agricultural landscape scattered with smaller settlements and several bigger cities and towns. The area where the nuclear plant was to be built was used mainly for pasture and regarded as of great natural beauty because of its open view over the Sound—the inland sea between Sweden and



Map 3.1 Barsebäck nuclear power plant is located on a cape in Öresund, close to the cities of Malmö, Lund, and Landskrona. Twenty kilometers across the Sound is the Danish capital of Copenhagen. Map: Stig Söderlind, 2013.

Denmark. Two small fishing villages—Barsebäckshamn and Vikhög—were the closest settlements. The main town, Löddeköpinge, is located about 7 kilometers from the site chosen for the plant, while the cities of Malmö, Landskrona, and Lund are all within 30 kilometers. The Danish capital of Copenhagen is 20 kilometers (map 3.1) away across the Sound, decisively closer than the Swedish capital of Stockholm, located 590 kilometers up-country.

All land within 500 meters of the proposed plant was bought by Sydkraft, and a safety zone of a couple of kilometers was established in which no permanent housing was to be built. However, the safety zone was seen as ideal for holiday cottages and there were plans to develop the area for pleasant country paths and similar facilities in the near future.[6]

According to Sydkraft, after a while the safety zone could be expected to be significantly reduced in size, considering the positive experiences with nuclear plants in, for example, the United States and the Soviet Union.[7] Sune Wetterlundh, the Sydkraft CEO, believed that they had "found an ideal site, located as it is in the center of the Sound region."[8]

For Löddeköpinge, the years ahead were filled with planning for new infrastructure needed by the enterprise, such as roads, water, sewage, and reserves for transmission lines.[9] The municipality bought considerable areas of land to be used for new housing for the workers; the estimation was 200 new dwellings every year, in a town center with a population of just 650 as of 1960. The press reported that this boom was "of course, received with satisfaction in the district."[10] A consultant prepared a plan for the site, which included four reactors to begin with, but it was noted that even six could be expected.[11] Löddeköpinge municipality and the local population had only marginal comments on the plan—for example, there were some concerns about potential radioactive pollution of the water that could affect the fish—but these worries were generally dismissed as exaggerated.[12]

The establishment of a nuclear power plant was a decisive event and implied major changes in the local context. However, from a national perspective the plant was just one part of a wide-ranging scheme for commercial nuclear power. The Swedish nuclear power program was extensive in international comparison, since only much larger nations had launched such programs before.[13]

The Swedish activities in the field of nuclear energy had begun directly after World War II and targeted both military and civilian uses. Research was carried out by a state-led company, and in 1954 a small research reactor went critical for the first time. A long-term program was adopted by the parliament in the next year, with the goal of creating a domestic nuclear fuel cycle, including extraction of uranium, the construction of nuclear reactors, and technology for reprocessing spent fuel. The larger aims were to diminish dependency on foreign energy supplies and to be able to construct nuclear weapons. The military aspect was controversial, however, and not discussed publicly. What became known as the "Swedish Path" entailed technical choices to focus on heavy-water reactors with domestic natural uranium in order to meet the overall goals of the program.[14] In the mid-1950s, it was envisaged that six smaller reactors for district heating purposes and one full-scale nuclear power plant would be built within the coming decade. STS scholar Jonas Anshelm has characterized this period as a visionary phase during which the nuclear "demon" was to be tamed by the scientific "wizards." Any risks were

expected to be handled by technology and through a learning process, similar to how society had adapted to electricity.[15]

Soon enough, the enthusiasm was tempered by frustrating delays and increasing costs and the plans were scaled down. During this "practical realization phase" a small heavy-water reactor began operating in Ågesta in 1963, providing the Stockholm suburb of Farsta with district heating, and in 1970 a full-scale reactor was finished in Marviken.[16] Ultimately, due to failure to meet safety requirements, the Marviken reactor was never commissioned. At this time, private actors had already chosen to invest in light-water reactors instead since, according to leading power companies in the United States, these had proved superior from a commercial point of view.[17] Finally, the government-led investors also abandoned the "Swedish Path." Switching over to light-water technology also meant discarding any military ambitions. In spite of the Marviken fiasco, in the early 1970s the nuclear power industry had bright prospects for the future. In 1971, six full-scale light-water reactors were ordered, mainly from the Swedish company ASEA, and the branch planned to build 24 reactors in the coming two decades. Among those ordered was the first reactor in Löddeköpinge, Barsebäck 1.[18]

At this time, the issue of risk connected to nuclear power had begun to enter the public agenda, but trust in the technology and general enthusiasm dominated. In connection with the Barsebäck plant, a director at Sydkraft assured that rigorous safety regulations in fact made nuclear power plants the *least* risky of all industrial sectors, that the radioactive waste was "easy to control," and that the spent fuel was to be transported "at sea in a way that ensures complete safety."[19] It is also important to note that the most highly radioactive by-product, spent fuel, was not regarded as waste until the mid-1970s, but rather as a valuable resource for the next generation of reactors.[20] In addition, the estimations of the time needed to store radioactive waste changed dramatically during the second half of the twentieth century. In the 1950s, it was expected that radioactive waste had to be stored isolated from humans for less than a hundred years. During the 1960s the estimations changed first into thousands of years and later, into hundreds of thousands of years.[21]

In several countries, nuclear power plants were viewed as objects of architecture; for example, in Great Britain and France well-known architects were hired to give the new industrial establishments a qualitative architectural form.[22] In Sweden, however, this was not the case. Architects were indeed commissioned to design canteens and exhibition pavilions in connection with nuclear power plants, but the plant itself was seen as a strictly technical structure.[23] Art historian Fredrik

Krohn Andersson argues that, for contemporary actors, the significant visual context for Barsebäck was the landscape, in terms of both location and scale.[24] Barsebäck nuclear power plant was to become large and visually dominating, located along the coastline, and this circumstance was thoroughly examined by the planners, who emphasized the visual contrast as something positive.[25] Representatives for heritage authorities, too, expressed similar affirmative opinions about the new industrial construction. The Swedish local heritage federation carried out a rather detailed account of the cultural history and natural environmental characteristics of the area, and a number of archaeological sites were excavated before construction began.[26]

The most important ancient monument was a passage grave from the Stone Age—Gillhög—located on a small hill a few kilometers from the plant site. In order to protect the grave and its context, the National Heritage Board, among others, stipulated that the plant had to have a sophisticated form that would harmonize with the grave hill and connect to the cultural landscape, and also that the transmission lines should be kept as far away as possible, on poles no higher than the hill.[27] Thus, there was no serious conflict between the existing landscape and the proposed new industrial infrastructure, but merely a question of correspondence.[28]

Early in the construction process, a specially dedicated exhibition pavilion was built next to the construction site since the plant, this "energy source of the future," was expected to become a big tourist attraction immediately.[29] The exhibition pavilion was to house information about nuclear power technology and to show findings from the archaeological excavations.[30] The initial incorporation of the nuclear power plant under construction into the landscape was thus a smooth story for the most part, in terms of local attitudes, heritage, and visual appearance.

Shaping Local and Regional Trust

The power plant construction began in 1970 and employed about 250 men, a number that would increase to 700 later on when the reactor vessels were put in position.[31] The location of the plant implied short distances to electricity consumers in southern Sweden, and the neighboring country of Denmark was also included in the market envisioned for the Barsebäck plant. In an agreement between Sydkraft and the Danish energy company Elkraft, Barsebäck was to provide electricity to Denmark until the Danish nuclear power program was up and running; after that, a mutual exchange of nuclear electricity was foreseen.[32]

The regional cooperation in electricity exchange between Sydkraft and nearby Denmark had been established long ago. Sydkraft was founded in 1905, owned mainly by five cities in southern Sweden, with its activities based on hydropower.[33] Early on, there were plans to connect the Sydkraft grid to a grid on the Danish side, so a submarine cable was laid in the Sound in 1915.[34] When there was an abundance of water in the southern Swedish rivers, the generated electricity surplus was sold to Denmark, and in times of water shortage, Danish thermal power plants became a backup for Sydkraft. As Sydkraft grew, two additional submarine cables were laid in the late 1920s and another three in the 1950s, financed mainly by the Danes.[35]

In 1957, a first nuclear research reactor in Denmark went critical at the state-owned nuclear research station Risø. During the subsequent decades, steps were taken to introduce commercial nuclear power.[36] Just as in Sweden, all the Danish political parties were positive about

Figure 3.1 As a token of the close and friendly relations between Denmark and Sweden in the energy business, a Danish girl orchestra plays at the 1977 topping out party for reactor number two at Barsebäck. Courtesy of E.ON Kärnkraft Sverige AB.

this new source of energy, as was the press.[37] To extend the already established cooperation in the electricity market between Sydkraft and Danish companies into the field of nuclear power was therefore nothing surprising (figure 3.1), and yet another transmission cable between the two countries was laid in the early 1970s.[38]

At the local level, Löddeköpinge cooperated with Sydkraft on issues such as a new water purification plant and street lighting, and the population of the local community increased considerably.[39] Within a fenced area, two boiling water reactors in two buildings the height of a 20-storey house and two chimneys rising 120 meters above the ground gradually took shape on the cape between the two small fishing villages (figure 3.2). The facades were covered with gray aluminum plates, broken up by a pattern of black vertical stripes. According to contemporary press reports, the idea was that the stripes would make the plant visually merge with the horizon and the sky. Some also claimed that the graphic pattern illustrated the fuel elements and the core.[40] Outside the fence were, among other things, a

Figure 3.2 Initially, the Barsebäck nuclear power plant was planned to consist of four, or even six, reactors. The closest settlements are Barsebäckshamn (in the foreground) and Vikhög (discernable in the background). Photo: Richard Conricus, 1989. Courtesy of Bilder i Syd.

distribution plant, a reserve power aggregate, and buildings for temporary residents.

In 1974, the town of Löddeköpinge merged into the larger municipality of Kävlinge. While the biggest employers in this new administrative unit were connected to farming (a slaughterhouse and a tannery), the nuclear power plant nevertheless established itself as an important employer in the area, with about 350 on the payroll.[41] The first Barsebäck reactor went critical in 1975 and in the fall of this year, Barsebäck was already providing electricity to Denmark.[42]

Almost from the beginning, Sydkraft and the local community established a close and trustful relationship.[43] Apart from the aforementioned infrastructure investments, the nuclear power plant also required a full-time manned fire station in the municipality and, like many other companies, Sydkraft began to sponsor local sports clubs, invite school classes to visit the plant, and inform about its production through advertising in newspapers and leaflets sent out regularly to all households.[44] One very popular element of the communication between the company and the local community later on was an annual photo calendar featuring romantic depictions of the plant along with nature motifs.[45]

Nevertheless, living in the vicinity of a nuclear power plant also entailed some specific everyday peculiarities. A fine-meshed alarm system was implemented to respond to emergencies. It was first based on AXE (telephones) and later on RDS (radio data system) technology; more than thirty thousand RDS receivers were distributed within the so-called emergency zone around the plant.[46] Another safety measure for the local area was the distribution of iodine pills by employers and by the pharmacy.[47] In retrospect, these material reminders of the particular risks of nuclear power were denoted as mere routine by municipal authorities, and regular opinion surveys showed that a vast majority of those living in the vicinity had high confidence in the Barsebäck plant.[48] It is certainly possible to interpret these assurances of trust as strategies to deny or neglect the risks. However, the conscious efforts by Sydkraft to win over the local population seem to have been rather successful in building a confident relationship with the local community.[49]

This picture is also strengthened by the work carried out by what was called the local security committee, initiated by national authorities as a means of exercising some public control over the plant. The long-standing local government commissioner Roland Palmqvist, for example, characterized both the relations to Sydkraft and the public control as "very good . . . thanks to the local security commission."[50]

On one rare occasion, the committee was criticized—from within. The vice chairman of the committee asserted that it was in fact a "taboo" to question the safety of Swedish nuclear power plants in any way, and implicitly accused the committee of hiding inaccuracies and other problems at Barsebäck.[51] His views were not met with any sympathy, either by the rest of the committee, or by the plant management or national nuclear authorities, and he was later dismissed from the commission.[52]

The community interaction that took place because of the existence of the plant was characterized by both normality and a special identity. The nuclear power plant was in many ways just like any industrial enterprise in the area, but at the same time it brought special features that affected private homes as well as municipal politics and administration.

Antinuclear Winds

The year 1972 was a breaking point in Swedish nuclear debate. Up to that time energy politics was generally regarded as a domain for technical experts. After this year, scientists began to openly express diverging opinions, expert knowledge was questioned, and nuclear power became a political and moral issue of public debate.[53] An antinuclear movement took shape, inspired by similar activities in Germany, France, and the United States, and spurred by a large international conference on the environment held in Stockholm the same year. Thus, the construction of the Barsebäck nuclear power plant coincided with a fundamental change in the societal understanding of nuclear power. A radio play about an imaginary accident at Barsebäck, broadcast in 1973—even before Barsebäck's first reactor began operating—found an audience that, according to some sources, began to panic because they believed the accident was real (reminiscent of the Orson Welles broadcast of "War of the Worlds" in 1938).[54] According to a Sydkraft chronicle, however, people rather became "somewhat worried" and the "panic" took place only in newspaper reporting.[55]

The antinuclear standpoint also became influential in the second largest political party at the time, the Center Party.[56] Leading members of the Center Party were influenced by the respected physicist and Nobel Prize winner of 1970, Hannes Alfvén. Alfvén had been engaged in the national nuclear program from the start but later began to criticize nuclear technology. When the Left Party also declared an antinuclear position, the old left-right dimension in Swedish politics was challenged, and in 1973 the oil crisis moved energy to the very

center of the political agenda.[57] In 1976, the Social Democratic Party was voted out of power for the first time in 44 years. A center-right coalition won the close elections, and the tipping point was likely the antinuclear standpoint of Center Party leader Torbjörn Fälldin.

The nuclear issue caused much conflict within the new government, since the other parties in the coalition did not share the Center Party's antinuclear position. In 1977, a second reactor began operating at Barsebäck and simultaneously a Nuclear Stipulation Act was approved, which required nuclear plant operators to prove, before loading new fuel rods, that they could manage radioactive waste in an absolutely safe way. The implications of this act launched prolonged interpretative conflicts, and in 1978 the government was forced to split. Efforts to find a political compromise were interrupted in 1979 by the Three Mile Island incident in the United States or, as it is often called in Sweden, the Harrisburg accident.

The incident was given extensive attention in the press; compared to the US press, for example, Swedish reporting was much more pessimistic.[58] A reporter interviewing two young women working with information for the public at the Barsebäck plant at the time presupposed that their work was "therapeutic" since the nuclear issue caused such passionate opinions—for or against.[59] However, on the contrary, one of the women replied that many people were in fact indifferent to nuclear power. Although she had been asked a lot of questions after the Three Mile Island incident, few visitors were scared but instead "open to evident data."[60] One concrete consequence of the Three Mile Island incident was that a special filter construction was erected at Barsebäck, the so-called Filtra. It was a cylindrical building filled with pebbles that was to work as a strainer for radioactive particles in case radioactive materials were released.[61]

On the national level, the Three Mile Island incident became the last straw in a long fight about holding a referendum about the future of nuclear power in Sweden. The event in the United States finally convinced the Social Democratic Party leader Olof Palme to favor a referendum, probably in order to avoid a nuclear debacle in the upcoming parliamentary election. The antinuclear parties formed one alternative, while the pronuclear parties formed two alternatives with slightly different formulations. Technology historian Arne Kaijser asserts that this was for tactical reasons, that is, the intention was to offer an alternative that appeared as a middle way and thus attract more voters.[62] The three alternatives all formally favored a phasing-out of nuclear power in Sweden, although on different conditions, since that was the only politically possible standpoint at the time.[63]

The referendum was to take place in the spring of 1980 and the campaigns were intense and engaged large parts of the population.[64] At Barsebäck, employees remember tight schedules—"three-four evenings a week"—of presenting and debating in study groups and hearings in connection with the referendum.[65] The basic message they brought with them was that knowledge was the key to accepting nuclear power and that "ignorance [was] behind most of it [the anti-nuclear attitude]," which was completely in line with the perspective advocated by most nuclear professionals.[66] After a nail-biting election night, the "middle way" alternative won with 39.1 percent, the anti-nuclear alternative got 38.7 percent, and the more openly pro-nuclear alternative got 18.9 percent. According to Sydkraft, people who lived closer to Barsebäck generally tended to vote in favor of nuclear power. The company commented that in "the cities of Malmö, Lund and Landskrona people were less afraid than in Norrland [a northern part of the country]."[67] A distance of fear was articulated in the referendum.

A few months later the Parliament decided that all nuclear power plants should be phased out by 2010 and that alternative energy sources and energy efficiency should be encouraged and enhanced to fill the vacancy. The goal of 2010 was based on the assumption that the last of the twelve reactors that had been ordered at this time would be commissioned in 1985, with an expected operating life of twenty-five years. In the long-term perspective, this decision implied major changes. However, in the short term, it meant more or less back to business for a sector that had been heavily disturbed by the period of political turbulence.[68] Nevertheless, after the referendum, the plans for Barsebäck 3 and 4 had to be abandoned.[69]

A Danish View over the Sound

Antinuclear opinions entered the political agenda in Denmark as well. Following the foundation of Organisationen til Oplysning om Atomkraft (the Organization for Information about Nuclear Power), OOA, in 1974, the issue was definitely at the center of attention in the Danish public discourse. The first action taken by the OOA was to claim a three-year moratorium on efforts to establish Danish nuclear power, justified by what the organization termed to be a need for further studies before making any decisions. Just two months after the foundation of OOA, twenty local sections of the organization had been set up all over the country, and the OOA became one of the predominant actors in the struggle over nuclear power in Denmark.[70]

During the first years of public debate in Denmark, Barsebäck was not the most frequently occurring theme. Instead, there were more general topics of discussion concerning the possible Danish commercial reactors, the consequences of radiation, nuclear bombs, and the transport of radioactive materials.[71] In 1977 and onward, however, Barsebäck became a major focus for the argumentation of the OOA, fueling discussions about possible locations of nuclear power plants in Denmark, about the Swedish transport of spent fuel through the Sound on its way to reprocessing in France, and about the probability and consequences of a major accident at Barsebäck.[72] For example, the OOA provided detailed calculations about possible contamination and the subsequent forced evacuation of large numbers of people from the greater Copenhagen area should there be an accident at Barsebäck, and later also presented an alternative energy plan for the country.[73] The two dominant themes of the debate over the years were the issues of radioactive waste and the safety and risks connected with nuclear power plants.[74]

OOA was certainly not unchallenged. The most prominent advocates of nuclear power in Denmark were the representatives of the electricity industry and the researchers at Risø. A separate organization, claiming to represent popular opinion in favor of nuclear power, was also founded: Reel Energi Oplysning, REO (Actual/Real Energy Information). Both the advocates and the opposition mainly used a language marked by rationality, technology, and natural science, although both sides were also prone to more emotionally loaded rhetoric.[75] For example, representatives of the OOA referred to leading nuclear advocates as "the nuclear priesthood," while at Risø the employees characterized fearful attitudes toward radiation as "hysteria."[76]

OOA has been described as a grass-roots movement, explicitly dissociated from political parties.[77] The activists wrote polemical articles, published a magazine and numerous brochures, and initiated demonstrations, marches, concerts, and theater plays.[78] Its most well-known symbol was a yellow and red badge with a smiling sun and the text "Atomkraft? Nej tak" ("Nuclear power? No thanks"). The symbol was designed by the young OOA activist Anne Lund in 1975, translated into 42 different languages, and over the following years fifteen to twenty million copies were printed.[79] In retrospect, Lund explained that it was a very consciously chosen symbol, not evoking radical left-wing aesthetics with clenched fists and red flags, but representing respectful dialog, kindness and politeness, "like a nice lady would like to wear on a nice trench coat."[80] The overall combination

of technical competence and emotional activism was the philosophy of the organization.[81]

The OOA was financed mainly by volunteer work, receiving economic support from individuals as well as income from sales of the "sun badge."[82] In 1980, the organization counted 130 local sections in Denmark, with some of the demonstrations attracting up to twenty thousand participants, and on several occasions hundreds of thousands of signatures protesting Barsebäck were collected and handed over to the Swedish government.[83] The majority of OOA members were young, and the work they put into the struggle against nuclear power turned into a lifestyle that influenced them in a fundamental way, not least as a kind of informal educational institution.[84]

Barsebäck certainly was a key symbol for the OOA.[85] One of the most frequent slogans was "Hva ska väck? Barsebäck. Hva ska ind? Sol og vind" ("What should go away? Barsebäck. What should come? Sun and wind") (figure 3.3).[86] In the visual language, OOA offered future scenarios, for example, an sunny and verdant aerial view over

Figure 3.3 Danish banners were common in the yearly antinuclear marches from Lund to Barsebäck in the late 1970s and early 1980s. Some demonstrations attracted about thirty thousand participants. Photo: Torbjörn Carlson, 1980. Courtesy of Bilder i Syd.

the Sound area between Denmark and Sweden, where the site of Barsebäck was turned into a "memorial park," contrasted by a dark, heavily industrialized counterpart.[87] The very form of the Barsebäck plant was used as well, for example, on banners that showed the characteristic vertical stripes of the Barsebäck reactor buildings as the teeth of a skull.[88]

That there was actual fear among many of the OOA activists is clear, illustrated, for example, by the account of a big march to Barsebäck in 1977 written by thirteen-year-old Lui: "We came closer and closer to the frightening monument of fear of a nuclear power plant... suddenly we stood in front of this abominable death trap, which the Swedish government put up without showing any regard to the inhabitants of the area."[89] Paradoxically enough, the contact between Danish and Swedish antinuclear activists seems to have been relatively limited, in spite of joint demonstrations and marches. A leading OOA activist, Jørgen Steen Nielsen, says that the lack of close cooperation was probably due to cultural differences.[90] At the same time Swedish authorities, individuals, and publications were often cited in the Danish public debate, by both advocates and opponents of nuclear power.[91] Among the better-known names of antinuclear spokespersons used by the OOA we find, for example, the Swedish writer and comic actor Tage Danielsson performing a monologue about a "probability calculus" for the Harrisburg accident/Three Mile Island incident, and the physicist Hannes Alfvén unctuously pleading against nuclear power.[92]

Chernobyl and a "Premature" Shutdown

In 1982, the Social Democratic Party was back in office. However, any hope it harbored that the hot topic of nuclear power could be cast aside from the national political discourse was disappointed. Instead, the Social Democrats experienced a harsh internal fight between antinuclear groups within the party on the one hand, and representatives for the trade unions on the other. The latter were worried that phasing out nuclear power would lead to increased electricity prices, which would severely affect basic manufacturing and, in consequence, harm employment in this key sector.[93] When a government commission explored the possibilities to advance the timetable for phasing out nuclear power, this led to intense lobbying by the trade unions and the power industry against what they termed a "premature" shutdown.[94]

The explosion at the Chernobyl nuclear power plant in 1986 shocked nuclear experts and the public alike. The accident was first detected in the West by Swedish nuclear engineers; in fact, the Swedish city of Gävle, 1,500 kilometers from Chernobyl, received more contamination than Kiev, located just 130 kilometers from the accident. Leading Swedish politicians demanded a total nuclear phase-out as soon as possible, and an immediate shutdown of Barsebäck, while several environmental organizations demanded the immediate closure of all nuclear power plants.

The government responded by initiating an investigation on risk assessment. To some extent, nuclear experts succeeded in convincing both the public and the politicians that there was no real connection between Swedish nuclear power plants and the Chernobyl plant.[95] The differences between Soviet and Swedish reactors were brought to the fore and emphasized by nuclear advocates. The logic was that it was meaningless to phase out Swedish nuclear power when there were much more dangerous reactors located just on the other side of the Baltic Sea, among them at the plants of Sosnovjy Bor, Ignalina, and Greifswald. The pronuclear conclusion was to spend money where it could be of greatest value, that is, in Eastern Europe.[96] Sweden also became quite involved in safety upgrades, especially at the Ignalina nuclear power plant, but this work did not influence the national debate in any fundamental way.

In 1985, after more than a decade of intense debate, the Danish Parliament decided to exclude nuclear power from its comprehensive energy planning. In 1986, in response to the Chernobyl accident, the parliament furthermore instructed the Danish government to contact the Swedish government immediately with a request to close down Barsebäck.[97] In 1988, the Swedish Parliament, too, decided to close down two of the country's existing twelve reactors by 1995 and 1996. There were several concurrent reasons why the two Barsebäck reactors were chosen to be the ones closed. First, they were relatively small in effect, and closing down these two reactors would eliminate an entire plant. Second, the employment rate in their region was better than at the other plants; third, and, not least important, was Danish pressure.[98] The minister of energy, Birgitta Dahl, emphasized that the decision was "irreversible."[99] In Barsebäck plant employees and their families and friends formed a human chain around the plant as a demonstration of their wish to continue operation. The action was described as a symbolic hug.[100]

Parallel to lobbying for the continuation of nuclear power, Sydkraft began planning to replace Barsebäck with other sources of energy,

namely, coal gasification and natural gas (the latter based on imports from the Soviet Union).[101] In communication with the municipality, the company emphasized employment security in the local area. Indeed, it claimed that if a coal plant were to be built instead, the number of local employees would actually increase, at least during the startup phase.

However, Sydkraft's plan for a coal gasification plant was met with fierce resistance among the local population.[102] A coal plant was considered dirty in comparison to "clean" nuclear power, and implied a number of elements that were regarded negatively, such as emissions and pollution from the plant, from coal transport trucks, and from a planned coal storage field in the area. The protests became loud and were highly organized, putting local politicians under intense pressure.[103] Kävlinge's municipal executive board suffered especially, since this body had the right to veto the project by refusing to grant Sydkraft the necessary building license.[104] In order to manage the delicate issue, a special group made up of representatives from all political parties was formed. Ultimately the municipality decided to reject the Sydkraft application for a new coal-fired power plant at Barsebäck.[105]

Simultaneously, the deep internal conflict between antinuclear groups and trade unions in the national Social Democratic Party intensified and was now played out in public. Eventually, the minister of energy, Birgitta Dahl, was forced to step aside. In 1990, the "irreversible" decision to close down two reactors was rescinded and slightly later a kind of compromise was reached, based on investments in renewable energy and, for the time being, continued operations at Barsebäck.[106] However, the pressure on the Swedish government from Denmark to shut down Barsebäck grew during the 1990s.[107]

From the area of popular culture, a strong but nonflattering image of the Swedes in relation to nuclear power was presented in a monologue from a TV series, "Riget," produced by Danish director Lars von Trier, which was aired in 1994. One of the main characters, a Swedish chief surgeon played by actor Ernst-Hugo Järegård, stands on the roof of the big hospital in Copenhagen, looking at Barsebäck, which he can discern at a distance on the Swedish coast. He sees the chimneys of Barsebäck as watchtowers and expresses his severe disgust for Denmark and for the Danes: "Thank you, Swedish watchtowers. By plutonium we bring the Danes to their knees. Here: Denmark, excrement emitted from limestone and water. And there: Sweden, cut in granite. Danish bastards. Danish bastards!"[108]

In truth, the Swedish attitude was far from conciliatory, as became clear when five of the Swedish nuclear power plants went offline for several months because of a serious technical malfunction at Barsebäck in 1992. To compensate for the standstill, Sydkraft imported electricity from coal-fired power plants in Denmark.[109] Exchanging nuclear energy for coal energy was much criticized by residents of southern Sweden, who considered it a bad solution for the environment in general, all the more so since under normal wind conditions the sulfur emissions from Danish coal plants were blown right in their direction.[110] Swedish debaters accused the Danes of using Barsebäck as an alibi to avoid their own energy problems, especially their "furious investment in coal," their too liberal environmental legislation, and also their reprehensible import of coal from apartheid South Africa.[111] An employee at the Barsebäck nuclear power plant was not alone in his view when he stated: "We are confounded with the Danes who belch out their bloody coal power smoke and there are always western winds...and it lands here with acidification problems...which destroy the environment in the long run."[112]

The friendly cooperative spirit that initially marked the relationship between Sweden and Denmark in the issue of nuclear power thus changed dramatically. Not only did young OOA activists raise their voices against Barsebäck, the Danish government also expressed severe discontent with the location of a nuclear power plant just about twenty kilometers from the Danish capital of Copenhagen. The antinuclear winds in Sweden also had a quite concrete effect on the future prospects of the Barsebäck plant, its employees, and the surrounding area. The response from the local community in Löddeköpinge/Kävlinge was nevertheless affirmative toward a continuation of nuclear power, illustrated by, among other things, the intense rejection of a coal gasification plant as an alternative source of energy and an alternative workplace.

The Spirit of Barsebäck

"We fought against odds...we will show them!"[113] "It is a great workplace; everybody is so nice and helpful."[114] There seem to be two interrelated meanings of "the spirit of Barsebäck" as it was used by the plant employees. One denoted the collective resistance toward antinuclear activists and political decisions that went against a future for nuclear power in Sweden. The other aspect was that the plant was a highly appreciated workplace where people stayed a long time. Taken together, these two meanings invoke an understanding of a workplace where employees were quite content with their work and closely united against a doubting world outside, against the "external enemy."[115]

When the two reactors of Barsebäck were online, the plant employed about 350 people.[116] A majority were men working with technical issues. About 25 percent were women, primarily performing administrative tasks like bookkeeping, personnel, and providing information to the public.[117] A large proportion of the employees worked at Barsebäck for a long time, often beginning their career in the basic operations and then moving on to other divisions of the plant.[118] Even the director as of 2010, Leif Öst, once began "on the floor" to end up at the highest position at the plant 38 years later.[119] The staff turnover was very low and the average employment time 17–20 years. A saying was that you were a newcomer if you had not yet worked ten years at Barsebäck, and it was never difficult to find new personnel if needed.[120] Many of the employees pinpoint the possibility to advance rapidly within the company as one of the reasons why they chose to stay for such a long time. Other advantages were a nonhierarchical atmosphere and the feeling of belonging to a family.[121]

Nevertheless, the pressure from outside was intense and many employees had to take a conscious position regarding their workplace. They had to justify their choice of workplace at private parties, for example, and be prepared to debate the pros and cons of nuclear power at any time. When they went to work, the road was sometimes blocked by antinuclear demonstrators calling the plant employees "child murder[ers] and such things."[122]

The employees developed a relaxed approach to the political pressure. For example, a man recalled the turbulence when on one occasion Greenpeace entered the fenced area, climbed the roof of one of the reactor buildings, and attached a huge banner on the wall: "It was like when the Eurovision Song Contest was on television, the telephones rang incessantly."[123] This man worked as a guard at Barsebäck for many years and related his expectations for weekends during periods when protests were intense: "When you came in Friday and were to work Friday, Saturday and Sunday, you were one hundred percent sure that something would happen...It has been fun in that way...it has always happened a lot."[124]

In the communications between the four reactor sites in Sweden, it was a friendly joke that the other three were happy that Barsebäck "took care of" all the negative publicity on nuclear power in the country. The public information officer at Barsebäck claimed that there was probably no other workplace where so many people had

such extensive media experience.[125] The "we" and a "them" from the perspective of the plant employees were thus—at least as expressed by these quotations—created in a good-humored way, patronizing but not hostile toward antinuclear activists. Similarly, in its company chronicle Sydkraft characterized the big antinuclear marches as public entertainment, a mixture of a march and "old-fashioned school field trips to the beech forest."[126] In spite of the easygoing accounts of intense antinuclear protests, it was also stated that "there is probably no other industry...that has been so ridiculed and taunted." The response from the nuclear plant employees toward the mistrust from outside the nuclear sector was to "show that the technology works."[127]

Accordingly, the special features of nuclear power were played down by the plant employees, who emphasized the ordinary and the normal. Barsebäck was labeled an "electricity factory," and the possibility to visit the plant was regarded an important tool to show that nuclear power was almost just like any industry, only very clean.[128] Some Danish visitors were described as really scared, "frightened of Barsebäck from childhood," but after the visit they were said not to be afraid anymore.[129] By being accessible and showing visitors that there was nothing secret or hidden at the plant, the Barsebäck employees perceived they often managed to stop the fear. One employee, Jan Pålsson, stated: "When they come here and realize that...it is not anything more special than a way to boil water...they lose this fear of it."[130]

One could, of course, question the way plant employees demonstrated the safety of nuclear power. In her study of the nuclear fuel reprocessing plant La Hague in France, anthropologist Françoise Zonabend depicts an encompassing but suppressed anxiety about nuclear technology, among employees as well as among those living in the neighborhood. She shows how fear was muted and concern banished by the use of different strategies, for example, by simple denial, by drawing on tradition, or by comparison with risks in other work places and in everyday life, like driving a car.[131] Zonabend also pinpoints the habit of using vocabulary from the domestic sphere—cookery and housework—as a way to play down or to trivialize danger at the La Hague plant.[132] However, it is worth noting that Zonabend carried out her fieldwork in the late 1980s, that is, immediately after the Chernobyl explosion. It cannot be ruled out that the temporal proximity to these events may have had some effect on the responses received in the study.

The indicators I found in relation to Barsebäck, ranging from statements and actions by the municipality, local results in the referendum on nuclear power, and opinion surveys, to interviews with employees and plant neighbors, all point in the same direction: people living in the vicinity of Barsebäck feared the plant less than people living further away.[133] In chapter 4 about the Ignalina nuclear power plant in Lithuania, we will discern a similar picture. Neither at Barsebäck nor at Ignalina does the distance of fear seem to have changed much over time.

Nevertheless, there was a feeling of bitterness in the air at Barsebäck. Employees and plant management described how the plant produced cheap and clean electricity in an environmentally friendly, safe way for decades and did not release anything but some hot water.[134] In addition, they highlighted how the nuclear sector carried a huge responsibility for its business as compared to other sectors—from the cradle to the grave—and Barsebäck's management assumed that no other industry in the country would be able to meet the same demands.[135] In spite of these circumstances, very little credit was given for their dedicated efforts—only the repeated view that nuclear power was dangerous, along with the continuous threat of closing down the plant.[136]

Closing Down

"We have always lived with the threat of closing down; ultimately, you did not believe in it."[137] Over what was often a long career at the Barsebäck plant employees got used to the fact that the future of their workplace was continuously debated and questioned, and that the plant would possibly be shut down before its technical lifespan had ended. In 1997, the Social Democratic Party, the Left Party, and the Center Party eventually agreed to close down Barsebäck's two reactors and the decision became reality in 1999 and 2005, respectively. At this time, Sydkraft, like the rest of the Swedish power industry, had been increasingly internationalized. In 2001, German E.ON bought the majority of the shares in Sydkraft and a few years later, Sydkraft was named E.ON. As compensation for having to close down the Barsebäck nuclear power plant for political reasons, E.ON was granted shares in another Swedish nuclear power plant, Ringhals.

When the closure at last became real, the employees characterized the decision in terms like "madness, capital destruction, political games and intrigues, innocent victims, betrayal."[138] Many quit their jobs as soon as the first reactor closed down, since it became "too emotional

and tough to be completely disregarded."[139] Representatives of the town of Kävlinge articulated an experience of being abandoned, of disillusionment in relation to the state, bemoaning that nobody outside the municipality "fought for us."[140]

E.ON put together a generous conversion program for the personnel at the plant. Initially it comprised an employment guarantee, ensuring that the plant would not experience a massive flight of competence when the closing date was announced. Later the program offered possibilities to study or to try another job at full salary for three to five years. While this helped a considerable number of employees find new ways to earn a living, other employees who became redundant found employment at other nuclear power plants in the country. After some years of adjustment, the disappointment and bitterness at the plant faded away and the situation was more or less accepted.[141] The atmosphere at Barsebäck changed into cautious optimism, and employees found new meaning in meeting the difficult challenge of decommissioning a nuclear power plant. Thus, in spite of being a "closing down industry," in many ways the enterprise succeeded in keeping the "Barsebäck spirit" alive, now with a focus on decommissioning the plant in the best possible way.

In Denmark, the OOA activists had reoriented their efforts toward the broader issues of energy politics after the 1985 parliamentary decision not to build commercial nuclear power plants in Denmark, but the organization did not formally disband until 2000 following the closure of the first reactor at Barsebäck.[142] The presence of Barsebäck in the Danish debate was not over, however. For example, in connection with the events of 9/11 in New York, a Danish newspaper featured a spread on Barsebäck as the worst terror target, combined with a montage showing an airplane on its way to hit the nuclear power plant. The short two-minute flight from Copenhagen airport to Barsebäck was emphasized and the text referred to a major who asserted that crashing into Barsebäck would be easier, cheaper, and more efficient than any other biological or chemical weapon.[143] One of two headlines stated that "We are Defenseless" and showed a picture of five people wearing full-body radiation suits.[144] The state of alert at the Swedish nuclear power plants was also raised, and the director for a Swedish nuclear expert authority said that it was practically impossible to protect oneself from an attack like the one in the United States, as modern nuclear power plants are not built to resist a suicide attack of that kind.[145] In several respects, Barsebäck was considered a "Danish" nuclear power plant, only located on the other side of the Sound; for many people the Danish nuclear era did not end until 2005, when Barsebäck's second reactor was finally closed down.[146]

Significance and Future Use

"Nobody knew where Kävlinge was located, but if I mentioned that Barsebäck was in the municipality, everybody knew."[147] The significance of the nuclear enterprise in Kävlinge municipality was huge in terms of identification and in the many ways in which the plant was present in everyday life—ranging from investments in road infrastructure, sponsorship of sports clubs, generous plant tours for schoolchildren, and distribution of special alarm equipment for the homes, to visually dominating the horizon from almost anywhere. The plant constituted one of the major employers in the municipality, but was not the only one, and within commuting distance there were a large number of other work opportunities.[148] That is, the local community was by no means as dependent on the plant as many mono-industrial towns are on their industrial enterprise. However, as illustrated by the quote at the start of this paragraph, in the logic of putting a place on the map, the name of Barsebäck held a top position in Swedish and Danish consciousness.

For the nuclear sector in general, Barsebäck was a kind of nursery where many people started their career. As an E.ON representative expressed it: "That's where it began [at Barsebäck]"; people who are now working in different positions in some of the nuclear enterprises or authorities in the country "know each other through Barsebäck, it is special."[149] The significance of what the plant produced is also an important part of the conceptualization. The plant production is compared to the amount of electricity produced by the rivers of northern Sweden, and its location in the southern part of the country is a key feature—as a unique and valuable southern input point to the power grid.[150] The negative image is also mentioned by plant employees, that Barsebäck "happened to be the symbol of antinuclear activities in the country."[151]

The silhouette of Barsebäck is certainly visible from a long distance, but this subject is worth some elaboration. During the planning and construction process in the late 1960s and early 1970s, the monumentality of the plant and its expected visual dominance in the landscape was much emphasized by participating architects, engineers, and heritage organizations as something good and desirable—but perhaps also as something that people needed to get used to before fully appreciating it. The contradictory idea that the gray color and black

vertical stripes would merge with the horizon and turn into a kind of camouflage is a story that was retold by some interviewees—with a laugh: "I know that the only thing you see from the bridge [crossing the Sound between Sweden and Denmark] or from Copenhagen is . . . Barsebäck."[152]

The visibility from Copenhagen has been an often repeated circumstance used to illustrate the short distance between the plant and the Danish capital. What you can see is not far away, at least when it comes to nuclear power plants, and especially when a majority of those living in Denmark with the view of Barsebäck at a distance carried strong antinuclear feelings. In striking contrast, it seems as if the idea of letting the plant disappear into the landscape has been realized in the local area, although not primarily because of the gray color and stripes. According to a study from 2010, people living close to Barsebäck do not "see" the plant since it has actually "merged with the landscape" in some sense.[153] It is just there, not anything that is noted. The visual dominance of Barsebäck is perhaps more prominent in the symbolic mental gallery of many Swedes and Danes living further away from the plant, based on newspaper photos and broadcast features with national coverage, but certainly also on the Danish view over the Sound.

Dominating the landscape or not—how is the future of the Barsebäck site envisioned in the context of the ongoing decommissioning? And have there been any heritage activities connected to the plant that could affect these plans and conceptions?

In the late 1980s, two heritage professionals, Kristian Berg and Lars-Eric Jönsson, argued that the Barsebäck nuclear power plant ought to be considered from a heritage point of view.[154] Their plea was regarded mostly as a joke, however, and the issue never entered the formal agenda of the heritage authorities. Fifteen years later, in the period between the closure of the first and the second reactors, the regional museum of southern Sweden initiated a seminar about the possible heritage values of Barsebäck and also carried out a documentation project based on perspectives of building conservation and ethnology.[155] At the national level, too, nuclear power attracted heritage attention at the beginning of the twenty-first century. The smaller reactor in Ågesta that had provided district heating to the Stockholm suburb of Farsta was documented by museum professionals, and the National Museum of Science and Technology published a book on the nuclear issue in a historical perspective.[156]

Hence, it was not very provocative when Barbro Mellander, director of the regional museum, stated in 2006 that Barsebäck is "living

cultural heritage in our collective memory."[157] The plant was said to fulfill the criteria used by the heritage institutions to define building structures of high cultural history value and to mirror the "grand narrative about Swedish energy politics, environmental politics and the welfare society after the Second World War," in many respects the same heritage values that were articulated in the late 1980s.[158] It seemed as if Barsebäck was well on its way to receiving heritage status, within a national or southern Swedish regional context.

In Denmark, when OOA disbanded, both the organization itself and the National Museum of Denmark encouraged antinuclear activists to write down their memories.[159] Among the answers we find, for example, former activist Helle Green, who ends her story by saying that "I have no doubts that if we had not fought in the 70s and 80s, we would have nuclear power in Denmark today. And I have a clear conscience when I think about myself taking part in that struggle."[160] The National Museum furthermore collected artifacts such as badges, banners, and publications from the OOA, but also things like a sculpture made from a piece of iron from the Swedish ship "Sigyn," which transported radioactive material from all the Swedish nuclear power plants. Sigyn actually ran aground just outside Barsebäck on its maiden voyage in 1982—the dented piece was removed and given to Greenpeace, which gave it to the OOA, which had it turned it into a sculpture. In 1999, the sculpture ended up in the National Museum in Copenhagen as a symbol of the decisive Swedish presence in the Danish nuclear power debate.[161] In 2001, the museum opened a new permanent exhibition entitled "Denmark Stories (1660–2000)," which contains one section about the Danish antinuclear movement, including Barsebäck (figure 3.4).[162]

In 2006 documentation and preservation efforts were also undertaken by the National Heritage Board in Denmark and the Electricity Museum, focusing on Risø as a research site and workplace. The decommissioning of the first reactor had been completed in 2005 and the reactor building left empty.[163] The documentation project in 2006 drew tremendous interest from the decommissioning company and many previous employees at Risø. The investigator asserted that because of the negative attitude toward nuclear power in Denmark, the history of the Risø site had not received the attention it deserved, neither in terms of economic and research issues nor as far as national and cultural identity were concerned.[164] Risø apparently did not fit well into the narrative of nuclear power in Denmark.

Even though it no longer produces any electricity, many visitors find their way to the Barsebäck plant, in what is sometimes labeled

Figure 3.4 At the Danish National Museum in Copenhagen, visitors can learn about the history of the antinuclear movement. Among the key symbols are the Swedish nuclear power plant Barsebäck and the "sun badge," designed by a young Danish activist in 1975 and translated into 42 different languages. Photo: Anna Storm, 2010.

nuclear power tourism.[165] The information officer states that many people nowadays find closed down factories exciting in general, and that Barsebäck is even more exciting, almost a bit "mythical," since it is a "symbol for nuclear power."[166]

Nevertheless, for the time being Barsebäck's owner E.ON is not planning to preserve anything of the physical structure of the plant, nor anything of the archival material beyond what is required by law.[167] Some employees at Barsebäck think the plant, or parts of it, could be an important industrial memory to preserve, while others think it would be a waste of societal resources: "There is nothing beautiful or cultural about a nuclear power plant. It has the right to exist only as long as it does its job."[168] In line with the latter statement, the company's goal is that the plant should disappear as completely as possible, and that the site could be used freely for other purposes. Whether or not a radioactive site can be regarded as "clean" naturally depends on whether the future use includes a residential area where

vegetable gardens will be planted, or whether it remains a fenced-in site for industrial production.[169] Representatives of Kävlinge municipality wish to see a new high-status residential area take shape along the coastline with the view over the Sound—"Barsebäcks sjöstad" (Seaside Barsebäck)—assuming that the ground can be satisfactorily decontaminated.[170]

A heritage perspective on the plant has mostly been a nonissue from the municipal point of view as well as for E.ON, and the heritage institutions have also silently withdrawn.[171] As of 2013, there are no signs of heritage interest and no contacts between the plant management and the regional museum or any other heritage institution.

Concluding Remarks

Close by the Barsebäck plant there is a mound of stones built by antinuclear activists in the 1980s. If the plant is completely taken away, the mound will be the only remaining material witness of the nuclear power plant at the site.[172] The plant is still there as a reminder, a monument that evokes strong but conflicting feelings. Will it be possible for the scars in the landscape to heal if the physical reminder disappears? By itself, the mound is an insufficient foundation to bear the memories connected with Barsebäck.

Barsebäck nuclear power plant became an esteemed workplace and societal actor in the local context of Löddeköpinge and Kävlinge in southern Sweden. It was symbolically defining since everybody in the country knew about the plant, and at the same time, it turned "invisible" and become normalized by those living close by. From a national point of view, Barsebäck was the foremost emblem for long and distressing political controversies about the future of nuclear power in Sweden, not least since the plant was a cause for tense relations with neighboring Denmark. In Denmark, Barsebäck was almost considered a domestic plant, only located on the other side of the Sound, and as such, first something to encourage and later to fight.

Just like in Malmberget, the physical landscape reminiscent of these critical decades is planned to disappear as completely as possible, and this ambition is not contested, but rather the opposite. Reinstating a "natural" landscape is the current benchmark for responsibility in nuclear matters. The distance of fear, the scales that decisively affect the significance of a particular nuclear power plant, will therefore have to attend to a new, less distinct geography in the future.

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