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A Disrupting Strategic Metal: The Norwegian Aluminium Industry Meets World War II

This article offers a new interpretation of the coming of state ownership in aluminium-related big businesses in Norway. It shows that the Norwegian aluminium business of the late 1930s and the 1940s was undertaken by a Scandinavian business elite fully capable of filling capital requirements after the war. This elite had, however, entangled itself into the German war effort in Norway mainly by supporting the building of new aluminium plants under the German occupiers' control. This left it morally vulnerable to the increasing emphasis during the war on aluminium as a strategic metal. The Allied war effort—especially evident in US attitudes—had come to see the cartelized aluminium industry of the 1930s as working against the national interest by impacting national production capacity in a negative way. The Allies bombed the major new plant in Norway in 1943, and after the war the US acted restrictively toward Norwegian capital assets in the US. By pursuing ownership after 1945, the Norwegian state performed strategic ownership roles in large corporations, thereby also protecting these entities from the possible wrath of the US against private owners.

Keywords: state ownership, strategic metal, collaboration, business elite, bombing

There is widespread consensus that when the Norwegian state suddenly became, after the Second World War, an important

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industrial shareholder, this had more to do with filling voids stemming from the German occupation than with ready-made plans based on social democratic ideology. In 1946, the new Labour (Arbeiderpartiet) government, with an absolute majority in Parliament (Stortinget), established an aluminium corporation—Årdal Verk—on the foundation of a German operation built during Germany's occupation of Norway.[1] By confiscating German shares, the state also became a significant owner (around 47%) of Norway's largest industrial corporation, the chemical company Norsk Hydro, which had made an aborted investment in aluminium during the war.[2]

But this is not to say that social democratic ideology did not matter for the decisions made by the government.[3] The post-war rise of Norway as a major producer of aluminium, in particular, plays a central role in interpretations of social democratic industrial policy in Norway.[4] The state assumed a financial role supporting capital-intensive businesses, a role that the Norwegian bourgeoisie in general had failed to provide in the crises-ridden interwar period.[5]

This paper argues that the coming of state ownership in Norway in the 1940s was affected much more by developments in the aluminium industry throughout the war than previously thought. After the US had concluded that aluminium was a strategic metal worthy of extreme procurement measures for itself and to destroy for their enemy, the whole business surrounding aluminium shifted significantly. This opens up a new, critical framework with which to interpret Norwegian aluminium activities during the war. Before the war, a private Norwegian aluminium initiative emerged through a group of Scandinavian business elites, led by the Norwegian Tom Fearnley. It set out to expand Norwegian production, an initiative that became entangled in Germany's aluminium plans for Norway. The way the war progressed made this collaboration look increasingly problematic

[1] This article will retain the UK-English spelling for aluminum—aluminium—for consistency, except for direct quotes.

[2] The government also constructed a state-owned iron works (Norsk Jernverk) for national supply security reasons. Tore Grønlie, *Statsdrift: staten som industrieier i Norge 1945–1963* (Oslo, 1989).

[3] For the first kind of argument, see Even Lange, "Førsteopponentinnlegg, Tore Grønlies, Statsdrift," *Historisk tidsskrift*, no. 3 (1991); Einar Lie, "Context and Contingency: Explaining State Ownership in Norway," *Enterprise & Society* 17, no. 4 (2016). For the latter part, see Grønlie, *Statsdrift: staten som industrieier*; Hans Otto Frøland, "Fra tysk fireårsplan til norsk statsindustri," in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, ed. Johan Henden, Hans Otto Frøland, and Asbjørn Karlsen (Bergen, 2008).

[4] Grønlie, *Statsdrift: staten som industrieier*; Lange, "Førsteopponentinnlegg, Tore Grønlies Statsdrift"; Lie, "Context and Contingency"; Frøland, "Fra tysk fireårsplan til norsk statsindustri."

[5] Tore Grønlie sees a multitude of factors, including planning ideology. Even Lange has argued that the state compensated for a lack of private capital. Einar Lie has built on this interpretation and argued that state shareholding filling the void left by the Germans benefitted from strong trust in the state.

both from Norwegian and international perspectives. The private group's legitimacy as national strategists suffered as a result. In some respects, the state became an industrial owner after the war when it filled the role that the business elites originally had positioned themselves to fill.

The paper draws a new story built on several large monographs from primary sources on interrelated activities, and the purpose is to show how a private, Norwegian-dominated, Scandinavian business and investment group tactically positioned itself across a range of companies and into the international aluminium cartel.[6] This new story shifts the interpretation of the Norwegian state's role after the war, bringing an understanding of the greater complexity of what going forward after the war actually entailed for the state. This is based on both what had happened during the war and on Norwegian positions before the war. This revised narrative also takes into account an international framework in which priorities shifted and Western governments became more skeptical of the free and unregulated role of private businesses.

The paper is divided into five parts. The first four are the background to and the creation of the private investment coalition in the late 1930s, the larger industrial framework within which the central organizers of this coalition belonged, the German occupation of Norway and its significant implications for aluminium, and the new awareness of the strategic importance of aluminium that followed the American entry into the war and the sterner attitude to collaboration that resulted. The fifth part discusses the long-term implications for the Norwegian business elite and considers how their actions failed to account for the seriousness with which the Allies saw the expansion of Norwegian aluminium. It ends with the concluding section.

A Norwegian Networker and the Rise of Norwegian Aluminium Businesses

Much of the literature on the pre-1940 Norwegian aluminium industry has downplayed the reasons for the state being optimistic about a grand Norwegian aluminium future.[7] The literature's emphasis is on the

[6] Knut Sogner, *Skaperkraft: Elkem gjennom 100 år, 1904–2004* (Oslo, 2003); Trond Bergh, Harald Espeli, and Knut Sogner, *Brytningstider: storselskapet Orkla 1654–2004* (Oslo, 2004); Knut Sogner, *Andresens: en familie i norsk økonomi og samfunnsliv gjennom to hundre år* (Oslo, 2012); Ketil Gjølme Andersen, *Flaggskip i fremmed eie: Hydro 1905–1945,* vol. 1 (Oslo, 2005); Finn Erhard Johannessen, Asle Rønning, and Pål Sandvik, *Nasjonal kontroll og industriell fornyelse. Hydro 1945–1977,* vol. 2 (Oslo, 2005); Marco Bertilorenzi, *The International Aluminium Cartel, 1886–1978: The Business and Politics of a Cooperative Industrial Institution* (New York, 2016).

[7] See the introduction in Johan Henden, Hans Otto Frøland and Asbjørn Karlsen, *Globalisering gjennom et århundre: norsk aluminiumindustri 1908–2008* (Bergen, 2008), 7–32.

constraints of foreign ownership as well as on the failure of the sole Norwegian-owned enterprise—despite favorable Norwegian conditions, such as cheap electricity and ice-free harbors—to lure investment and create more optimism than actually existed. Some scholarly work, though, has emphasized the vitality and independent efforts of Norwegian engineers working within the constraints of small-scale Norwegian companies.[8] The various concerted efforts undertaken by Norwegians themselves, which combined into a vital strategic initiative in the late 1930s, have been neglected.[9] The role of Tom Fearnley especially has largely escaped attention.

Two developments during the 1910s had considerable long-term influence on the Norwegian aluminium industry. And Fearnley was connected to both. In 1915, the company A/S Høyangfallene Norsk Aluminium Co. (hereafter NACO) was started as a vertically integrated producer of electricity, alumina, aluminium, and aluminium products.[10] Meanwhile, in 1918, the research and development company Elektrokemisk developed a technical principle subsequently known as the "Söderberg system" through which electrical processes could be made continuous; through the 1920s, it experimented with ways to apply this principle to aluminium.[11] Both companies came under the influence and part-ownership of Alcoa due to the severe crises they underwent, in 1923 and 1924, respectively. Alcoa was one of the founders of the aluminium industry and dominated the American market. Alcoa kept both companies under ambitious Norwegian management.

Fearnley invested in Elektrokemisk in the 1910s, but his preoccupation with aluminium was more evident through NACO. He was a member of the board of directors from the company's inception in 1915 through to its reorganization in 1923, which is when its electricity business was demerged (and called Høyangfallene), and Alcoa purchased 50% of NACO. The remaining shares of NACO were controlled by a bank in receivership. Fearnley was arguably Norway's most influential businessman at this point.[12] He ran the shipping

[8] Espen Storli "Out of Norway Falls Aluminium: The Norwegian Aluminium Industry in the International Economy, 1908–1940," (Ph.D. diss., Norwegian University of Science and Technology, 2010).

[9] Henden, Frøland, and Karlsen, *Globalisering gjennom et århundre*; Hans Otto Frøland and Mats Ingulstad, *From Warfare to Welfare: Business–Government Relations in the Aluminium Industry* (Trondheim, 2012). See Jan Thomas Kobberrød. "Global Markets and National Tasks: Norwegian State-Owned Aluminium Companies since 1946," in *From Warfare to Welfare*, ed. Hans Otto Frøland and Mats Ingulstad (Trondheim, 2012) 199–228.

[10] Kåre Fasting, *Norsk aluminium gjennom 50 år: forhistorie og historikk 1915–1965 : Aktieselskapet Norsk aluminium company, A/S Nordisk aluminiumindustri* (Oslo, 1965).

[11] Sogner, *Skaperkraft*.

[12] Bergh, Espeli, and Sogner, *Brytningstider*.

company Fearnley & Eger, which also functioned as an investment vehicle. During both world wars, he headed the Norwegian delegation negotiating with Great Britain on shipping matters. He had investments and board positions in several Norwegian industrial corporations. For many years, he was a member of the board of Hambros Bank in London.[13] Together with his cousin, Johan H. Andresen, he headed the 1928 reorganization of the failed family bank other family members had started, restoring the name Andresens Bank, which had been lost in its 1921 merger with Bergens Kreditbank.[14] After 1928, Andresens Bank was one of Norway's largest business banks.

Tom Fearnley returned to aluminium in the 1930s. In 1937, he headed a consortium that bought the 50% of NACO shares held by its bank in receivership since 1923. As part of the 1937 process, the electricity company Høyangfallene was reunited with the industrial company NACO. From that point on, Fearnley's consortium and Aluminium Ltd. (Alcoa's Canadian sister company, having inherited Alcoa's shares) each owned 50% of NACO.

Fearnley was well acquainted with the rapid rise of aluminium as an important metal. In 1935, a Norwegian group of investors (organized by Elektrokemisk) bought out Alcoa's 55% shareholding in Elektrokemisk (shares which, from 1928, had been owned by Aluminium Ltd.). Fearnley bought some of these shares.[15] Seemingly, he was just acquiring a minor position, but as an investor he knew Elektrokemisk from the 1910s. He was a cousin of the chief executive officer (CEO), Conrad Wilhelm Eger (hereafter Willy Eger), and Elektrokemisk for a number of years had been a tenant at Fearnley's office building in central Oslo, where Fearnley had his own office. Both cousins belonged to the influential and wealthy Andresen family.[16]

Elektrokemisk held an enviable position in aluminium. Based on Elektrokemisk's elaborate experimental work during the 1920s, the French company Alais, Froges et Camargue announced in 1932 it had designed a successful rectangular shape design of an anode on the basis of the Söderberg system to complement a rectangular oven with a gas-absorption system that contained some of the fluoride gases.[17] In 1933, Alais, Froges et Camargue transferred the rights to this invention to Elektrokemisk because the Elektrokemisk's licensing contract stipulated

[13] Wasberg and Petersen, *Fearnley & Eger 1869–1969* (Oslo, 1971).

[14] This was the bank that controlled 50% of the shares in NACO.

[15] "Konsortium for hjemkjøp av aksjer i Det norske A/S for Elektrokemisk Industri," J. Sejersted Bødtker 30 Jan. 1935, Series 0001, Box N001, Aktieinnkjøp av A.C.O.A., Elkem Archive, Norwegian Industrial Workers' Museum.

[16] Sogner, *Andresens*.

[17] Sogner, *Skaperkraft*; Muriel Le Roux. *L'entreprise et la recherche: Un siècle de recherche industrielle à Pechiney* (Paris, 1998).

that technical advances made by licensees were Elektrokemisk's property. This collaborative sharing was strategic for French aluminium companies, which had a central position within the common research projects of the international aluminium cartel.[18] The improved Norwegian-owned and French–Norwegian-constructed anode system —supported by the French company's Rioupéroux plant—conquered the aluminium world in the 1930s.

Elektrokemisk and the international cartel supported each other. Elektrokemisk's contracts stipulated that all improvements to the Söderberg system made by its licensees belonged to Elektrokemisk, but in return they had the right to use the most advanced version of the system. In this way, the core knowledge of production improved. The licensees of Elektrokemisk were also members or associates of the cartel. The aluminium industry boomed in the 1930s, as attested by Elektrokemisk's success. The emergence of aluminium as a strategic metal with wide uses—in particular for airplane manufacturing—commenced with the First World War and gained pace in the 1930s. It led to the start of a new and powerful player, the state-owned German VAW (Vereinigte Aluminium Werke). New and improved alloys propelled rapid German and Japanese expansion of aluminium production during the 1930s, a development that changed the Allies' attitude toward the metal after 1939, in light of Germany's aggression.

The Söderberg system meant Elektrokemisk had a unique foundation for the future. Alcoa did not use this system. It organized its European business through its sister Canadian company, Aluminium Ltd., the 1928 offshoot of Alcoa that produced large amounts of aluminium in Canada.[19] Aluminium Ltd. used the Söderberg system and played an important role in steering the international cartel. Aluminium Ltd. and the international cartel approved the Norwegian share purchase, mentioned above, but only after Elektrokemisk agreed that it would not provide third parties with any information on aluminium production, other than the Söderberg system.[20] When World War II broke out in Europe in 1939, Elektrokemisk's success with the Söderberg system for making aluminium was clear.[21] In February 1940, Elektrokemisk's CEO Willy Eger wrote to Arthur Vining Davis, his

[18] Bertilorenzi, *International Aluminium Cartel,* 183.

[19] Aluminium Ltd. was known as Alcan after World War II. George David Smith, *From Monopoly to Competition: The Transformations of Alcoa, 1888–1986* (Cambridge, UK, 1988).

[20] "Ludwig Braasch": Braasch to Eger 28 Sept. 1933; Eger to Braasch 10 Oct. 1933, Series 0001, Box N002, Elkem Archive, Norwegian Industrial Workers' Museum.

[21] References to Elektrokemisk, where not otherwise specified, are from Sogner, *Skaperkraft*.

Table 1
Capacity of Söderberg Installations in the Aluminium Industry at the End of the Year (in Metric Tons)

Year	*Europe*	*North America*	*Asia*	*Total*
1935	N/A	7,000	0	
1936	27,000	7,000	0	34,000
1937	31,500	12,000	5,000	48,500
1938	78,800	38,000	9,000	125,000
1939	111,700	38,000	16,000	165,000
1940	173,200	38,000 (?)	66,000	~ 277,000

Source: "Arthur W. Davis": Eger to Davis 23 Feb. 40, Series 0001, Box N002, Elkem Archive, Norwegian Industrial Workers' Museum.

counterpart at the American giant Alcoa, who was about to build a new aluminium factory:

> It is for us also quite interesting to note that during the recent years in [the] whole of Europe and in the rest of the world outside America, every new aluminium plant has been totally equipped with Söderberg pots, and whenever an old series should be rebuilt they are all rebuilt with the Söderberg system.[22]

This system was a great improvement on the system Alcoa used, argued Eger, giving much more efficient production results. According to Eger, global aluminium production had risen eight times since 1936, partly driven by access to the improved Söderberg system, and he provided Davis with the numbers to prove it (shown in Table 1).

Davis did not react favorably to Eger's letter and did not use the Söderberg system when Alcoa acted as US representative in expanding production during the war, but Elektrokemisk nevertheless conquered the North American market. One of Elektrokemisk's senior engineers escaped from Norway soon after the German occupation on April 9, 1940, and he negotiated a deal with the Reynolds Metal Corporation. He and Reynolds persuaded Alcoa to let Reynolds Metal Corporation use the Söderberg system. During the war, Reynolds built more than 450,000 tons of capacity in the US using this system, while Aluminium Ltd. added 300,000 tons capacity in Canada. This was the equivalent of

[22] "Arthur W. Davis": Eger to Davis 23 Feb. 1940, Series 0001, Box N002, Elkem Archive, Norwegian Industrial Workers' Museum.

150% of the global Söderberg capacity in 1940. Shareholders like Fearnley would have been well aware of this.

Fearnley took ownership positions in NACO and Elektrokemisk during the second half of the 1930s. In both instances, he was part of the consortia that reestablished Norwegian influence in firms that had needed foreign capital in the 1920s. In the case of NACO, he was the organizer of the consortium that bought back half the shares owned by the bank. This reentry into aluminium was just a starting point for him.

Grand Scale Tactical Positioning

Fearnley was by and large a businessman, but one with a standing that could position new investments in aluminium in broader industrial frameworks. Through his two positions on the board of directors of two other companies—Orkla (a pyrite mining company) and Norsk Hydro (Norway's largest industrial company)—he wielded great influence. He owned a substantial minority holding in Orkla. He forged relations on both of these boards with the Swedish banker Marcus Wallenberg, a close personal friend. Both Orkla and Norsk Hydro would subsequently engage in manufacturing aluminium, an effort that deserves some background information.

Although it specialized in synthetic fertilizer, Norsk Hydro had dabbled in alumina research until 1926, but without success. Norsk Hydro appointed a new CEO that year, Axel Aubert, to rationalize its fertilizer production to reduce costs. Aubert had been the CEO of Norsk Sprængstofindustri, the dynamite-producing company that Fearnley had co-founded in 1917 and on which he also sat on the board. Aubert, Fearnley, and Wallenberg played central roles in 1927 when Norsk Hydro took the path-changing decision of abolishing its own Birkeland-Eyde process in favor of the superior and much more energy-efficient Haber-Bosch process owned by IG Farben. IG Farben negotiated a 25% shareholding in Norsk Hydro as part of the deal.[23] This was a bitter pill for Norsk Hydro because prior to this it had tried to modernize its production process with the help of the American the Nitrogen Engineering Company (NEC). IG Farben, with the creation of British Imperial Chemical Industries (ICI) in its wake, increased production capacity through large-scale, low unit-cost factories. This forced Norsk Hydro to rethink its own process. This deal also needed the approval of the largest shareholder group in Norsk Hydro, the French Paribas Bank.

[23] Andersen, *Flaggskip i fremmed eie: Hydro 1905–1945* (Oslo, 2005), Chapter 7.

The deal with IG Farben may have been influenced by Fearnley and Wallenberg. Marcus Wallenberg's was the chairman of the board of both Norsk Hydro and Orkla until 1942. He was a close friend of Fearnley, who had helped him become a member of St. James's Club in London.[24] Crown Prince Gustaf Adolf of Sweden was a mutual friend and regular companion of both men. When Fearnley visited Stockholm, which he often did, he stayed at the palace. The formation of IG Farben in 1925, from the merger of three large German chemical companies—BASF, Bayer, and Hoechst—had, however, created a challenge for pyrite producer Orkla, a big exporter to Germany. The Wallenberg family negotiated with IG Farben in early 1926 on the sale of a majority position in Orkla. Instead, Orkla created a huge cartel-like association with Rio Tinto appointing Rio Tinto as a seller to IG Farben representing several mining companies.

Under the influence of Wallenberg and Fearnley, Orkla developed new technologies, most notably the Orkla process that widened market opportunities. Starting in 1931, Orkla sold its pyrite in two forms—as pyrite to Rio Tinto (and from there to IG Farben) and as sulfur (purified by the Orkla process) through an Italian–American sulfur cartel. In 1931, Orkla's CEO Nils Erik Lenander wanted to continue to develop Orkla as a chemical company, and one of several ideas was to develop petrol from coal and slate, building on ongoing Swedish work. IG Farben was also working to get petrol from coal. Fearnley opposed this work, for reasons unknown, yet he bought more shares of Orkla around this same time and took a more prominent role in guiding Orkla. In retrospect, he may already have formulated the plan of eventually using Orkla's considerable financial resources for financial rather than industrial investments.

Both Fearnley and Wallenberg took initiatives that point to Norsk Hydro as their preferred industrial tool. They were building a gigantic industrial enterprise. It was Wallenberg in 1934 who responded to Axel Aubert's call to use Norsk Hydro's extensive energy resources for new businesses. Wallenberg mentioned to Aubert Orkla's discarded idea of synthetic petrol as a possibility, especially given Norway's extensive coal resources at Spitsbergen.[25] Aubert's request in 1938 to Sigurd Kloumann, NACO's CEO, about a possible collaboration concerning aluminium came shortly after Fearnley's consortium had bought half the shares in NACO.

Fearnley and Wallenberg were intent on building Norsk Hydro as a large and diversified corporation under the leadership of Axel Aubert.

[24] Bergh, Espeli, and Sogner, *Brytningstider*.
[25] Andersen, *Flaggskip i fremmed eie*.

Their authority reflected more than mere business positions. They held powerful positions within their respective countries. Fearnley headed the Norwegian shipping negotiations with Great Britain in autumn 1939; Marcus Wallenberg Jr. was part of the Swedish trade delegation that conducted a parallel negotiation.[26] Their main counterpart on the British side was Sir Charles Hambro, who was married to the young Wallenberg's former wife, and therefore was stepfather to the heirs of the Wallenberg legacy. Hambro was CEO of Hambros Bank in London, and Fearnley had also been on that board. Hambros Bank had an extensive portfolio in Scandinavia, including several Fearnley-related companies, and Orkla in particular. In March 1940, Hambro and Fearnley personally closed a mineral deal between Great Britain and Norway.[27] The deal allowed Norway to sell minerals, including Orkla's pyrites, to Germany at the same increased level as during German rearmament in the 1930s.

On the Norwegian side, everybody was surprised by the generosity of the British. This can be explained by Britain's need to keep friendly relations with Norway given the possibility of British use of Norwegian territory during World War II. With present-day sensitivities about conflicts of interests, it is certainly remarkable that the negotiating teams for Britain, Norway, and Sweden included people who had intricate personal and professional links.

Kloumann flatly refused Aubert's request to collaborate. Aubert tried again the next year, with the same result. As Kloumann put it, Norsk Hydro "would be about the most dangerous competition, which both NACO and the aluminium industry in general could get in this particular field of industry."[28] This was because Norsk Hydro had powerful owners like Fearnley, with a standing in Norway, and the Wallenberg family, Stockholm's Enskilda Bank, IG Farben, and the French Paribas Bank, all with deep pockets.

Norsk Hydro's managers obviously saw aluminium as a possible diversification of business.[29] The increased global use of aluminium was intriguing for a company that previously tried to find new methods to get aluminium oxide from the Norwegian labrador stone. Norsk Hydro also owned the Tyin waterfall, and electricity from the Tyin could be used in aluminium processes. Just as the Second World War broke out,

[26] Ulf Olsson, *Att förvalta sitt pund: Marcus Wallenberg 1899–1982* (Stockholm, 2000).

[27] The mineral issues in the negotiations had been delegated to the companies. Nils Ørvik, *Norge i brennpunktet; fra forhistorien til 9.april 1940: Bind I.Handelskrigen 1939–40* (Oslo, 1953), 267.

[28] Andersen, *Flaggskip i fremmed eie*.

[29] Andersen, *Flaggskip i fremmed eie*.

Norsk Hydro was in the process of planning oxide production based on a perceived breakthrough in research.

Fearnley was a tactician in aluminium, not a strategist. The path through NACO (of which his consortium controlled half the shares and Aluminium Ltd. controlled the rest) was closed for the time being. But the scope of his efforts—enabled through his consortium's board positions in NACO, his own in Norsk Hydro, and his relationship with Elektrokemisk—mirrored the complicated game he had ably played at Orkla and the cartels for pyrite and sulfur. His positions in these three Norwegian companies represented a gambit in which his formal but unconnected positions yielded enough short-term profit to be justified as investments but also where the possible upside was significant if a bigger deal could be forged. Norsk Hydro seemed the obvious vehicle to grow, and he and CEO Aubert would certainly have talked about the possibilities. At Norsk Hydro, the opinions of IG Farben, the large shareholder, also mattered. Searching for synthetic petrol and aluminium, as Norsk Hydro did, meant coordinating with IG Farben, which had been involved in aluminium in Germany from the early 1930s through owning an old smelter outside the control of the aluminium cartel member VAW.[30] IG Farben also made light metal magnesium, which had some of the same uses as aluminium.

Spearheaded by CEO Aubert and supported by Fearnley and Wallenberg, Norsk Hydro embarked on a diversification path starting in the mid-1930s. To what extent Fearnley and Wallenberg had discussed the possibility of using financial resources from Orkla to bolster Norsk Hydro is not known, but it is notable that the diversification path at the wealthy Orkla was stopped as Norsk Hydro's was started. Neither the synthetic petrol work nor the renewed interest in aluminium could have been articulated without the consent and coordination of Norsk Hydro's largest individual owner, IG Farben. Norsk Hydro and IG Farben constituted an alliance with formidable technical and financial clout at a time when the Norwegian Söderberg system was a proven technology—and this in a country with vast electricity resources perfect for the production of aluminium.

The German Aluminium Plan

Germany occupied Norway on April 9, 1940. Herman Göring and the Luftwaffe immediately wanted to seize the opportunity that Norwegian electricity resources afforded to expand their own aluminium production. According to the economic historian Alan Milward, "in western

[30] Bertilorenzi, *International Aluminium Cartel,* 205.

Europe no other single project equaled the importance of the aluminum plan."[31]At the time, Norway's five (mostly) foreign-owned producers manufactured around 30,000 tons of aluminium a year. The German occupiers presented various plans at different stages of the war to increase that tonnage many times over and to also establish large-scale oxide production.

The German aluminium plan failed miserably. The only real outcome was an almost finished plant in Årdal, which came under Norwegian state ownership after the war. In short, the German plan failed through a combination of incompetence, internal rivalry, lack of resources—and reduced need for aluminium as the war progressed. Frøland, Ingulstad, and Scherner, Ketil Gjølme Andersen, and Anette Storeide have established the following narrative.[32]

The Germans did not arrive in Norway with a ready-made plan. NACO and Norsk Hydro were involved in discussions about the possibility of expanding the existing industry and finding the right locations for greenfield establishments. NACO was vertically integrated and well positioned to give advice to the Germans, who were also interested in Norsk Hydro's oxide plans. These German involvements created tensions between NACO and Norsk Hydro as well as fomented internal tensions and conflicts within the management of NACO. CEO Kloumann distanced himself somewhat from the rest of management and ended up playing an unclear role that involved contact with Aluminium Ltd. through Sweden. The rest of NACO's management became heavily involved with the German occupiers and represented an integral part of German knowledge gathering.

The main German effort proceeded along two tracks.[33] Through Göring, in December 1940, the German state established a new German light metals company—Hansa Leichtmetall—and appointed a close associate of Göring as its head. Göring wanted a new company rather than the huge state-owned aluminium producer VAW (a member of the international cartel). Hansa Leichtmetall in turn established a new Norwegian company in May 1941, A/S Nordag. It was A/S Nordag that nearly finished the plant in Årdal in Western Norway (north of Bergen), but it failed in many other respects. The Årdal plant used the Tyin waterfall to produce electricity, and the Tyin originally belonged to

[31] Alan S. Milward. *The Fascist Economy in Norway* (Oxford, 1972), 171.

[32] The following is based on Andersen, *Flaggskip i fremmed eie*; Anette Storeide, *Norske krigsprofitører: Nazi-Tysklands velvillige medløpere* (Oslo, 2014); Ketil Gjølme Andersen and Anette H. Storeide, "A Quest for Diversification? Norsk Hydro, IG Farben, and the German Light Metal Programme," in *Industrial Collaboration in Nazi-Occupied Europe: Norway in Context*, ed. Hans Otto Frøland, Mats Ingulstad, and Jonas Scherner (London, 2016), 299–329; Henden, Frøland, and Karlsen, *Globalisering gjennom et århundre*.

[33] Andersen, *Flaggskip i fremmed eie*.

Norsk Hydro. The German occupiers arranged a swap: in return for using the Tyin, Norsk Hydro was given access to the river Mår, which was close to Norsk Hydro's main factory complex at Herøya in Porsgrunn (in the southwestern section of the Oslo fjord).

While the German VAW was mostly kept out of Norway, IG Farben entered in collaboration with Norsk Hydro.[34] IG Farben had a strained relationship with VAW, and in 1940 saw its relationship with Norsk Hydro as an opportunity to expand its light metals production. In May 1941—after tough negotiations—IG Farben, Nordag, and Norsk Hydro agreed to establish Nordisk Lettmetall (Nordic Light Metals) to make magnesium, aluminium oxide, aluminium, and cryolite. Nordisk Lettmetall, jointly owned by the three companies, was established at Herøya on the premises of Norsk Hydro, with electricity to be sourced from the Mår.

Norsk Hydro's share capital was expanded for its expensive participation in Nordisk Lettmetall. In retrospect, this undertaking was quite controversial. German shareholders ultimately secured well over half of the shares of Nordisk Lettmetall from a combination of their portion of the newly issued shares and purchases of free shares on the open Paris market. The French shareholding was drastically reduced.[35] Also among the significant buyers of new shares was an invited Norwegian group called the Oslo Consortium, headed by Fearnley. The biggest block in the Oslo Consortium was held by Orkla. The Wallenberg family also participated secretly through their Orkla holding. The Oslo Consortium included Fearnley, his company Fearnley & Eger, Norsk Sprængstofindustri (where he sat on the board and where his brother-in-law was CEO), Johan H. Andresen (of the earlier mentioned Andresens Bank), Storebrand (one of Norway's biggest insurance companies), and a number of ship-owners and lawyers with minor positions.[36] There was overlap between the 1941 Oslo Consortium and the Tom Fearnley-led group of the same name holding shares in Naco.

When interrogated after the war, Fearnley and the other members of their consortium said they invested to take care of Norwegian interests.[37] They also said they were forced to participate, and that Norsk Hydro's prior interest in light metals made it impossible to not take part. There is, however, very little evidence of force, apart from the occupation

[34] Andersen, *Flaggskip i fremmed eie*.

[35] The Paribas Bank had a dominant position among Norsk Hydro shareholders from the beginning. The French felt cheated in the process and pursued the matter after the war. Eric Bussière, *Paribas 1872–1972: Europe and the World* (Antwerp, 1992).

[36] Bergh, Espeli, and Sogner, *Brytningstider*.

[37] Andersen, *Flaggskip i fremmed eie*; Bergh, Espeli, and Sogner, *Brytningstider*; Sogner, *Andresens*.

itself. Fearnley and the others said they acted in accordance with a statement by the attorney general of Norway early in the war about the duty of the occupied nation under international law to collaborate with the occupier (this too turned out to be controversial).[38] They also expected the war to end much sooner, and therefore that the company's production would not be used for warfare. After the war, they expected the German state to withdraw from the investment, thus opening the way for larger Norwegian shareholdership.[39] What they did not say, of course, was that Nordisk Lettmetall was exactly the kind of investment that could pry open a Norwegian route into the constrained aluminium world of the international cartel. What they perhaps spoke of as laconically as they could were the personal relationships that had been forged over the years. IG Farben's CEO Hermann Schmitz had been a member of Norsk Hydro's board of directors since 1927, and Axel Aubert was a member of IG Farben's board of supervision (*Aufsichtsrat*).[40] In summer 1939, the French attaché for trade had remarked to his superiors in the French Foreign Office that Germans dominated Norsk Hydro, even though the French still owned the majority of shares. In November of the same year, he contacted the British to ask for a common effort to remove Aubert as CEO.[41]

For Fearnley, much more was at stake than the future of Norsk Hydro. He had already taken a shareholder position in NACO. He had involved Orkla, the Wallenbergs, and significant Norwegian companies and individuals, who together commanded a powerful array of financial resources. The involvement of Orkla is especially significant because it was in the process of slowly exhausting its pyrite resources, with little need for reinvesting in its own business, but with substantial financial resources to invest.[42] Fearnley positioned himself, Orkla, and his consortium for continued expansion into light metals in general and aluminium in particular. Fearnley was, at the time of the creation of Nordisk Lettmetall, the only board member of Norsk Hydro in Norway and quite active in the negotiations over the preparation of the company.[43]

Norsk Hydro's investment was also controversial in Norway at the time. Between autumn 1940 and autumn 1941, resistance to the German occupiers was taking hold. In May 1941, parallel with the establishment of Nordisk Lettmetall, 43 Norwegian organizations wrote a protest letter against Nazification by the German occupiers. One of the few

[38] Jan Didriksen. *Industrien under hakekorset* (Oslo, 1987).
[39] Andersen, *Flaggskip i fremmed eie*; Storeide, *Norske krigsprofitører*.
[40] Andersen, *Flaggskip i fremmed eie*, 364.
[41] Andersen, *Flaggskip i fremmed eie*, 358.
[42] Bergh, Espeli, and Sogner, *Brytningstider*.
[43] Andersen, *Flaggskip i fremmed eie*.

organizations that did not sign this letter was the Association of Norwegian Industry.[44] Its president was following the collaboration line, and he subsequently accepted a position on the board of Nordisk Lettmetall. This protest led to one of the most daring initiatives of the time taken by a leader of the Norwegian resistance: Elektrokemisk's CEO Willy Eger, the cousin of Tom Fearnley and Johan H. Andresen.

In August 1941, Eger demanded at the board meeting of the Association of Norwegian Industry that a new board should be appointed, which would have ended the collaboration argument.[45] His proposal was rejected by 23 votes to 18. Eger and ten of those who voted with him resigned from the organization. Eger's actions were highly principled, and they must also have reflected his deep dissatisfaction with the establishment of Nordisk Lettmetall.[46] This was Germany's main investment in Norway at the time, and it involved the use of Eger's company's proprietary technology. In private correspondence, Eger criticized the German aluminium plan as megalomania and as an unrealistic and dangerously one-sided use of Norwegian resources. Based on his knowledge of the international aluminium industry, he anticipated a glut of excess aluminium capacity after the war. Eger and Elektrokemisk had also just avoided having to relocate: Nordag had wanted to take Elektrokemisk's place in Tom Fearnley's office building.

Norsk Hydro's investment in Nordisk Lettmetall contributed to a watershed in Norwegian resistance. Because of its size and its wider implications, it represented a new dimension of what is meant by collaboration. Most Norwegian businesses kept the "wheels going" because Norwegian society had to survive. Some new businesses were started and expanded by Norwegians to assist the Germans: these were willing collaborators. Investment by Norwegians in Nordisk Lettmetall could perhaps be framed as a gray area in keeping the wheels going. Fearnley did have indirect support from a majority of the board from the Association of Norwegian Industry. However, that was not how an increasingly principled resistance regarded cooperation in the enemy's production of a strategic metal. This was a step too far, although its consequences for what would happen after the war were very unclear.

The Allied–American Challenge

Nordisk Lettmetall moved forward as a primarily German effort but with Norwegian participation—and located on the premises of Norsk

[44] Didriksen, *Industrien under hakekorset*.
[45] Didriksen, *Industrien under hakekorset*.
[46] Sogner, *Skaperkraft*; Bergh, Espeli, and Sogner, *Brytningstider*.

Hydro, Norway's flagship industrial company. By 1943, Nordisk Lettmetall was by far the most advanced and promising new aluminium construction in Norway, something that would soon be rectified by the Americans.

The Allied war effort had Norwegian businesses under surveillance. Norway had large resources of pyrite (e.g., sulfur, copper, and other metals), iron, and chemical compounds used for ammunition and weapons, as well as access to timber and fish. The Allies singled out some production sites as providing Germany with strategic materials. Norwegian soldiers under Allied–British command undertook a number of sabotage actions, including against Orkla, the largest pyrite producer in Norway.[47] Meanwhile, Norsk Hydro (in Rjukan in inland southern Norway) produced the heavy water required in making of atomic bombs. The production unit was first destroyed in a famous sabotage action by a Norwegian–Allied unit in February 1943.[48] This was later made into the film, *The Heroes of Telemark*, with Kirk Douglas in the leading role.

On July 24, 1943, 120 American planes dropped more than 1,600 bombs on Norsk Hydro's fertilizer operation at Herøya;[49] 55 people were killed. The extensive damage was centered on the nearly completed Nordisk Lettmetall complex, but fertilizer production was also hit heavily. Norsk Hydro's management reacted with shock and bewilderment; it could not understand how a "neutral" company could be the target of Allied bombing. The bombing was conducted without the consent of the Norwegian government-in-exile in London, which reacted negatively to the event and the damage it caused. The government-in-exile preferred sabotage like that used against Orkla and the first destruction of Norsk Hydro's heavy water production unit.[50]

By this time, the Germans were not interested in rebuilding Nordisk Lettmetall. Norsk Hydro, the Norwegian government, and the Germans all wanted to repair the fertilizer plant, but the Norwegian effort was stalled by British and American opposition, which did not see production of nitrogenous fertilizer as a neutral activity but rather as a complex chemical undertaking that had relevance for the German munitions industry. Norsk Hydro's fertilizer production, it would seem, had not merely been collateral damage when Nordisk Lettmetall was bombed. Nevertheless, Norsk Hydro rebuilt its fertilizer plant with German assistance.

[47] Bergh, Espeli, and Sogner, *Brytningstider*.

[48] Andersen, *Flaggskip i fremmed eie*.

[49] Andersen, *Flaggskip i fremmed eie*.

[50] Olav Njølstad. *Professor Tronstads krig. 9. april-11.mars 1945* (Oslo, 2012), 250–266 and 276–290.

The Allies again kept the Norwegian government in the dark when on November 16, 1943, 174 planes dropped bombs on Norsk Hydro's Rjukan plant that contained the rebuilt heavy water production unit; twenty people were killed. In addition, an ammonia factory that delivered its product to the fertilizer plant at Herøya was hit, something the Allied forces later said had been a mistake, for what that statement is worth. Could both the fertilizer plant at Herøya and the ammonia plant at Rjukan have been bombing mistakes? Some have argued that Germany wanted nitrogenous material and that the bombing of the plants may well have been done intentionally.[51]

This paper argues that these bombings were done because the Americans and the British wanted to limit German access to strategic materials: aluminium, heavy water, and possibly nitrogenous materials. The first bombing at Herøya was said to have happened "by mistake" when bombers already in the air were rerouted from a German target hidden by clouds, not checking if Herøya was really an approved target for bombing rather than sabotage.[52] The second bombing at Rjukan was done on purpose because the British believed the heavy water production was of such great importance that urgent measures needed to be taken to stop production.

In the long-term perspective for Norway, aluminium was the important product here. The US realized during the war that "decentralizing" its national aluminium production to the private company Alcoa had been a strategic mistake. Alcoa was seen as a company working simultaneously to protect its American home market monopoly and also either staying in the international cartel or communicating with it. The shortage of national production capacity in the strategic metal aluminium hit the American authorities hard at the beginning of World War II. Aluminium was soon seen as vital to the outcome of the war, and the American authorities started a national state-owned production program. Reynolds Metal Company, using Elektrokemisk's technology, was a third producer who slipped in during the war.[53] At the close of the war, the Supreme Court of the US ruled against Alcoa, finding it had monopolized its market position. Marco Bertilorenzi, in his seminal book on the international cartel, has argued that this ruling may have been affected by the American Board of Economic Warfare's insistence that the international aluminium cartel had to be dissolved because of how it had damaged American production capacity.[54] Aluminium Ltd., the Canadian member of

[51] Andersen, *Flaggskip i fremmed eie*, 421–430.

[52] Njølstad, *Professor Tronstad*.

[53] Andrew Perchard, "This Thing Called Goodwill: The Reynolds Metals Company and Political Networking in Wartime America," *Enterprise & Society* 20, no. 4 (2019).

[54] Bertilorenzi, *International Aluminium Cartel*, 245f.

the cartel and a sister company to Alcoa, felt obliged to take the initiative to dissolve the cartel, and it did so immediately after the war.

Bertilorenzi argues that American distrust of the international cartel was not, as perceived later, a result of competition policy but rather the realization of the problematic issue of private business determining the national production capacity of a strategic material. The extensive capacity that the American government created during the war was subsequently used for a new US aluminium industry comprising a downsized Alcoa, an expanded Reynolds, and a new player, Kaiser Aluminium. The attitude of American authorities to the implications of its own and European industrial structures was determined and forceful.

The bombing of Herøya happened because of the American–Allied preoccupation with aluminium, and it sent a message: aluminium production for the enemy was extremely damaging to their war effort, to the extent that lives—including innocent lives—could be sacrificed to stop it. Obviously, sending such a message in July 1943 also represented a hint about what kind of activity those Norwegians—against the judgment of their peers—had embarked on with their investment in aluminium in 1941. Enrolling Norway into an Allied war effort locked pragmatic Norway into an international community of sovereign states with a different moral code containing clear distinctions about what was right and what was wrong, a community that acted swiftly and mercilessly in its interpretation of necessary actions.

In his penetrating analysis of complex events, Norsk Hydro's historian Ketil Gjølme Andersen argues convincingly that the divergence between Norwegian and American (and British) officials over bombing continued after the war in the form of differences in industrial policies between the countries.[55] The Norwegian government and the state apparatus did indeed instigate investigations into Norsk Hydro's activities during the war. The Norwegian government-in-exile in London supported Norsk Hydro throughout the war, and thought that the company's activities supporting the German war effort had been forced on the company. Once the war was over, however, as more voices were heard and more documents became available, Norsk Hydro's actions became more questionable. Perhaps the American bombing to hinder the German war effort was justified, after all? Punishing a company was difficult. In the end, the Norwegian government decided that its priority was to enable Norsk Hydro to take its place in the international economy.

[55] Andersen, *Flaggskip i fremmed eie*.

The declaration that Norges Bank (the Central Bank of Norway) sent to American authorities in 1948 that no one in Norsk Hydro was under criminal investigation due to their activities during the war was particularly problematic.[56] The Norges Bank submitted this declaration to free US$2.3 million of Nork Hydro funds frozen in the US. In fact, an investigation was underway, but this petered out into a short and useless report absolving all within the Norsk Hydro administration except, conveniently, the deceased CEO Axel Aubert. The political direction of the investigation, as well as the complexity of the whole matter, quite possibly saved some people at Norsk Hydro—including both Tom Fearnley and its new CEO, the lawyer Bjarne Eriksen, also a small investor in the Oslo Consortium—from facing criminal proceedings, and enabled Norsk Hydro to continue as the Norwegian flagship industrial company.

However, Norsk Hydro did not quite continue in the same way.[57] Through Norway's confiscation of German property, the state came to own 53% of the shares in Norsk Hydro and 100% of the unfinished aluminium plant in Årdal. The state shareholding in Norsk Hydro was adjusted downward after demands from the French shareholder group that had been badly treated in the 1941 share extension, with Norway now owning 47% of Norsk Hydro and the French 35%. Norwegian shareholders—the Oslo Consortium—kept their shares, and even made a deal with Norway to give it the right of first refusal if they were to sell. The state feared that Fearnley & Co. would sell out to the French group. As it turned out, the consortium stayed on for several decades and held an important balance of power position in the company's general assembly.[58]

The real situation in Norway, quite possibly hidden to the Americans, was that many, if not all, of the Norwegian officials who investigated Norsk Hydro after the war were skeptical of the company's contribution to the establishment of Nordisk Lettmetall. It is not possible to say for certain whether this position reflected the tough realities of the shocking American bombings or the reorientation in 1941 of Norwegian industrial circles. The seriousness of Norsk Hydro's work in German-friendly aluminium activities escalated as the war progressed. The American involvement in the bombings and the dampening of the Norwegian criminal investigations may, however, have affected other developments that hit some of the protagonists quite hard.

[56] Andersen, *Flaggskip i fremmed eie*, 441.
[57] Grønlie, *Statsdrift*. 75–82.
[58] Bergh, Espeli, and Sogner, *Brytningstider*.

An Elite Society Meets a New Order

Navigating the complicated terrain after the war required a continuous process of adaptation. The new actor, the Norwegian Labour government, based on a majority in the Stortinget, was armed with large ownership positions in Norsk Hydro and other confiscated German possessions, including the nearly finished aluminium plant in Årdal, built by the German occupiers. It is fair to say that in this landscape, the government acted with authority, securing a dominant ownership position in Norsk Hydro and full ownership of the new state-owned aluminium corporation of Årdal Verk. That this turned into long-term state ownership was not inevitable.

What was at stake after the war could easily be seen in a prewar perspective. Tom Fearnley and Marcus Wallenberg Sr. had, for a number of years, taken very active roles in Norsk Hydro. Through the Oslo Consortium, they had increased their shareholding during the war. Norsk Hydro's own plans for aluminium production had been based on the use of the Tyin waterfall, which the Germans used when they erected the factory at Årdal. From a purely prewar perspective, Norsk Hydro and Årdal Verk belonged together, along with the not-quite rebuilt Nordisk Lettmetall factory and the power sourced from the Mår.

Erik T. Poulsson, the senior lawyer heading the state's office for alien property, originally wanted to organize a private Norwegian consortium to take over the former German-owned position within Norsk Hydro. He was not a supporter of state ownership.[59] Such a consortium existed already. Tom Fearnley, the Wallenbergs, Orkla, and others had not only taken an active position in the development of Norsk Hydro and Norwegian aluminium production, but they also belonged to the top strata of the Scandinavian business elite and had commanded positions on behalf of their nations. From a prewar perspective, they would have been perfect candidates to bring Norsk Hydro and the aluminium plant of Årdal forward.

Neither Fearnley nor Jacob Wallenberg, who succeeded his deceased father on Orkla's board, were positively disposed toward the German Nazi state. Fearnley (whose surname stems from an ancestor who came to Norway from England in the late eighteenth century) had spent a lot of time in England and had been influenced by its culture. He had been imprisoned, interrogated, and quite probably badly mistreated by the German occupation power. He had been thrown out of his stately home by none other than Joseph Terboven, *Reichkommissar* for Norway.[60] Jacob

[59] Grønlie, *Statsdrift*, 44.
[60] Bergh, Espeli, and Sogner, *Brytningstider*.

Wallenberg was CEO of Stockholm's Enskilda Bank and had extensive German contacts that he used to assist the German resistance.[61] He had Norwegian resistance contacts as well.[62] It is highly likely that both of them collaborated with their friend Sir Charles Hambro, who eventually led the secret British intelligence office, the Special Operations Executive.

The top management of Norsk Hydro welcomed Fearnley and his consortium. In early 1946, Norsk Hydro's CEO Bjarne Eriksen (also a minor member of the Oslo Consortium) had suggested to Erik Poulsson that Fearnley should rejoin its board of directors. Poulsson strongly opposed this, as he told the Labour Party's Minister of Industry, Lars Evensen, in January 1946:

> I am not inclined to vote for the choice of ship-owner Fearnley. Firstly, he is part of the so-called Oslo Consortium and participated in the capital increase in 1942 *[sic]*. These transactions are under investigation for possible treason, and it would appear quite unreasonable to give Mr. Fearnley the confidence of the state. Secondly, under the current power position in the company it is more pertinent to appoint another [state representative] [to] the board.[63]

With Eriksen as CEO and Fearnley as member of the board, the Oslo Consortium and the 1941 investment in Nordisk Lettmetall would likely have paid off to the advantage of Fearnley's consortium, and perhaps been a step toward a larger shareholding for the Oslo Consortium. But that was not to be. At the beginning of 1946, Orkla, of which Fearnley and the Wallenbergs were the dominant shareholders, was also under investigation.[64] Orkla's people came through the scrutiny without formal accusations, but the way that their operations had proceeded through the war, delivering large quantities of pyrite ore to Germany, had caught the attention of many. These actions could be defended on the basis of the generous trade agreement with Britain, in which Fearnley and Hambro had been instrumental. An additional argument was made that keeping Norwegian control of Orkla during the war ensured that production was lower than if the Germans controlled it. Nevertheless, after the war, the sheer volume of German business was an awkward legacy, even without the knowledge of the personal friendships of the negotiators of the trade agreement. Further, Orkla had positioned itself

[61] Håkan Lindgren, *Jacob Wallenberg, 1892–1980* (Stockholm, 2007).

[62] Sogner, *Andresens*.

[63] RA, Statsselskapavdelingen, Industridepartementet, kassett 87, Poulsen to Evensen, 29 Jan. 1946. Cited in Bergh, Espeli, and Sogner, *Brytningstider,* 99f.

[64] Bergh, Espeli, and Sogner, *Brytningstider*.

as vehemently opposed even to sabotage because it could lead to a German takeover. After the war Orkla entered into a bitter conflict with the leading employee Peter Deinboll (whose son was a dead resistance hero) who had facilitated the Allied sabotage actions. He, not the company, was the hero at the time. Fearnley's advice to Orkla's CEO Thorry Kiær when they discussed how to proceed to regain legitimacy, was to communicate with "the now leading and deciding circles."[65]

That phrase reflects the power shift that happened in Norway throughout the war. Fearnley entered the war as possibly the personification of the Norwegian business elite, a role that he and Norsk Hydro used—with major support from Norwegian industrial circles—to take an increased position in Norsk Hydro and to facilitate German-driven aluminium expansion. His fall from grace happened through three events. One was an increased sense of resistance in the Norwegian population, exemplified by Willy Eger's actions in 1941 to change the direction of the Association of Norwegian Industry, and Orkla director Deinboll's participation in the sabotage against Orkla. The second was the realization of the brutality and inhumanity of the German regime—not so much in Norway, although Norwegian Jews were sent to the gas chambers too. The third was the harsh bombing of Norwegian production sites and how that magnified how a brutal occupier should be met by an international alliance that would brush aside pragmatic Norwegian priorities to achieve effective damage on its adversary. There was a cognitive shift following reality checks throughout the war about what was at stake. Fearnley and friends got stuck in a position they had taken at a time when they had strong normative power in Norway. They argued after the war that they had taken account of "national considerations" when investing in Norsk Hydro and Nordisk Lettmetall, but those considerations had been bombed to pieces by the Allies to which Norway had entrusted its future.

Would Fearnley and company be unthinkable as investors in Norsk Hydro and Årdal Verk in a purely national framework? They represented the Scandinavian business elite, and the sum total of their efforts as businessmen for their countries must have weighed heavily in their favor. They were still wealthy. They were, as mentioned, even invited to make a deal with the state to keep national control of Norsk Hydro after the settlement with the French shareholders. Increasingly, however, the minister of Industry and the Labour government decided that the Norwegian state should take a long-term ownership position in Norsk Hydro.[66] This did not become clear before May 1947, however,

[65] Fearnley to Thommessen, 16 June 1945, in Bergh, Espeli, and Sogner, *Brytningstider*, 111.
[66] Grønlie, *Statsdrift*.

and it is highly likely that the decision was influenced by the situation around the almost finished aluminium plant in Årdal. Tore Grønlie, in his book about the coming of state ownership in Norway, compares Norsk Hydro to what became Årdal Verk. While the former represented an established going concern with some certainty about its future, the latter was a new entity without an established market. As Grønlie shows, the involved Labour politicians had very different opinions about state ownership and how to go about it, and the minister of industry, Lars Evensen was very pragmatic. Grønlie's interpretation is that the state ownership in Norsk Hydro was primarily taken to keep national control, but also reflected a belief that state planning was good (although he does not say how), a social democratic position of sorts. Establishing Årdal Verk was much more of a risk, though one worth taking with an increasingly interesting product.

Merging Norsk Hydro and Årdal Verk was out of the question. The Ministry of Industry did not trust the top management of Norsk Hydro, which was one underlying argument for taking a state ownership position.[67] The private Norwegian ownership consortium led by Tom Fearnley had seen Norsk Hydro as an aluminium company. Norsk Hydro had previously owned the Tyin waterfalls that supplied electricity to Årdal Verk, and had its own aluminium path blocked by the Allied bombing of Nordisk Lettmetall. If a Fearnley solution was unacceptable, it was not that easy to see an alternative private grouping emerging in the short term. Indeed, the Fearnley consortium was still shareholders of Norsk Hydro after the war, in a position to step in if the state changed its mind about its ownership stake.

When Fearnley pointed to "the now leading and deciding circles," he may well have meant the alliance between the Labour government and the industrialists who had been leading figures in the resistance. The prime minister starting in 1945, Einar Gerhardsen, had been part of the resistance and had suffered tough imprisonment. Before the 1945 election, he had led a coalition government that emphasized national unity. Elektrokemisk's CEO Willy Eger had held important positions in the secret resistance administration and had closely collaborated with Labour Party members, and he had to flee the country in autumn 1944.[68] He was appointed to the *Tiltaksrådet* in 1945, a new business–government council discussing what Norway should prioritize after the war.[69] He was also hired as consultant about the prospective Årdal

[67] Grønlie, *Statsdrift*. The merger of Årdal Verk and Norsk Hydro did not happen until the 1980s.

[68] Ole Kristian Grimnes, *Hjemmefrontens ledelse. Norge og den 2. verdenskrig* (Oslo-Bergen-Trondheim, 1979).

[69] Sogner, *Skaperkraft*, 125ff.

venture, and he told the authorities that Nordag had left an excellent plant with the latest version of his company's proprietary production system: the Söderberg system. The Årdal production facilities were far superior to the older and much smaller Norwegian plants, and they had a capacity of almost all the Norwegian pre-war capacity combined. Eger also contributed a rather positive outlook of market conditions. He had visited Alcan in Canada just after the war, and Elektrokemisk had a senior representative located permanently in New York. Yes, the decision taken by the government to become owners of industrial aluminium production was its own, but it based it on advice about important issues from Eger, a senior figure in the international aluminium industry.

To what extent did international developments matter for the choices made by the Norwegian government to proceed with state ownership of Norsk Hydro and Årdal Verk? The decision to separate the two companies can easily be explained by the troubled relationship with Norsk Hydro's management. But there were three issues stemming from the war that may have been decisive and that illustrate the tight connection between American policies and Norwegian export businesses' uncertain and possibly challenging future. One was the anti-trust case won in the US Supreme Court by the Department of Justice against Alcoa (and by implication Elektrokemisk). The second was the ongoing process of freeing US$2.3 million for Norsk Hydro frozen in American banks. Third was the awkward and damaging position of Jacob Wallenberg, friend of Tom Fearnley and an important member of the Oslo Consortium through his board membership at Orkla, which owned shares in Norsk Hydro.

The ruling against Alcoa was a move by the American state to gain sectoral control of an important and strategic product: the future of American aluminium production was not a private business matter. Indeed, the Americans did not want international cartels at all, and Elektrokemisk, operative in the US and Canada for the benefit of the Allied war effort, and a center for Norwegian resistance against the German occupiers, did not escape the same punishment as Alcoa. When giving back Elektrokemisk's confiscated American patents in 1951, the Office of Alien Property told Elektrokemisk that its handling of the Söderberg patents in effect gave it a de facto monopoly—which contravened competition policy.[70] Seen from the perspective of the

[70] Elektrokemisk's representative in the US had been granted extensive freedom to operate on behalf of the company, even if its American patents for the Söderberg system of aluminium had been confiscated. See Elkem's protocols from meetings among board of directors, board meeting in Elektrokemisk, 1 June 1945, historical board minutes kept at corporate leadership's records; Sogner, *Skaperkraft*, 131.

strong role taken by America to reshape the national aluminium industry, Norwegian state ownership of Årdal Verk was not only a reaction to a new beginning but also to a degree that followed the US example. Taking ownership under these circumstances, when aluminium was regarded as a strategic material—and the whole global sector was going to be recast—does smack of responding to an emerging national challenge as much as to social democratic ideology.

The situation for Norsk Hydro was difficult too, primarily because of American suspicions about the company's prewar association with Germany.[71] From July 1945 to 1952, Norway's Ministry of Foreign Affairs assisted Norsk Hydro in its attempt to get back its extensive frozen assets. These negotiations were complicated by broader issues of international reparations law, but basically—and for the purpose of this paper—they revolved around the US claim that the German shareholding in Norsk Hydro before the war (around 25%) constituted a legal position that gave the US the rights to some of Norsk Hydro's American assets, as these were regarded as alien property. Top management in Norsk Hydro and IG Farben had also been in close personal contact for a number of years. Hermann Schmitz, the managing head of IG Farben who had had regular meetings with Fearnley, Aubert, and Wallenberg for about 15 years, was sentenced by the US military tribunal in Nürnberg to 4 years of imprisonment for his role in two spoliation (plundering) cases, and they included the establishment of Nordisk Lettmetall and the watering down of French shareholding.[72] He was acquitted of several other crimes.

The US also used the conflict over who owned the US$2.3 million in assets to raise issues about trade policies in general. Gradually, the tone softened, although why the Americans gave in is not quite clear. The question of Norsk Hydro's possible wartime collaboration with the German occupation regime was also raised, and the above-mentioned statement that was sent to the US in 1948 by Norges Bank to clear Norsk Hydro of collaboration charges was part of this process. However, that

[71] This paragraph is based on Svein Olav Hansen's unpublished paper, "Norske midler blokkert i USA—Norsk Hydro som amerikansk krigsbytte 1945–1952," BI Norwegian Business School, August 2001. Hansen's paper is primarily based on sources from the archives of the Norwegian Foreign Office, 28.32/2, "Norske Midler Blokkert i USA," vols. 1 and 2. Hansen gives an account of where to find additional material in Norway and the US, but his paper also gives a clear source-based exposition of important parts of the process. See also Johannessen, Rønning, and Sandvik, *Nasjonal kontroll og industriell fornyelse. Hydro 1945–1977* (Oslo, 2005). 31f (based on Hansen's paper).

[72] International Criminal Court, "(I.G.-Farben-Prozess): The IG Farben Trial. The United States of America vs. Carl Krauch et al., US Military Tribunal Nuremberg, Judgement of 30 July 1948, accessed 11 Dec. 2024, https://www.legal-tools.org/doc/ce19e9/pdf."

statement cannot by itself have resolved the moral standing of Fearnley's consortium in the eyes of the Americans.

In 1945, it was discovered that the Wallenberg family had secretly bought the majority of the American arm of the German Bosch company in 1940, with an option for Bosch to buy the shares back after the war.[73] The Americans had suspected this from the beginning of the war. They made a serious investigative effort, only for the Wallenbergs to deny it and convince the Swedish Ministry of Foreign Affairs to confirm their denial. To cover their tracks, the Wallenbergs and Bosch in 1942 had agreed to erase all documentation of the deal, but Bosch had not done so. The Americans found the documentation of the cover-up after the war, and the US subsequently froze all of the Wallenberg assets in the country.

The Bosch affair had deep implications, even if the Swedish Ministry of Foreign Affairs formally resolved the matter. In addition to the problems created vis-à-vis with the US, the Swedish Ministry of Foreign Affairs was deeply disappointed by being misled by the Wallenbergs. The whole of Sweden reacted too. The matter reached the newspapers and created trauma for the Wallenberg family. In 1946, Jacob resigned as CEO of the bank partly for this reason, thereby taking the blame. This paved the way for the equally guilty brother Marcus Jr. to take his place as a fresh face leading the influential bank.

The Bosch affair also shone a harsh light on Norsk Hydro's situation. One may ask if it mattered for the US negotiations with Norway about Norsk Hydro's frozen assets in America.[74] There were grounds for suspicion. When IG Farben was invited into part-ownership of Norsk Hydro in 1927, the chairman of the board was Marcus Wallenberg Sr., and board member Tom Fearnley and CEO Axel Aubert were new to the company; and the manner of the establishment of Nordisk Lettmetall in 1941 ended with a German majority shareholding and with increased ownership by the Wallenbergs through Orkla and the Fearnley consortium. It was one thing for Norwegian authorities to argue that Norsk Hydro was thoroughly Norwegian; it was quite another to erase the long chain of events that betrayed strong German influence on decisions. The Wallenbergs blatantly lying to the Americans and deceiving their own Ministry of Foreign Affairs certainly did not help.

The US and the Allies redefined strategic materials and strategic targets during the war. This is illustrated by the Allied bombing of Norsk Hydro's two sites (including Nordisk Lettmetall) behind the back and

[73] Ulf Olsson, "Stockholms Enskilda Bank and the Bosch Group, 1939–1950," in *Banking & Enterprise* (Stockholm, 1998); Lindgren, *Jacob Wallenberg*.

[74] Hansen, "Norske midler blokkert i USA—Norsk Hydro som amerikansk krigsbytte 1945–1952"

against the wishes of the Norwegian government-in-exile. The new postwar alliance between Norsk Hydro and the state to free the company's frozen assets in the US underlines the pragmatic attitude of the new Norwegian Labour government elected after the war. There was no short-term alternative to the state assuming an ownership position of Norsk Hydro and Årdal Verk if the companies were to remain Norwegian. The government obviously regarded the role of the Oslo Consortium during the occupation as problematic for Norwegian authorities based on Norwegian circumstances. However, even if there was Norwegian forgiveness for activities in gray areas, the prospect of bringing the Oslo Consortium, with players, such as Tom Fearnley and Jacob Wallenberg, into American politics was probably unthinkable, given the harsh American attitude toward collaboration with Germany during the war. Fearnley and the Wallenbergs were the very embodiment of the private, secretive, and business practices of the interwar cartel development that the Americans went to great lengths to stop.

Conclusion

The Norwegian state assumed shareholding positions in Norsk Hydro and Årdal Verk to continue their important industrial activities after the war. The state thereby performed compensatory entrepreneurship, filling roles that private owners would traditionally take. This paper does not, however, agree with the previously argued position that this was compensation for a lack of Norwegian capital, but rather that the group of suitable and wealthy private investors positioned for a private alternative had ideologically compromised themselves in a way that made them unsuitable as captains of Norwegian-owned international industry selling a strategic metal or having dominant positions in an important company. The government did not want this because the war years had seen questionable actions by this private group. The US had contributed to the new ethical framework with which to judge wartime actions. After the war, America took a critical stance against Norwegian companies engaged in aluminium production and in wartime German collaboration. Therefore, there were more than national reasons for avoiding involving the Fearnley consortium as dominant owners of Norsk Hydro and Årdal Verk.

In tying the prewar and postwar Norwegian aluminium industry together, it is important to acknowledge the continuation of aluminium knowledge and export thinking from the 1930s to the 1940s. Norway possessed both state-of-the-art knowledge on aluminium production and strong business connections. The German-built plant in Årdal used this knowledge extensively, and arguably something similar to Årdal

Verk could very well have been erected by the Norwegians themselves had there been no occupation. The idea of an Årdal plant lived in the minds of Norwegian investors before the war, even if the German occupiers built it. Årdal Verk could almost be seen as an organic development based on Norwegian prewar developments: alignment with the international cartel, the Söderberg system, Norwegian electricity resources, Norwegian production experience, and the role of Scandinavian capital.[75]

Taking a bird's-eye view of the pre- and postwar aluminium efforts, it is also important to acknowledge the power shift in Norwegian business. Yes, the arrival of the state meant the removal of private actors who could very well have organized the aluminium expansion themselves, be it before or after the war. One could say that this business elite's proficiency and ability going into the 1940s proved to be a trap in the aluminium-hungry climate created by the German invasion. There were two voids for the Norwegian state to fill after the war: the one left by the Germans after they lost the war, and the one left by the private Norwegians who lost their legitimacy to become major players in the expansionary process to which they had contributed.

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[75]Without the war, the aluminium cartel could have been in a position to stop such a development. However, given increased demands and the strong actors involved on the Norwegian side, stopping a Norwegian plan might have been difficult.