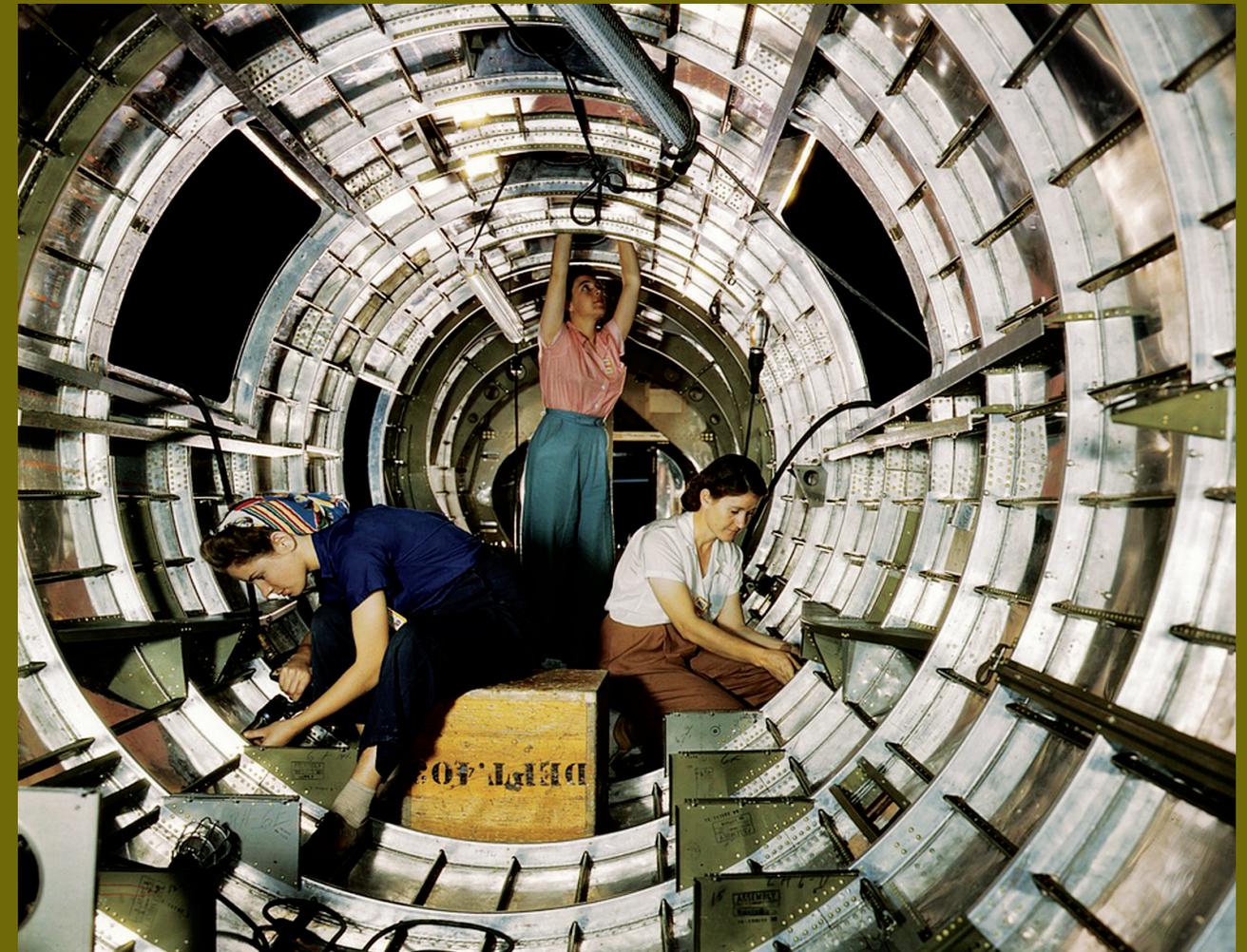


Hans Otto Frøland and Mats Ingulstad (eds.)

# From Warfare to Welfare

Business-Government Relations in the Aluminium Industry



Hans Otto Frøland and Mats Ingulstad (eds.)

From Warfare to Welfare

The rapid growth of the aluminium industry during the last hundred years reflects the status of aluminium as the quintessentially modern metal. Given its impact on every facet of modern life, its aptitude for academic analysis is only rivaled by the versatility of the metal in industrial application.

While during the 19th century aluminium was the source of luxury goods for the rich few, during the First World War it was subjected to strategic considerations by belligerent states. It had become a warfare metal. It remained a military-strategic metal well into the 1950s, before it regained a position as a metal for civilian consumption, this time for the masses.

This book takes a historical approach, informed by an institutionalist perspective, to elucidate the political economy of the aluminium industry in the twentieth century. It is structured as a series of analyses of the interactions between the state and the corporations in different countries. By looking at business-government relationships we can better grasp the linkages between the aluminium industry and the two key features of the history of the twentieth century: The rise of the industrial warfare state and its subsequent replacement by the welfare state.

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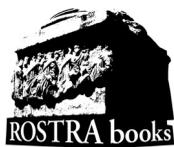
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Trondheim Studies in History

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Trondheim Studies in History  
Series editor: Professor Per Hernæs

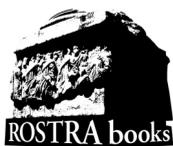
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## Abbreviations

AA – Aluminium Association  
AAC – Alliance Aluminium Compagnie  
AAM – Anglesey Aluminium Metal Ltd.  
AF – Aluminium Française  
AFC – Alais, Forges et Camargue  
AI – Alluminio Italiano  
AIAG – Aluminium Industrie Aktiengesellschaft  
Alcan – Aluminum Company of Canada  
Alcoa – Aluminum Company of America  
ÅSV – Årdal og Sunndal Verk  
BACO – British Aluminium Company  
BMC – British Metals Corporation  
BNFMRA – British Non-Ferrous Metals Research Association  
CBA – Canadian BACO  
CEGB – Central Electricity Generating Board's  
CZC – Consolidated Zinc Company  
DC-NFMT – Board of Trade's Departmental Committee on the Non-Ferrous Metals Trades  
DNN – Det Norske Nitridaktieselskap  
DPC – Defense Plant Corporation  
DSIR – Department of Scientific and Industrial Research  
DTI – Department of Trade and Industry  
EC – Electro-Chimie  
ECA – the Economic Cooperation Administration  
EEC – European Economic Community  
EFTA – European Free Trade Association  
Elkem – Elektrokemisk  
FRG – Federal Republic of Germany  
GATT – General Agreement on Tariffs and Trade  
IAMB – Inter-Allied Munitions Board  
IMI – Istituto Mobiliare Italiano  
Impalco – Imperial Aluminium Company  
INA – Industria Nazionale Alluminio  
IRI – Istituto per la Ricostruzione Industriale  
ISC – Imperial Smelting Company  
LLL – Lavorazione Leghe Leggere  
LWR – Light water reactors  
MIC – Military-Industrial Complex  
Mosal – Mosjøen Aluminiumverk

NACO – Norsk Aluminium Company  
NAI – Nordisk Aluminiumindustri  
NDAC – National Defense Advisory Commission  
NCB – National Coal Board  
NEDC – National Economic Development Council  
NSHEB – North of Scotland Hydro Electricity Board  
ODM – Office of Defense Mobilization OPM – Office of Production Management  
OEEC – Organisation for European Economic Co-operation  
PCAC – Produits Chimiques d’Alais et de la Camargue  
RFC – Reconstruction Finance Corporation  
RTZ – Rio Tinto Zinc  
SAVA – Società Alluminio Veneta Anonima  
SEMF – Société Electrométallurgique Française  
SIDA – Società Italiana dell’Alluminio  
SIFA – Società Italiana per la Fabbricazione dell’Alluminio  
SIP – Società Italiana Potassa  
SNAL – Società Nazionale Alluminio  
Sofidenord – Société Financière pour le Développement du Commerce Français avec les  
Pays de l’Europe du Nord  
SSEB – South Scotland Electricity Board  
UKAEA – United Kingdom Atomic Energy Authority  
VAW – Vereinigte Aluminium-Werke  
WPB – War Production Board  
WTO – World Trade Organization

# **‘An Age of Aluminium’: The Political Economy of the Aluminium Industry in the Twentieth Century**

Hans Otto Frøland and Mats Ingulstad

At the 1855 World’s Fair in Paris, aluminium ingots were displayed next to the French Crown Jewels at the personal request of Napoleon III. The Emperor, who personally financed the research into industrial production of aluminium by Sainte-Claire Deville, was motivated by a dream of lightening and brightening the martial accoutrements of his armies. But the complexity of producing aluminium in pure metal form ensured that it remained rare and precious until the penultimate decade of the nineteenth century. It was not until 1886 that the parallel inventions by Charles Martin Hall and Paul-Louis Toussaint Héroult of an electrolytic method for smelting of aluminium made it available on a large scale. While contemporary observers predicted that this discovery would usher in an ‘Age of Aluminium,’ it took quite some time before aluminium became established as an industrial metal, despite its many desirable attributes. But when it finally achieved its breakthrough, the emergence of the aluminium industry proved to have an immense impact on the twentieth century.<sup>1</sup>

The rapid growth of the aluminium industry during the past hundred years reflects the status of aluminium as the quintessentially modern metal.<sup>2</sup> As one enthusiastic scholar has remarked, aluminium “has had profound effects on modern life, both embodying and shaping modernity as concept and as lived experience.”<sup>3</sup> Given its impact on every facet of modern life, aluminium as a subject of scholarly inquiry can be studied from a plethora of perspectives; its aptitude for academic analysis is only rivalled by the versatility of the metal in industrial

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1 Vaclav Smil, *Creating the Twentieth Century: Technical Innovations of 1867–1914 and Their Lasting Impact* (Oxford: Oxford University Press, 2005).

2 For instance, the title of a special exhibition which ran from August to November 2008 at the Fabrikmuseum in Delmenhorst, Germany was “Der Glanz der Moderne.”

3 Sarah Nichols, “Aluminium by Design: From Jewelry to Jets” in *Aluminium as Design: Jewelry to Jets*, ed. Sarah Nichols (Pittsburgh: Carnegie Museum of Art, 2000), 12–57.

application. This book takes a historical approach, informed by an institutionalist perspective, to elucidate the political economy of the aluminium industry in the twentieth century. To be even more specific, it is structured as a series of analyses of the interactions between the state and the corporations in different countries. By looking at business-government relationships we can better grasp the linkages between the aluminium industry and the two key features of the history of the twentieth century: The rise of the industrial warfare state and its subsequent replacement by the welfare state.

## **Business-Government Relations**

The earliest mention of aluminium in recorded history is usually attributed to the Roman naturalist Pliny the Elder. According to his *Historia Naturalis*, a silversmith approached Emperor Tiberius, presenting him with a cup of a brand new material, a light, lustrous and ductile metal he claimed to have extracted from clay. The emperor, fearing the effect on the price of the gold, silver and copper in the imperial treasury, had the silversmith beheaded and his workshop destroyed.<sup>4</sup> While perhaps a lesson in how prudent monetary policies may be detrimental to long-term economic growth, two even more profound issues are revealed here. Firstly, even Tiberius, who as a fine general undoubtedly would understand its military utility, could not easily disregard the economic dimension of aluminium production. Secondly, not to put a too fine point on it, the aluminium industry has from the outset sought the protection and the business of the state, not always with happy results.

For many years, firm and market structure has been the starting point for business studies in grappling with questions relating to firm behaviour, even when considering multinational companies operating in different political environments. The division of labour between economists, business historians and political scientists has left us with an unduly constrained understanding, rooted in politics or economics rather than in political economy.<sup>5</sup> This also holds true for the scholarship on the aluminium industry, which primarily relates to questions about cartelization, vertical integration and industrial concentration.<sup>6</sup> Recently however,

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4 Gaius Plinius Secundus, *Historia Naturalis*, 36.66.

5 Thomas McCraw, "Government, Big Business and the Wealth of Nations" in *Big Business and the Wealth of Nations*, eds. Alfred Chandler, Franco Amatori and Takashi Hikino, (Cambridge: Cambridge University Press, 1997), 522–545.

6 Donald Wallace, *Market Control in the Aluminium Industry* (Cambridge: Harvard University

new perspectives on the political determinants and constraints on firm behaviour have emerged, pushed forward by a renewed interest in political economy and the impact of differing institutional settings.<sup>7</sup> The impact of public policy on the aluminium industry is naturally substantial. Fiscal and monetary policy plays a large role in determining its viability, as do the often contested energy regimes or tariff levels.<sup>8</sup> Many of these factors are external to the aluminium industry itself, and the impact of public policy, however important for the welfare of the business, becomes hard to isolate and analyse. The aim of this book is to provide a deeper understanding of the nature of the aluminium industry by investigating policies directly targeting the industry.

There is a tendency in the literature to view public policy in the aluminium sector as mainly the shortsighted results of pressure group politics, executed in a slow, inept manner.<sup>9</sup> It must be recognized, however, that the state usually operates with a wide range of objectives in which the aluminium industry usually figures as only one factor out of many. While such a broad perspective would explain many of the contradictions and the often rapid change in public policies affecting the sector, it is also clear that various governments frequently have sought to harness the aluminium industry to resolve pressing public policy issues directly. It is the central thesis of this book that these policies are anything but the short-term results of lobbying or electoral concerns, but rather reflect long-range strategic objectives pursued by many states over a large part of the previous century. These objectives can be grouped under two main headings, warfare and welfare, and will be discussed further in two separate sections below.

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Press, 1937). Isaiah Litvak and Christopher Maule, "Assessing Industry Concentration: The Case of Aluminum," *Journal of International Business Studies* vol.15 no.1 (Spring – Summer, 1984): 97–104. Recent research has however sought to link these features more strongly to an analysis of government policies, support mechanisms and protectionist measures. Pål Sandvik and Espen Storli, "Big Business, Market Power and Small Nations: The Norwegian Aluminium and Nickel Industry 1920–1939" in *Managing Crises and De-Globalization: Nordic Foreign Trade and Exchange, 1919–1939*, ed. Sven Olof Olsson (New York: Routledge, 2009).

- 7 Peter Rodriguez, Donald Siegel, Amy Hillman and Lorraine Eden, "Three Lenses on the Multinational Enterprise: Politics, Corruption, and Corporate Social Responsibility," *Journal of International Business Studies* vol.37, no.6, (Nov. 2006): 733–746.
- 8 Akira Goto "Japan: A Sunset Industry" in *The World Aluminium Industry in a Changing Energy Era*, ed. Merton Peck (Washington DC: Resources For the Future, 1988), 90–120.
- 9 Merton Peck, Hans Landsberg and John Tilton, eds., *Competitiveness in Metals: The Impact of Public Policy* (London: Mining Journal Books, 1992); Ludovic Cailluet, "The British Aluminium Industry, 1945–80s: Chronicles of a Death Foretold?" *Accounting, Business & Financial History*, vol.11 no.1 (2001): 79–97.

The main tool utilized by the governments in their pursuit of strategic objectives has been the use of expansion programs. These programs have been essential to the development of the aluminium industry, because as Robert Freidel has pointed out, in contrast to plastics, aluminium was developed without an existing market or indeed, without any concrete demand for its actual properties.<sup>10</sup> The aluminium producers, try as they did to sell the product as a ‘wonder metal,’ struggled to find takers for their output.<sup>11</sup> It was only after the Second World War that the aluminium companies really engaged in extensive R&D in close cooperation with industrial designers to target consumers directly. As a consequence, for the first half of the century the aluminium companies’ own efforts to develop their markets did not generate sufficient demand to expand their operations substantially, at least not in comparison to the immense build-ups of smelting capacity that have been undertaken with government prodding and financial support.<sup>12</sup> As can be seen from figure 1, government demand was a key factor in the establishment and the growth of the global aluminium industry until well into the 1950s.

From the German rearmament program that turned the Third Reich into the world’s largest primary aluminium producer by 1937, and as evidenced by the competing Norwegian and British programs by the 1960s and 1970s, different national governments have used both the stick and carrot to coax the companies to increase both the number and the capacity of the potlines within their territories. Other than through direct ownership, whole or partial, the state has relied heavily on incentives. These have frequently been very generous, including lucrative tax rebates, long-term loans and preferential purchasing agreements, amounting to, if not actually labelled outright subsidies. Since aluminium smelting is highly energy intensive, governments can also influence the fortunes of the industry through the establishment of energy regimes, or by controlling the cost of other input factors when necessary. Some governments have also sought to facilitate expansion by choosing one company as the ‘national champion’, and by facilitating its take-over of competitors in the manner of Pechiney under the Fifth Republic in France.<sup>13</sup> Such policies are attractive both for the state and the corporation, as the

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10 Robert Freidel, “A New Metal! Aluminium in its 19<sup>th</sup>-Century Context” in *Aluminium as Design: Jewelry to Jets*, ed. Sarah Nichols (Pittsburgh: Carnegie Museum of Art, 2000), 58–83.

11 H.W Magee, “Aluminum: The Wonder Metal,” *Popular Mechanics*, Feb (1936): 169–178.

12 A pertinent example is the infusion of American dollars into Alcan’s construction of the enormous Shipshaw project during the Second World War. David Massell, “As Though There Was No Boundary’: the Shipshaw Project and Continental Integration,” *American Review of Canadian Studies* vol.34 no.2, (2004): 187-222.

13 Zuhayr Mikdashi, “Aluminium” in *Big business and the State: Changing Relations in Western Europe*, ed. Raymond Vernon, (Cambridge: Harvard University Press, 1974), 170–194.

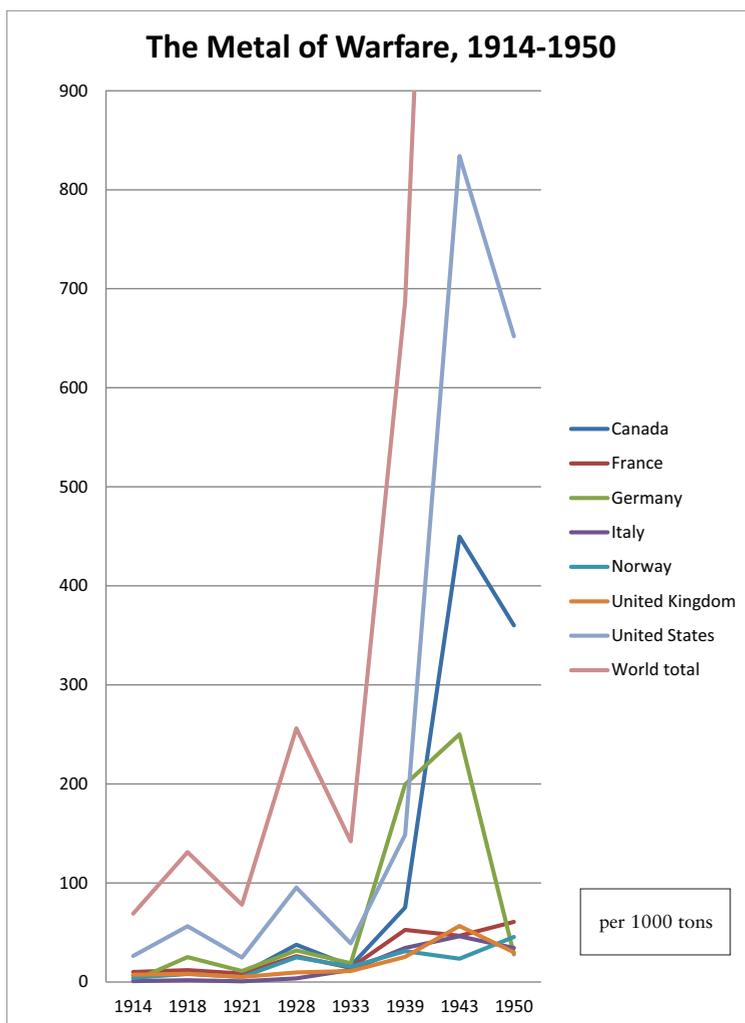


Figure 1.1 The metal of warfare: the growth of the aluminium industry, 1914–1955.<sup>14</sup>

job creation or the accomplishment of other short-term political goals immediately become visible, while cost of the tax breaks and fiscal incentives only become apparent in the long run.<sup>15</sup>

14 Christopher J. Schmitz, *World Non-Ferrous Metal production and Prices, 1700–1976* (London: Frank Cass 1979), 197–208.

15 Alan Rugman, Alain Verbeke and Nathan Greidanus “Multinational Enterprises and Governments: An Analysis of New Trends” in *The Accountable Corporation, vol.IV, Business-Government Relations*, eds. Marc Epstein and Kirk Hanson, (London: Praeger, 2006), 145–170.

Where aluminium companies have not wished to comply with the objectives of the state, due to fears of over-expansion resulting in falling prices and increasing competition, government officials have not refrained from bringing substantial pressure to bear upon the companies. If the men in the boardroom were not swayed by appeals to their patriotism, industry executives were fully aware that the government either held or was in the position to acquire substantial ownership interests in their companies, by force of law or by outright expropriation. In the United States, there was the long-running monopoly case against Alcoa, suspended as a sword of Damocles over Company. Even harsher measures were of course conceivable for recalcitrant businessmen subject to the whims of the European dictatorships, even if the room for manoeuvre was greater within the fascist states themselves and in the north-western parts of the continent than elsewhere.<sup>16</sup>

Beyond the obvious influence of government decisions on the welfare of the industry, there is another substantial reason to look at the interactions between business and government: the boundaries between the public and private sector are highly permeable. This is not a question of tracking the waxing and waning of corporate power over decision-making processes, a question that remains rooted in the realm of the political, as opposed to historical, analysis.<sup>17</sup> Similarly, the conflation of government and private interests, prevalent both among Marxist scholars and Libertarian activists, adds little to our understanding of the historical dynamics of this relationship.<sup>18</sup> Rather, in the realm of political economy, lobbying and influence peddling are factors to be considered rather than determinants. These types of interactions naturally vary across a wide spectrum. Corporatist states like Mussolini's Italy naturally saw close cooperation between the state and powerful individuals in the private sector, but this remained a feature of Italian industrial policy also in the post-war era.<sup>19</sup> Such kinds of cooperation were not limited to the continental states experimenting with corporatism however. The revolving doors between Whitehall and the City in London gives new credence to the adage that British never draw a line without blurring it, in this case between private and public

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16 Hans Otto Frøland, "Nazi Planning and the Aluminum Industry" in *Alan S. Milward and a Century of European Change*, eds. Fernando Guirao, Frances Lynch, Sigfrido Ramirez Perez, (London: Routledge, 2012): 168–188.

17 David Vogel, *Fluctuating Fortunes: The Political Power of Business in America* (Washington: Beard Books 2003).

18 Ronald Graham, *The Aluminium Industry and The Third World: Multinational Corporations and Underdevelopment* (London: Zed Press, 1982).

19 Franco Amatori, "Growth via Politics: Business Groups Italian Style" in *Beyond the Firm: Business Groups in International and Historical Perspective*, eds. Takao Shiba and Masahiro Shimotani (Oxford: Oxford University Press, 1997), 109–134.

sectors. In the United States, the hopeful entrants into the aluminium industry also sought to build alliances with the ruling Democratic Party through lavish support for its election campaigns. But even such crass attempts of purchasing influence amount to little when considered in relation to how the aluminium industry has been affected by the major preoccupations of the state in the twentieth century: warfare and welfare.

## Warfare: The Metal of Self-Sufficiency

The French historian Ivan Grinberg has noted how aluminium first entered the soldier's life as early as 1892, when the French Ministry of War established its commission on the metal.<sup>20</sup> Until well into the First World War, its most important application was in reducing the weight of the soldiers' equipment and their means of transportation. Aluminium powder also became a key ingredient in ammonal, one of the explosives that during the First World War were utilized in quantities that had been previously unimaginable. The many uses to which the metal could be put soon led to shortages, and the French, British and the American governments were engaged in complex diplomatic negotiations over deliveries of aluminium to the military establishments of their allies. Both for the main producers, and the countries that relied on them, it served as a powerful lesson that new sources of the metal had to be found, even if they would have to venture out of their own territory.<sup>21</sup>

While transportation and explosives were both important uses for aluminium, the metal's metamorphosis from a useful ingredient to a necessary input factor would come in another field. As early as in 1908 the futurist writer H. G. Wells published his nightmarish vision of bombing raids on great cities carried out by air dirigibles, made light enough to soar through the heavens by extensive use of aluminium.<sup>22</sup> Wells' vision was partially realized a few years afterwards with the Zeppelin bombings of England in 1915 and 1916; an even more ominous portent of things to come was the raid on London by German long-range aircraft in 1917. While the main battle in the Great War had been fought on, and even in, the ground, the implications of military aviation for warfare in the future were dramatic. As

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20 Ivan Grinberg, *L'Aluminium: Un si léger métal* (Paris: Gallimard, 2003).

21 David Bregaint, "Det 'Uønskede Barnet'. Pechineys Norske Datterselskap DNN, 1913–1958" in *Globalisering Gjennom Et Århundre, Norsk Aluminiumsindustri 1908–2008*, eds. Johan Henden, Hans Otto Frøland, and Asbjørn Karlsen (Bergen: Fagbokforlaget, 2008), 101–135.

22 H.G. Wells, *The War in the Air* (London: George Bell, 1908).

the leading proponent of the doctrine of aerial warfare, the Italian General Giulio Douhet, insisted a few short years after the war had ended: “The true airplane must be made from metal”, and the metal he had in mind was aluminium.<sup>23</sup> Aluminium had become a strategic material.

The notion that shortages of certain raw materials can severely circumscribe the military capability of a nation has existed as long as countries have been dependent on trade to meet their requirements.<sup>24</sup> In the interwar period, strategic materials policy gradually became an important preoccupation for policymakers as the international tension rose. As the historian Alfred Eckes has pointed out, the scramble for control over strategic materials was itself an important factor in worsening the climate of international relations.<sup>25</sup> In countries like France, Germany, Great Britain and the United States, scholars and policymakers engaged in lively exchanges over the importance of supply security, access to and control over the raw materials, both in geopolitical, military and economic terms.<sup>26</sup> Just as military aviation and the mechanization of armies loomed ever larger in military doctrine, so did salience of the aluminium supply, since aluminium alloys increasingly replaced all other metals and wood types in the construction of aircraft.<sup>27</sup> As one official American survey put it in 1937: “When consideration is given to the increase in motor transportation, and the part played by aluminum in the manufacture of trucks, automobiles and aircraft, the importance of this metal from a standpoint of military preparedness is obvious.”<sup>28</sup> This led many countries to adopt stockpiling programs to purchase and store sufficient quantities of either bauxite or aluminium to tide them over a war. The sale of aluminium abroad was also increasingly turned into a question of national security, as evidenced by a French decree that in 1935 prohibited the export of aluminium except under government

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23 Giulio Douhet, *Il Dominio dell’Aria; Probabili Aspetti della Guerra Futura e gli Ultimi Scritti del Gen Giulio Douhet* (Milano: A. Mondadori, 1932), 74. Our translation.

24 Gordon McCormick and Richard Bissell, eds. *Strategic Dimensions of Economic Behavior* (New York: Praeger, 1984).

25 Alfred Eckes, *The United States and the Global Struggle for Minerals* (Austin: University of Texas Press, 1979).

26 Ewald Banse, *Raum und Volk im Weltkrieg* (Oldenburg: Gerhard Stalling, 1932); Brooks Emeny, *The Strategy of Raw Materials. A Study of America in Peace and War* (New York: The MacMillan Company, 1934); Eugene Staley, *Raw Materials in Peace and War* (New York: Council on Foreign Relations, 1937); Egon Glesinger, *Nazis in the Woodpile: Hitler’s Plot for Essential Raw Material* (Indianapolis: Bobbs-Merrill, 1942).

27 Eric Schatzberg, *Wings of Wood, Wings of Metals: Culture and Technical Choice in American Airplane Materials, 1914–1945* (Princeton: Princeton University Press, 1999).

28 United States Bureau of Mines, *Mineral Raw Materials: Survey over Commerce and Sources in Major Industrial Countries* (New York: McGraw-Hill, 1937), 7–8.

license.<sup>29</sup> By the end of the inter-war years, aluminium production had become a matter of high politics.

The Second World War bore out the predictions made in the previous decades, and may rightly be labelled an 'Aluminium War'. Unprecedented quantities of the metal were poured into the construction of fighter planes and bombers, and on average the fuselages of military aircraft that darkened the skies in this conflict were made up of 70% aluminium, while their propellers and the engines consisted of 25% aluminium.<sup>30</sup> The importance of the aluminium industry to the war effort becomes apparent if we consider the great lengths the belligerents went to in order to protect their own facilities and damage the smelters of their opponents. Nazi saboteurs planned to land by submarines to strike at the heart of the American aluminium industry. The Americans on the other hand worried about conceivable German control of the world supply of natural cryolite, an important raw material in the smelting process that could only be found at Ivigtut, Greenland.<sup>31</sup> The Allies also bombed the light metal complex constructed as a joint effort by Norwegian and German interests at Herøya in July 1943.<sup>32</sup> The advent of long-range bombers also entailed that the Canadian giant producer Alcan, which supplied the British with up to 80% of the metal they needed for their war effort, was the only private company offered military protection by Canadian authorities; in fact most of the Canadian anti-aircraft guns were deployed to protect the Alcan's Arvida complex.<sup>33</sup>

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29 G. A. Roush, *Strategic Mineral Supplies* (New York: McGraw-Hill Book Company, 1939), 232.

30 John DeMille, *Strategic Minerals: A Summary of Uses, World Output, Stockpiles, Procurement* (New York: McGraw-Hill Book Company, 1947), 31.

31 Nicholas Spykman, *America's Strategy in World Politics* (Hamden: Archon Books, 1970), 299, 303.

32 Kjetil Gjørme Andersen, *Flaggskip i Fremmed Eie: Hydro 1905–1945* (Oslo: Pax Forlag 2005), 421.

33 Jean Martin, "The Canadian Triumph of the Second World War: Alcan: From the Canadian Little Sister to Alcoa's Major Competitor," *Cahiers d'Histoire de l'Aluminium*, Special Issue no.2, 2007: 29–37.

**Table 1.2 Production of primary aluminium in thousand tons, 1940–1945<sup>34</sup>**

	Canada	Germany	France	Italy	Norway	USSR	UK	USA	World
1940	109.1	225.7	68.1	42.8	30.6	66.0	21.2	206.3	863.2
1941	213.9	234.0	70.5	53.1	19.3	73.2	25.4	309.1	1141.7
1942	360.6	250.5	49.8	48.0	22.6	60.6	52.4	521.1	1534.7
1943	495.7	223.8	51.2	50.9	25.9	68.7	62.3	920.2	2145.1
1944	462.1	210.5	28.8	18.5	22.1	78.3	39.7	776.5	1866.7
1945	215.7	22.0	41.0	4.5	5.1	95.1	35.7	495.1	975.5

The assistance offered by different governments naturally extended well beyond military protection alone. The strategic nature of aluminium had already presented the domestic industries with a powerful argument for keeping foreign investors out of their home markets, as non-nationals could not be trusted to maintain sufficient output in case a war erupted. Likewise, any qualms about the high level of concentration in the industry were dispelled when more metal was needed for rearmament. Power, labour and construction materials were also made available despite the tight supply of such resources in the regimented war economies. The belligerent governments also pushed the companies to conduct research into viable alternatives to bauxite, such as aluminous clays, alunite, leucite, anorthosite and labradorite.<sup>35</sup> The generous incentives to erect new facilities allowed the companies to replace older, less efficient smelter capacity while the government footed the bill. Consequently, the prospects for the post-war years seemed rosy, especially as company coffers were flush with cash from government loans and military sales proceeds. However, the close involvement of the government and the great expansion of capacity that took place also entailed that at the end of hostilities, governments everywhere could utilize these new war assets to alter the composition of the sector through the retention or sale of facilities.<sup>36</sup>

34 United States Business and Defense Services Administration, *Materials Survey: Aluminium, compiled for the Office of Defense Mobilization* II-19. In general, figures used to denote productive capacity in the source material seldom specify whether they are in short, metric, or in the case of bauxite, long tons.

35 E.g. Margaret Graham and Bettye Pruitt, *R & D for Industry. A Century of Technical Innovation at Alcoa* (Cambridge: Cambridge University Press, 1990), 243–249; Kjetil Gjølme Andersen and Gunnar Yttri, *Et Forsøk Berdt. Forskning og Utvikling i Norsk Hydro gjennom 90 år* (Oslo: Universitetsforlaget, 1997), 136–141; Eberhard Neukirch, *Die Entwicklung des Leichtmetallausbaues im Vierjahresplan mit besonderer Berücksichtigung der Zeit des Grossdeutschen Freiheitskampfes*, Berlin 1943 (Located in Bundesarchiv, Berlin, Reichsamt für Wirtschaftsausbau, R 3112, 150–152), 58 ff, 143 ff.

36 Harald Rinde “Den Lange Ventetida” in *Årdal: Verket og Bygda 1947–1997*, eds. Rolv Petter Amdam, Dag Gjestland and Andreas Hompland (Oslo: Samlaget, 1997), 56–83.

The Second World War was temporary high point for the aluminium industry, although the severe shortages of aluminium of the Korean War years also persuaded many states of the importance of expanding the industry further.<sup>37</sup> Both civilian and military demand for the metal continued to rise beyond even the wildest dreams of industry insiders. Things were about to change however. By the late 1950s, aluminium no longer possessed an intrinsic military-strategic value. As the Economic Secretary of the British Treasury, Frederic Erroll, noted during the heated struggle over the American takeover of the BACO in 1958: “the metal is becoming less and less important for defence purposes as we move away from conventional aircraft.”<sup>38</sup> The Americans had reached the same conclusion the year before for a number of reasons: their strategic stockpile was flooded with aluminium, the price of the metal had slumped in 1957 as a result of over-expansion, but the most direct cause was the Sputnik shock. Ironically, this 83 kg ball of aluminium launched into outer space spelled the definitive end of the era of aluminium as a strategic material.

## **Welfare: The Metal of Civilian Consumption**

The demise of aluminium as a martial material was inextricably linked to the end of the era of strategic air power. The doctrine of aerial warfare dwindled as the development of Intercontinental Ballistic Missiles turned the conflict between East and West into a frosty stalemate. From the late 1950s onwards, the Cold War increasingly took on the form of a quarrel over which system could best deliver economic growth and rising living standards, as highlighted by the famous ‘Kitchen Debate.’<sup>39</sup> This shift was also driven by the experiences with the transformative power of government planning that became evident during the Second World War, as well as genuine desire not to return to the miserable employment figures of the Great Depression. Delivering rising standards of living became deeply ingrained as a new core mission of the state, especially in Europe. This was partly due to the extensions of welfare that have generally followed in the wake of destructive wars, and partly due to the concrete fear that communist

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37 L'Organisation Européenne de Coopération Économique, *l'Industrie Des Métaux Non-Ferreux en Europe, 1954* (Paris: L'Organisation Européenne de Coopération Économique, 1954).

38 Memorandum by the Economic Secretary of the British Treasury, British Aluminium Company, C(58)247, 3 December 1958, The National Archives, London, CAB 129/95.

39 David Engerman, “The Romance of Economic Development and New Histories of the Cold War,” *Diplomatic History* vol.28 no.1 (2004): 23–54.

agitators would spread discord unless the grievances of the labouring classes were addressed.<sup>40</sup> All over North America and Western Europe in the years after the war, politicians were becoming far more sensitive to the demands and wishes of their electorate for a better quality of life. The days of the welfare state were dawning.

As the objectives of the state changed, so did its rationale for involvement in the aluminium sector. No longer content to let the economy run its course, government officials became even more concerned with how the industrial sector operated. They increasingly put in place regulations that were designed to lessen the risk of violent cyclical fluctuations that would have grave implications for the rest of society. Aluminium itself had become a basic industrial material, which made it important for the functioning of the economy as a whole. If the aluminium companies could not satisfy the demand, it would lead to a reduction in output over a wide range of sectors. As a consequence, public ownership remained a feature in many countries after the war.<sup>41</sup> The aluminium industry was also pressed into service as a provider of employment, although it was not well suited for that task. The ratio of capital to labour was distinctly unfavourable, as aluminium industry jobs demanded very heavy investment per job created. Nevertheless, this did not discourage politicians with hopeful constituencies in rural areas. Several countries, such as Norway and the United Kingdom, initiated costly expansion programs for their aluminium industry that were targeting economically depressed regions with high unemployment.

The salience of aluminium in the political strategies of the welfare states also gave a new dimension to the perception of political risk. Company executives could no longer rely on cheap power from the state without government officials demanding that they lengthen their payrolls and maximize the contribution to wider economic growth along the lines desired by the state apparatus. While this led many governments to sponsor programs designed to increase productivity and competitiveness, it also entailed close monitoring of company performance and its indirect effects on the society as a whole. Additionally, several European socialist governments also hoped to use nationalization to bring about other forms of soci-

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40 Theda Skocpol, *Protecting Soldiers and Mothers: The Political Origins of Social Policy in the United States* (Cambridge: Harvard University Press, 1992); Deborah Dwork, *War is good for Babies and Other Young Children. A History of the Infant and Child Welfare Movement in England 1898-1918* (London: Tavistock Publications, 1987); Klaus Petersen, *Legitimität und Krise. Die politische Geschichte des dänischen Wohlfahrtsstaates 1945-1973* (Berlin:Verlag A. Spitz, 1998).

41 In West Germany for instance, as late as the 1960s the government owned 72% of the domestic aluminium industry as well as a substantial part of other key sectors of the economy. Martin Van Creveld, *The Rise and Decline of the State* (Cambridge: Cambridge University Press, 1999), 357.

etal change, such as worker control over the factories.<sup>42</sup> While the great savings inherent in aluminium recycling led to the industry initially being perceived as environmentally friendly, the sector was also hit by the restrictions on pollution spawned by the increasing awareness of the negative impact of environmental deterioration on the lives of ordinary citizens. While ambitious reforms and regulations seldom got very far, it was a testimony to changing role of the state in the post-war era, and new risk factors that influenced the relationships between business and government.

The first post-war decades saw a long period of almost uninterrupted growth, with only occasional downturns in demand for aluminium. New markets opened up for consumer goods such as beverage cans and aluminium wrap. The rapid growth of the civilian aircraft industry was also a boon for the aluminium companies. But just as the aluminium producers were basking in substantial profits, so were they rallied to the banners of the state once again. Contributing to financial stability became an important assignment for the aluminium industry in the post-war era. This entailed that the companies targeted the export markets in order to earn foreign currency rather than providing domestic consumers with metal for fabrication. The alternative for countries with deficits in the aluminium supply was likewise to increase their domestic output in order to reduce the need for imports that had to be paid for in dollars. In this regard aluminium also served as a bargaining chip in the trade with Eastern Europe, which was an important source of many raw materials for Western European countries. These barter agreements served to alleviate the pressure against currency reserves, even though European shipments of aluminium across the iron curtain was still unpopular in military and political circles in Washington.<sup>43</sup>

The state was also intimately involved in another aspect of the post-war aluminium industry, as a driver of the surge in civilian demand. The civilian requirements for aluminium in the immediate post-war years took all but the most optimistic industry executives by surprise. Before long, an anticipated surplus capacity was turned into a vast deficit of aluminium in the industrialized countries. Particularly strong was the demand from the construction sector. The experience of mass production and fabrication of aluminium that had been accumulated during the

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42 Ali Farazmand, *Privatization or Public Enterprise Reform: International Case Studies with Implications for Public Management* (Westport: Greenwood Press, 2001), 62–3.

43 Frank Cain, *Economic Statecraft during the Cold War: European Responses to the US Trade Embargo* (New York: Routledge, 2007); Alan Dobson, *US Economic Statecraft for Survival 1933–1991: Of Embargoes, Strategic Embargoes, and Economic Warfare* (London: Routledge, 2002).

Second World War suddenly made aluminium attractive as a construction material, a market that had been almost non-existent before 1940. Development of new alloys made aluminium more suitable for structural purposes, and advances in welding and riveting techniques made it possible to erect aluminium bridges that subsequently required little maintenance.<sup>44</sup> The thermal conductivity of aluminium also made it unsuitable for windows, but once frames with thermal barriers had been developed the sales boomed. The success of aluminium in the construction sector was also strongly affected by the new role of the state as a promoter of the welfare of its citizens. Acute housing shortages on both sides of the Atlantic made the idea of prefabricated aluminium houses attractive to government agencies that tried their best to alleviate such problems. The government thus played a leading role in opening a vast new market for aluminium building components.<sup>45</sup>

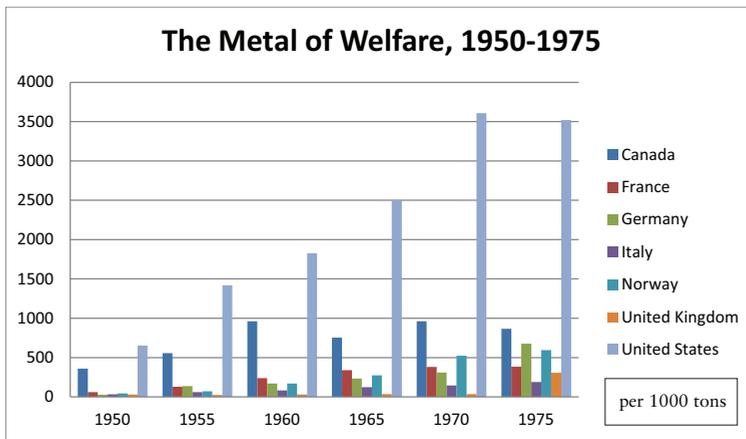


Figure 1.3 The metal of welfare: the growth of the aluminium industry, 1950–1975.<sup>46</sup>

The post-war era also saw changes in the composition of the firms that provided new challenges in the business-government relationship, particularly the emergence of the multinational corporation. While the aluminium industry has always been heavily concentrated, during the 1950s and 1960s the sector was further

44 Phillip Bulson, ed., *Aluminium Structural Analysis: Recent European Advances* (Oxon: Taylor & Francis, 1991).

45 Florence Hachez-Leroy, “The Productivity Missions for Metal Assembly Work” in *Catching up with America: Productivity Missions and the Diffusion of American Economic and Technological Influence after the Second World War*, ed. Dominique Barjot, (Paris: Presses de l’Université de Paris-Sorbonne, 2002), 405–411.

46 Schmitz, *Non-Ferrous Metal Production and Prices*, 197–208.

consolidated as the major companies to the west of the 'iron curtain' came to dominate both alumina refining and the smelting stages in the international value chains.<sup>47</sup> These companies, which were located in North America and Western Europe, became known as 'the Big Six' (Alcoa, Alcan, Reynolds, Kaiser, Alusuisse and Pechiney). While concentration was nothing new in this industry, what was particularly disturbing from the perspective of the nation states was that these companies were breaking out of their traditional domestic haunts, seeking proximity to new customers by investing beyond the tariff barriers in other countries. This development lessened the control of the government over the companies, and opened new vistas for the canny business operators that were able to expand internationally.<sup>48</sup> The ability to shift capital between different locations provided multinational corporations with a substantial advantage, as it enabled them to play different governments against each other and threaten to shift their investments to new locations.

The threat of outsourcing was not the only new development that worked to the advantage of the corporations. The efficiency of an international division of labour had become the new economic orthodoxy in the post-war era, especially after the Americans made economic integration based on this principle a main objective of the Marshall Plan. As international markets were increasingly globalized by the abolition of non-tariff barriers and quantitative restrictions, so there was a trend of economic regionalization; both were accompanied by the creation of new inter- and supra-national institutions. While the General Agreement on Tariffs and Trade (GATT) and later the World Trade Organization (WTO) have served to constrain the range of options for policymakers across the globe, these developments were particularly palpable in Europe. The creation of both the European Economic Community (EEC) and the European Free Trade Association (EFTA) entailed that the recourse to outright subsidy demanded acquiescence from other states, as many policymakers were to discover to their dismay. For some states it provided an opportunity to argue that their comparative advantages should make them a preferred supplier within a protected area.<sup>49</sup> The logic of national self-suf-

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47 John Stuckey, *Vertical Integration and Joint Ventures in the Aluminium Industry* (Cambridge: Harvard University Press, 1983).

48 Geoffrey Jones, *The Evolution of International Business: An Introduction* (London: Routledge, 1996), 84.

49 As e.g. France within the EEC, see Florence Hachez-Leroy, "Le construction européenne et ses conséquences sur l'industrie française de l'aluminium" *Cahiers d'Histoire de l'Aluminium*, Special Issue No.1, 2003: 23–35. On e.g. the Norwegian response, see Hans Otto Frøland, "The Norwegian Aluminium Expansion program in the Context of European Integration, 1955–1975" *Cahiers d'Histoire de l'Aluminium*, Special Issue 2, 2007: 103–123.

efficiency which had driven developments in the interwar years was replaced by a new reality of regional and global inter-dependence, just as the warfare state was replaced by the welfare state. In that sense, the historical development of the political economy in the aluminium industry provides a clear illustration of how state and society has been transformed over the course of the twentieth century.

## **The Structure of the Book**

This book is an outgrowth of the Comparative Aluminium Research Program (CARP), which for almost a decade has sheltered at the Department of History and Classical Studies at the Norwegian University of Science and Technology (NTNU) in Trondheim. The individual chapters were presented as papers during two sessions at the Economic and Business History Association (EBHA) Conference in Bergen in late August 2008. The papers by Espen Storli, Marco Bertilorenzi and Mats Ingulstad were presented during a session titled “Government Influence in a Cartelized World”. The remainder by Jan Thomas Kobberød, Hans Otto Frøland, Andrew Perchard and Niall MacKenzie were given at the subsequent session under the poetic heading of “Government-Business Relations in the Aluminium Industry.” All papers have been since revised, both before and after peer review.

The opening chapter of the book is the contribution by Mats Ingulstad, which takes a fresh look at how the relationship between the American government and Alcoa have played out over the first half of the twentieth century. Contrary to previous interpretations, which have stressed the mutual hostility engendered by the long-running antitrust case, Ingulstad claims the strategic importance of aluminium caused the government and the monopolist to work closely together most of the time. Rather than the iconic antitrust case, he argues that it was rather the inability of Alcoa to provide sufficient aluminium to American authorities in wartime that doomed its monopoly.

The importance of aluminium as a strategic material also lies at the heart of the chapter by Marco Bertilorenzi, which examines the fate of the Italian aluminium industry during the interwar period. While the struggle for autarchy brought the Italian state into the sector from the mid-1930s, he argues that it did not bring about total state control of the industry, but rather that the international cartel arrangements and powerful domestic industry executives continued to exert strong influence over the direction of the industry.

The interlocking nature of cartel arrangements and public policy is also a key feature of the chapter by Espen Storli. Storli provides a compelling account of

how Norwegian state subsidies for trade with the Soviet Union inadvertently had a substantial impact on the structure of the international aluminium industry. Tapping into nationalist sentiments, one small Norwegian company managed to insert itself in a strategic political position, and through its ability to influence the distribution of state guarantees to aluminium sellers in a depressed world market, gained an influence far out of proportion to the size of the company or the country itself.

Andrew Perchard takes a stern look at how the British Aluminium Company (BACO) has fared under the wings of the British government. Although aluminium was clearly perceived to be a strategic material, and there were close ties that existed between the BACO and the higher circles in the government, Perchard argues that the Company's myopic mandarism did not result in the formation of a military-industrial complex, but rather spelled the ruin of BACO. His account is a sobering reminder for anyone hoping for the emergence of a progressive industrial policy emerging out of Whitehall.

Niall MacKenzie delves into the expansion program for the aluminium industry in Great Britain announced by Harold Wilson in 1967. MacKenzie highlights the continuing woes of BACO when dealing with the British government, by now also sharing the domestic market with a consortium led by Rio Tinto Zinc and Alcan. Not only was the Wilson smelter program hampered by a misplaced hope that British nuclear reactor technology would provide sufficiently cheap electricity to make Great Britain competitive as an aluminium producer, public policies also fluctuated wildly between partisan posturing and support for regional development and employment, before the programme finally foundered on the rocks of decentralized energy regimes.

How the objectives of the government frequently change, and often are in conflict with the private companies' goal of maximizing profits, also lies at the heart of the contribution by Jan Thomas Kobberrød. As Kobberrød notes while investigating the Norwegian case, state ownership is not necessarily a guarantee that the aluminium producer will engage in activities desired by the government if the management feels they are tangential to their own goals. After the consolidation of the aluminium activities owned by the Norwegian state in the 1980s, the dilemma has gained a global dimension: should the partially state-owned company continue to be the recipient of low-cost power from the government and contribute to value creation in Norwegian backwoods, or cast its anchors and emerge as a true multinational company.

The chapter by Hans Otto Frøland provides a somewhat different perspective on the Wilson smelter program. The program challenged the Norwegian smelter

program, which largely targeted the British market. By highlighting the conflict between the Norwegian and British states, he is able to show how the Canadian company Alcan, which had interests in both countries, managed to emerge as a winner of a three-way game. Having identified Alcan's influential role in this inter-governmental contest, he questions whether it was a conflict at all.

# **“We want aluminium, not excuses!”: Antitrust and Business-Government Partnership in the American Aluminium Industry, 1917–1957**

Mats Ingulstad<sup>1</sup>

Sun Tzu’s classic military treatise, the *Art of War*, offers a stern warning to kings, generals, grand viziers and others with a natural predilection for the offensive that “If you expose the army to prolonged campaign, the state’s resources will be inadequate”.<sup>2</sup> The advent of modern industrialized warfare during the First World War made this sagacious piece of advice even more relevant. The increasing reliance on military aviation gradually turned the steady supply of aluminium into one of the determinants of military capabilities for the next half century. For the United States, which relied on its overwhelming industrial might to win its wars, producing the vast quantities of aluminium needed to maintain its war-making capabilities became imperative. This naturally had a tremendous impact on the relationship between the American government and the American aluminium industry. However, with the anti-trust case *United States v Alcoa* standing as a towering landmark in American legal and economic history, studies on the business-government relationship in the American aluminium industry are usually centred upon the government’s efforts to break the monopoly of the Aluminium Company of America (Alcoa).<sup>3</sup> That is unfortunate, since the antitrust case was

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1 The author would like to express his gratitude to the the Institut pour l’Histoire de l’Aluminium (IHA) for a generous research grant.

2 Sun Tzu, *The Art of War* (Running Press London 2003), 20.

3 Antitrust permeates the first official history of Alcoa. Charles Carr, *Alcoa, An American Enterprise* (Rinehart: New York, 1952). The more recent account by George David Smith is better balanced, but it is still very focused upon the antitrust case. George David Smith, *From Monopoly to Competition; The Transformations of Alcoa 1888–1986* (Cambridge: Cambridge University Press, 1988). The case has also acquired a prominent position in the literature on law, economics and industrial organization. See for instance Dennis Mueller, “Lessons from the United States’ antitrust history,” *International Journal of Industrial Organization* vol.14 (1996): 415–445.

only an episode in a long-term relationship between the public and private sector, albeit one that can shed light on the more fundamental dynamics. This contribution will demonstrate that rather than a legal duel between business and the government that spanned decades, this relationship was shaped by a convergence of interests that led to close cooperation.

In the following it will be argued that while antitrust considerations always influenced the business-government relationship to some extent, the strategic importance of aluminium was a more salient factor than hitherto recognized. Not only would the military need for aluminium bring huge profits to Alcoa, allowing it to expand its capacity and open new markets for the metal, it also fomented an intimate business-government relationship and gave Alcoa shelter from the more zealous antitrust advocates at crucial junctures. This argument runs contrary to the frequently expressed view that Alcoa was unfairly prosecuted, even persecuted, by the American government. Alan Greenspan and others have argued that Alcoa was not a coercive monopoly since it did not actively try to prevent competitors from joining the field. From their perspective, Alcoa was a victim of its own success; it was solely its business acumen that prevented other companies from entering the industry and depriving it of its monopoly.<sup>4</sup> This contribution however, will demonstrate that Alcoa actively used its position as the sole supplier to the government, both of aluminium ingots and technical advice, to keep other companies from breaking into the smelting business.

Despite the succour Alcoa derived from its close relationship with the mobilization agencies of the government during the Second World War, it ultimately proved to be a double-edged sword. Alcoa was cautious about expanding its capacity due to fears of overproduction, and used its significant influence to quash any discussion of expansion being necessary for military purposes. The company only succeeded too well however, as Alcoa did not manage to produce sufficient amounts of aluminium for American mobilization during the first years of the Second World War. It was this failure to deliver, I argue, that irretrievably cost Alcoa the monopoly, not some unwarranted anti-Alcoa ire or the antitrust ardour of the Department of Justice. Despite Alcoa's frequent banishments into the political wilderness, the company would remain among the chief beneficiaries of government aid for as long as the United States needed its aluminium for military purposes.

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4 Dominick Armentano, *Antitrust Policy; The Case for Repeal, Revised 2nd Edition* (Auburn: Ludwig von Mises Institute, 1999), 60–63; Alan Greenspan, "Antitrust" in *Capitalism; The Unknown Ideal*, ed. Ayn Rand (New York: The New American Library, 1967), 63–71; Alan Neale and Daniel Goyder, *The Antitrust Laws of the United States of America: A Study of Competition Enforced by Law* (New York: Cambridge University Press, 1980).

## Alcoa and the First World War

During its first decades, Alcoa led a relatively unobtrusive existence as the sole American producer of what only gradually lost its status as a novelty metal. But as President Theodore Roosevelt and his successor William Howard Taft became more and more ardent in their fervour to take drastic measures against giant trusts and cartels, Alcoa joined the ranks of the monopolists under fire.<sup>5</sup> In 1911 Alcoa was charged by the Department of Justice with violations of the Sherman Act through unlawful participation in foreign cartels. The following year Alcoa was acquitted of the charges of having built its monopoly illegally, but it did sign a consent decree in which Alcoa somewhat ingeniously agreed to discontinue any unlawful activity, without admitting to have engaged in any.<sup>6</sup> Alcoa thus emerged relatively unscathed from its first run-in with the government. Other companies, such as Standard Oil or American Tobacco, were not as fortunate.

Even if the wave of antitrust sentiment gradually subsided thereafter, a more important development for Alcoa was the European conflagration unleashed in 1914 by a moody Serbian nationalist with a handgun. The outbreak of the First World War radically altered the prospects for Alcoa as a company and aluminium as an industrial metal. Instead of fighting off threats of dissolution, the company was now allowed to profit immensely from war-driven demand. The armed services became Alcoa's most important customer, as their engagements in France rapidly demonstrated the importance of logistics and the savings that could be had if aluminium was used to reduce the weight on items ranging from automobile parts to canteens and meat cans.<sup>7</sup> Aluminium also increasingly replaced wood and other materials in aircraft components, and the introduction of long-range bombers and bombing raids foreshadowed the tremendous importance of strategic air power and the need for aluminium in later wars.<sup>8</sup>

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5 Myron Watkins, "The Sherman Act: Its Design and Its Effects," *The Quarterly Journal of Economics*, vol.43, no.1 (Nov., 1928): 1–43; William E. Kovacic and Carl Shapiro, "Antitrust Policy: A Century of Economic and Legal Thinking," *The Journal of Economic Perspectives*, vol.14, no.1 (Winter, 2000): 43–60.

6 Carr, *Alcoa*, 80.

7 P. F. Archer, Assistant Quartermaster, the Marine Corps to E.C. Thurston, War Industries Board, October 5 1918, National Archives and Records Administration, Washington, record Group 61, War Industries Board\Correspondence and Papers on aluminium\Box 169\Aluminium Requirements, Marine Corps. The National Archives and Records Administration is hereafter referred to as NARA, and Record Group is abbreviated to RG.

8 While only about 10% of American military demand for aluminium was related to military aviation, the US also supplied the war industries of the Entente powers. American aluminium also went into the production of Ammonal, a high explosive made of ammonium nitrate and aluminium powder.

The application of cutting-edge industrial methods for turning living human beings into dead ones also inaugurated a new era of government-business cooperation. As the United States moved towards intervention in The Great War, so was the domestic economy gradually harnessed for industrial mobilization. After the American entry into the war, President Wilson set up a War Industries Board which gradually became the nexus for the mobilization of the American economy, with commodity speculator Bernard Baruch cast in the role as the ‘Zeus of Industry.’ The boundaries between government, the business community and the armed forces became blurred to the extent that it could be difficult to see who were holding the reins. The government relied heavily on business executives to man the various positions within the emergency agencies, which offered important venues for a two-way learning process.<sup>9</sup> Alcoa was one of many companies which learned how to influence the decision-making process and to turn a profit by supplying the American war machine. The War Industries Board operated through a series of commodity committees, and Alcoa’s President, Arthur Vining Davis, was appointed chairman of the War Industries Board Aluminium Committee. Grosvenor Clarkson, the erstwhile Director of the Council for National Defense, wrote of this appointment in his *pièce justificative*, without any apparent trace of irony that “the industry was in the hands of a single well-intentioned man.”<sup>10</sup> ‘Well-intentioned’ was a characterization that seldom would be repeated during Davis’ long career in aluminium.

Arthur Davis, and Alcoa with him, was determined not to let this opportunity slip by. After less than two months of war, Alcoa reported that plans were well under way to increase production by another 5,000 tons.<sup>11</sup> Coming on top of another 15,000 tons added since 1915, it brought Alcoa to its wartime peak capacity of 76,000 tons.<sup>12</sup> But it was soon apparent that not enough aluminium could be produced to cover the requirements of both the Allies and the United States.

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Business and Defense Services Administration, *Materials Survey: Aluminium, compiled for the Office of Defense Mobilization* (Washington: Department of Commerce, 1956), VII–1.

- 9 Paul Koistinen, *Planning War, Pursuing Peace, The Political Economy of American Warfare 1920–1939* (Lawrence: University Press of Kansas, 1998), p.xv; Robert Cuff, *The War Industries Board, Business-Government Relations During World War I* (Johns Hopkins University Press, Baltimore, 1973). See also Robert Cuff, “A ‘Dollar-a-Year Man’ in Government: George N. Peek and the War Industries Board”, *The Business History Review* vol.41 no.4. (Winter, 1967): 404–420.
- 10 Grosvenor Clarkson, *Industrial America in the World War, the Strategy Behind the Line, 1917–1918* (New York: Houghton Mifflin, 1923), 357.
- 11 Council of National Defense Committee on Raw Materials, Subcommittee on Aluminium, Survey of Aluminium Situation from May 1, 1917 to May 1, 1918, NARA\RG 61, War Industries Board\Correspondence and Papers on Aluminium\Box 172\Aluminium, price fixing.
- 12 Carr, *Alcoa*, 154.

This necessitated control over both distribution and prices. Control over distribution was secured through the introduction of a priorities system, which became one of the outstanding features of the War Industries Boards' efforts to direct the mobilization process.<sup>13</sup> Alcoa avoided being placed under the priority system by pledging to give preferences for both direct shipments to the American government and other suppliers bound to it by contract. Alcoa even managed to be put in charge of the priorities system itself, like INCO was in nickel. That gave Alcoa the final word as to what businesses were to receive the aluminium they needed to fulfil their contracts. Even though there existed a possibility to appeal to the War Industries Board, it was often futile since the Board operated on the basis that the monopolies were better informed of the respective needs of their customers.<sup>14</sup>

While not bound in terms of distribution, Alcoa did have to submit to a pricing regime, as the competitive buying of the Allies had driven aluminium prices through the ceiling already before American entry in the war. While normally sold at 20 cents pr. pound, aluminium now traded for 60 cents in the open market and contract prices hovered around 38 cents. According to Clarkson, Davis acted at the highest plane of service and patriotism, and offered to the government all the aluminium it might require and at its own price.<sup>15</sup> As it turns out, Davis was a trifle less charitable than Clarkson suggests. He complained loudly both publicly and within the War Industries Board Committee that Alcoa was forced to cut the prices while production and labour costs were rising. Davis offered the government to buy the aluminium at 27.5 cents pr. pound, which was based on an average for the years 1907 to 1917, plus two cents for increasing costs in war-time as opposed to pre-war conditions.<sup>16</sup> The resulting price was significantly higher than the prices that had prevailed before the war, and also included the exceptionally high prices of 1907.<sup>17</sup> This offer, while substantially below the inflated market price at the time,

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13 Bernard Baruch, *American Industry During the War, a Report of the War Industries Board (March 1921)* (New York: Prentice-Hall, 1941), 156–157.

14 Business and Defense Services Administration, *Aluminium*, VII-3; Cuff, *War Industries Board*, 201.

15 Clarkson, *Industrial America*, 355.

16 Davis to Baruch, 20 April 1917, NARA, RG 61, War Industries Board\Correspondence and Papers on Aluminium\Box 172\Aluminium, price fixing.

17 Christopher Schmitz, *World Non-Ferrous Production and Prices, 1700–1976* (London: Frank Cass 1979), 264. The price level in 1907 was higher than at any time since 1896, and thereafter dropped significantly. The prices of bauxite on the other hand rose slowly from 1913 to 1922, but evinced scarcely any trace of the war inflation that trebled the price of the metal, simply because there was no open market. G.A. Roush, *Strategic Mineral Supplies* (New York: McGraw-Hill Book Company, 1939), 228.

was still very favourable for Alcoa. This method of calculation included the wartime price increases on the output after 1914, but reimbursed Alcoa for the rising costs of input factors.

Thus, it is no wonder that for all his grumblings about the inadequacy of the price levels, Davis and Alcoa got along splendidly with the Price Fixing Committee under the chairmanship of Robert Brookings. Brookings readily conceded that the government had to work with the monopolist. More than that, he even indicated that if the company was not making a very handsome profit under these circumstances, then government support would be considered. Davis did not need to take up the offer. Alcoa also had a significant influence on how the price fixing system operated. The committee ordinarily set the prices for a three month-period. The price for aluminium was apparently sufficiently high that Davis wanted it fixed for a six month period rather than to have the possibility of an upward adjustment after three months. To this request Brookings simply replied that “We will fix this just as you would like to have us fix it.”<sup>18</sup>

Alcoa derived many other benefits from its close working relationship with the government. Alcoa was not only the sole producer of primary metal, but it also competed with its own customers as a fabricator of aluminium. When the War Industries Board received offers of processed aluminium powder for the Army from other fabricators, Davis was informed and given the opportunity to take the contract instead. This sort of cooperation led to accusations that the company used its position during the war to squeeze its competitors, such as its only sizable competitor in the rolling of aluminium sheet, the Bremer-Waltz Corporation.<sup>19</sup> The American government also used pressure to secure bauxite lands in Dutch and British Guiana during the war when Alcoa feared that it was running out of high grade domestic bauxite. While there was some competition from imports during the last years before the war, Alcoa’s market share shot right back up at the outbreak of war in Europe, and reached its highest level ever, exceeding 99.9% for several years running.<sup>20</sup>

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18 “Meeting of the Price Fixing Committee of the War industries Board with a Representative of the Aluminium industry for the Purpose of Fixing the Price of Aluminium”, 20 August 1918, NARA, RG 61, War Industries Board\Correspondence and Papers on aluminium\Box 170\minutes of price fixing committee.

19 J. L. T Walz to War Industries Board, Bureau of Applications and Issue, Priorities Division, 5 September 1918, NARA, RG 61, War Industries Board\Correspondence and Papers on aluminium\Box 170.

20 Bradford Barham, “Strategic Capacity Investment and the Alcoa-Alcan Monopoly 1888–1945” in *States, Firms and Raw Materials; The World Ecology and Economy of Aluminium*, eds. Bradford

The war had also forced the government to immediately suspend its anti-trust activities and seek industrial cooperation instead. This strengthened the hand of the industrialists who wanted to make it easier to form cartels after the war by suppressing the antitrust policy of the government.<sup>21</sup> On the other hand, unlike for some other raw materials, no threatening shortages of aluminium had occurred, apart from some delays owing to railroad congestion and power shortages.<sup>22</sup> In return for profits, influence and impunity, Alcoa fulfilled its side of the bargain by providing the metal needed by the American government for the war effort.

## Return to Normalcy

With the return to peace, Alcoa basked in the generally amiable relationship between big business and government that persisted under Presidents Harding, Coolidge and Hoover.<sup>23</sup> Even when “less government in business” was the watchword, Alcoa was especially fortunate in having the protection offered by the elevation of the financier Andrew W. Mellon to the position of the Secretary of the Treasury, a position he held from 1921 to 1932. Mellon had been intimately connected with Alcoa since he extended his first loan to the enterprise in 1889, and had since held positions as both company treasurer and a member of the board. Mellon had first used his influence on behalf of the company to ensure tariff protection against foreign aluminium in the McKinley Tariff Act of 1890. He had kept aloof from the first Alcoa antitrust case which ended in the consent decree of 1912, but during his tenure as Secretary of the Treasury he kept a watchful eye over Alcoa as he did with the rest of his businesses. Mellon not only assisted Alcoa in its negotiations with James B. Duke over hydroelectric development in the Saguenay in Canada but was also actively involved in ensuring that the Fordney-McCumber Tariff Act of 1922 gave ample protection for Alcoa, thereby

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Barham, Stephen Bunker and Denis O’Hearn (University of Wisconsin Press, Madison 1994), 69–110. See table on page 95.

21 Robert Himmelberg, “The War Industries Board and the Antitrust Question in November 1918” *The Journal of American History* vol.52 no.1 (Jun., 1965): 59–74.

22 Baruch, *American Industry*, 156.

23 President Harding told Congress in 1921 that he wanted “less government in business as well as more business in government”. He also oversaw the process of replacing the progressive members of the Federal Trade Commission that would eventually be of great assistance to Alcoa in the mid-1920s. Eugene Trani and David Wilson, *The Presidency of Warren G. Harding* (Lawrence: University Press of Kansas, 1977), 83, 86.

keeping foreign production out and strengthening Alcoa's hold on the American markets.<sup>24</sup>

Despite the auspicious political climate, Alcoa's fortress of solitude was a sufficiently imposing feature in the metal markets that it drew substantial negative attention. The most serious threat was an investigation launched by the Federal Trade Commission in 1922, an agency with the power to investigate, publicize and prohibit unfair methods of competition. By 1924, the Commission had compiled a highly critical report about Alcoa, charging the company with misconduct, unfairly squeezing out independent fabricators, efforts to monopolize bauxite, control over foreign markets for aluminium in the United States and violations of the terms of the consent decree of 1912.<sup>25</sup> Luckily for the company, the Federal Trade Commission fell under the control of pro-business interests with the appointment of William Humphrey in 1925. Humphrey was adamantly opposed to regulation and denounced the Commission before his own entry as "an instrument of oppression and disturbance and injury instead of a help to business." Humphrey practised what he preached, and was chiefly responsible for the decision not to reopen the case against Alcoa.<sup>26</sup> He also eagerly sought to block the Attorney General's attempts to build a case against Alcoa and refused to surrender the results of the Commission's investigation on the highly dubious ground that Alcoa had willingly supplied the information.<sup>27</sup> While Alcoa did suffer some bad publicity before the Federal Trade Commission dismissed its own charges, it was a far cry from dissolution. Later private antitrust suits brought against Alcoa by the Baush Machine Tool Company and other small companies likewise did not put so much as a dent in Alcoa's monopoly.

Another area where the aluminium monopoly benefited from benign neglect during the 1920s was in its importance for the military strength of the nation. Since shortages of many raw materials had led to logistical problems that had only been overcome through great expenditure of time, money and effort, many in the political and military elites sought to capitalize upon the experiences of The Great War. One of the most important outcomes was the enactment of the National Defense Act of 1920, which gave the Office of Assistant Secretary of War the responsibility for "the assurance of adequate provision for the mobilization of material

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24 David Cannadine, *Mellon: An American Life* (New York: A. A Knoph, 2006), 111, 222, 323.

25 Carr, *Alcoa*, 202–206; Cannadine, *Mellon*, 347, 693n122.

26 Cullom Davis, "The Transformation of the Federal Trade Commission, 1914–1929" *The Mississippi Valley Historical Review*, vol.49 no.3 (Dec., 1962): 437–455.

27 Robert Ferrell, *The Presidency of Calvin Coolidge* (Lawrence: University Press of Kansas, 1998), 71f.

and industrial organizations essential to wartime needs.”<sup>28</sup> The War Department began talking to industry representatives about how different materials could be provided in case of a future war. But despite lobbying from academics and former officials like Assistant Secretary of War Crowell, Secretary of Commerce Redfield and Bernard Baruch himself, the government did not take any meaningful action in developing an overall strategic materials policy.<sup>29</sup> In this political environment it is not surprising that there were no determined efforts to protect the aluminium supply; The Great War had given no cause for concern regarding aluminium and the doctrine of air power had yet to be commonly accepted or its implications understood. There were also strong forces within the armed services that refused to come to grips with the fact that mobilization of resources was becoming as important as manpower. While the absence of a government stockpile of aluminium deprived Alcoa of a potential market, the company did not suffer unduly since it continued to do brisk business during the 1920s.

## Challenges and Opportunities after the Great Crash

The Great Depression created new challenges for the company. Not only did aluminium sales plummet, forcing the company to reduce its workforce and halt plant construction, but its political cover was also blown to smithereens. While a mere whisper of “Mellon” had opened doors for the company during the 1920s, it now presented them with formidable obstacles. The former Secretary of the Treasury was vilified in the press as a tax-evading monopolist. To make matters worse, the election of Franklin Roosevelt at the height of the economic debacle seemed to inaugurate a hostile phase in the relationship between Alcoa and the government. Within a year the Roosevelt administration was holding public hearings on the aluminium industry. During these hearings the officers of Alcoa admitted that they

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28 Harry Yoshpe, “Economic Mobilization Planning between the Two World Wars,” *Military Affairs* vol.15 no.4 (Winter, 1951): 199–204; Paul Koistinen, “The ‘Industrial-Military Complex’ in Historical Perspective: The Interwar Years,” *The Journal of American History* vol.56 no.4, (Mar., 1970): 819–839.

29 William Redfield, *Dependent America: A Study of the Economic Base of Our International Relations* (Boston: Houghton Mifflin Company, 1926); Bernard Baruch, *Baruch: Public Years* (New York: Holt, Rinehart and Winston, 1960), 264; Jordan Schwarz, *The Speculator: Bernard M. Baruch in Washington, 1917–1965* (Chapel Hill: University of North Carolina Press, 198), 390; Isaiah Bowman, *The New World; Problems in Political Geography* (London: George Harrap & Company Ltd, 1928); Benjamin Williams, *Foreign Economic Policy of the United States* (New York: McGraw-Hill Book Co, 1929).

not only controlled 100% of the domestic reduction capacity for virgin aluminium, but also that they sat on the greater part of all known reserves of bauxite.<sup>30</sup> This was duly noted by the National Resources Planning Board, an important idea incubator and advisory agency to President Roosevelt which reported to the staunchly anti-monopolist Secretary of Interior Harold Ickes.<sup>31</sup> The Board's Planning Committee on Minerals Policy conceded that while concentrated ownership in some cases could help industries grow past the pioneer stage and that most mineral monopolies faced competition from other minerals, it nevertheless concluded that competition was necessary and antitrust laws should be vigorously enforced.<sup>32</sup>

The increasing hostility of the Roosevelt administration to monopoly was offset for Alcoa by the growing realization in some circles that aluminium was crucial for the military capabilities of the nation. The Minerals Committee report, while hostile to monopoly, had also noted that without raw materials the industrial production would fall precipitately, and consequently the military capabilities of the United States would rapidly diminish. The armed forces, not entirely without some gentle nudges from Alcoa, understood that it would require a lot of aluminium for aircraft and other military hardware in the future. The War Department listed aluminium as a critical material in 1932, meaning shortages could be expected and that some degree of control could be necessary in case of war. In 1936 aluminium was formally designated as a strategic material, elevating it into the ranks of the most urgently needed materials. The rapidly rising share of imported bauxite was the chief factor which led to the new designation, but there were other concerns as well. A large proportion of the domestic supply was made up of secondary aluminium, reclaimed from scrap, which could not meet the strict military specifications.<sup>33</sup>

By the mid-1930s both the Navy and especially the Army Air Corps began taking a more active interest in the metal. They had frequent contact with

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30 Draft Report Part II, section V "Minerals and the Problem of Monopoly", note 1, NARA, RG 187, National Resources Planning Board\Unpublished Reports of the NRPB, 1936–1942, Minerals General – Planning, Regional\Prel. Drafts of 'Planning for Mineral Policy', Oct 1934.

31 Marion Clawson, *New Deal Planning; The National Resources Planning Board* (Baltimore: Johns Hopkins University Press, 1981); Charles Merriam, "The National Resources Planning Board; A Chapter in American Planning Experience" *The American Political Science Review*, vol.38 no.6 (Dec., 1944): 1075–1088.

32 National Resources Board – Report of the Planning Committee for Mineral Policy, 1 December 1934, NARA, RG 187, National Resources Planning Board\Published Reports of the National Resources Planning Board, 1937–43, Public Works\Box 11.

33 Roush, *Strategic Mineral Supplies*, 236. The official definitions of strategic and critical materials can be found on p. 6

Alcoa, and one Alcoa official even served as a reserve officer on the aluminium committee established by the Office of the Assistant Secretary of War. The planning effort was poorly organized however, and both Alcoa and the armed forces spectacularly underestimated the need for aluminium in the coming war. In the meantime, Alcoa gained protection against the most perfervid trust-busters in the Roosevelt Administration. When the Justice Department filed its antitrust suit in 1937, it requested information from the War Department, which subsequently refused to provide it out of fear that disclosure could harm and alienate the company. When the Department of Justice subpoenaed a copy of a report written by a military officer directly from Alcoa, Assistant Secretary of War Louis Johnson personally told Alcoa not to comply. Neither the Department of Justice nor the court ever saw a copy of the report.<sup>34</sup> Alcoa had thereby gained a powerful ally. The company was naturally well aware of the value of this support, and also solicited the War Department for help in its quest for an even more favourable tariff policy.

The last years before the Second World War were marked by a struggle between the Department of Justice and those who wanted to protect the company on the basis that it was the only repository of the knowledge needed to make the metal in sufficient quantities. It also helped that the President had not made up his own mind about the economic policies to pursue during the late new Deal. When frustrated by the ‘Roosevelt Recession’ of 1937–1938 he had directed the Department of Justice to renew the efforts to bring down the most conspicuous monopolists: “Get plenty strong. We’re going into training for the heavyweight championship”.<sup>35</sup> Despite such outbursts, Roosevelt remained sceptical about the value of a strong antitrust effort, and did not see it as central to his economic programs.<sup>36</sup> In this policy vacuum, it fell to the newly appointed Assistant Attorney General in charge of the Antitrust Division to provide leadership. Despite what one could expect from a man who had recently ridiculed antitrust as an empty ritual, Thurman Arnold managed by sheer force of his boisterous personality to invigorate the Antitrust Division.<sup>37</sup> Even though Arnold lacked the full backing of the President, he went after the scalp of Alcoa and other monopolists with gusto.

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34 Koistinen, *Planning War*, 116–120.

35 H. W. Brands, *Traitor to His Class; The Privileged Life and Radical Presidency of Franklin Delano Roosevelt* (New York: Doubleday, 2008), 492.

36 Wilson Miscamble, “Thurman Arnold Goes to Washington: A Look at Antitrust Policy in the later New Deal,” *The Business History Review* vol.56 no.1 (Spring, 1982): 1-15; Gene Gressley, “Thurman Arnold, Antitrust, and the New Deal,” *The Business History Review* vol.38 no.2 (1964): 214–231.

37 Thurman Arnold, *The Folklore of Capitalism* (New York: Blue Ribbon Books, 1941), 211. This book was first published in 1937.

But while the government and Alcoa locked horns in the courtroom, Alcoa could find comfort in other political developments. Seeking a deterrent to German adventurism, Roosevelt was temporarily converted to the cause of air power in fall 1938, and asked Assistant Secretary of War Louis Johnson to draw up plans involving the creation of an air force of 10,000 planes, together with an expansion of the productive capacity of American industry to 25,000 planes a year. A combination of isolationist outrage and Johnson's over-enthusiastic proposal to implement the President's wishes destined the plan for the dustbin. However, the mere contemplation of such a tremendous expansion of the American air force was impossible without a realization of the need for substantial amounts of aluminium.<sup>38</sup> Alcoa eagerly availed itself of this shift in politico-military thinking to strengthen its position by giving advice on the armed forces' requirements of aluminium and quashing any suggestions that the monopolist could not provide all the necessary metal. As the Army-Navy Munitions Board undertook a study of aluminium and bauxite availabilities, the responsible subcommittee was full of Alcoa's representatives, such as its Director of Research and the head of the Alcoa subsidiary Surinaamsche Bauxite Maatschappij. Not surprisingly it concluded that the stocks of metal at hand and Alcoa's smelting capacity were sufficient to guarantee American self-sufficiency in any emergency.<sup>39</sup> Two years later it would be painfully evident that the supply and requirement figures worked out with Alcoa's assistance were completely worthless.<sup>40</sup> But in the meantime, the Army-Navy Munitions Board took aluminium off the critical list in early 1940, and when it made its recommendations for purchases of several types of raw materials for the stockpile in May, aluminium was conspicuously absent.<sup>41</sup>

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38 Keith McFarland and David Roll, *Louis Johnson and the Arming of America* (Bloomington, Indiana University Press, 2005), 62–65; John Huston, ed., *American Airpower Comes of Age; General Henry H. "Hap" Arnold's World War II Diaries, vol. I* (Maxwell: Air University Press, 2002), 81.

39 Report of the sub-committee on Aluminium and Bauxite to the Mineral Advisory Committee to the Army and Navy Munitions Board, 7 August 1939, quoted in United States Civilian Production Administration, *The Aluminium Policies of the War Production Board and Predecessor Agencies, May 1940 to November 1945* (Washington: Government Printing Office, 1946), 4, 9. The final figures were provided by Alcoa alone.

40 United States Bureau of the Budget, *The United States at War* (Washington: Government Printing Office, 1946), 81. An OPM memorandum from August 1941 expressed its disbelief that the estimates of total military requirements for a war of 2 years duration amounted to only 250,000 tons of aluminium for an army 4 million man strong.

41 H. K. Rutherford to Harry Hopkins, 14 May 1940, Franklin Delano Roosevelt Presidential Library (henceforth FDRL), Harry L Hopkins Papers\Box 302\Book 2, Stockpiling Materials; United States Army and Navy Munitions Board, *Strategic and Critical Raw Materials* (West Point: Department of Economics, Government and History, 1940), 15.

Alcoa had manoeuvred itself into an ideal position. Its metal was sufficiently important that steps to break up the company could not lightly be contemplated, but the supply appeared sufficiently robust to make it unnecessary to expand the productive capacity beyond what the company thought post-war markets could absorb. Even after the launch of the antitrust case in 1937, government officials who strongly opposed economic concentration could only gnash their teeth. Alcoa continued to bask behind the tariff walls while controlling the imports of foreign metal through Alcan. Rather than trying to appease the courts by moderation, Alcoa raised its prices in 1937, and in 1939 it recorded the greatest profits in company history.<sup>42</sup> Despite the irritation of the ongoing antitrust trial, Alcoa appeared poised to reap the spoils of war as a monopolist yet again.

### **The Struthionine Strategy**

As another great war erupted in Europe for the second time in a generation, Alcoa could again look forward to sound profits and close cooperation with the government. While it had undertaken its own expansion program, there were many who doubted whether it would be sufficient to match the German output. Beginning in 1934, the Nazi government had overseen an expansion that had turned Germany into the world's largest producer and fabricator of aluminium by 1937.<sup>43</sup> The German example did not change Alcoa's fundamental commitment to avoiding over-expansion, a strategy shaped by the dreary experiences of the Depression years. When journalists pointed out that the American war program depended on Alcoa's production and questioned whether they had sufficiently expanded their capacity, Davis chastised them: "It was extremely unfortunate that libelous, vicious and misleading articles should be allowed to foster unwarranted fears among the people [...] and they thus play directly into the hands of Hitler and Mussolini". To anyone who doubted that the United States had enough aluminium, Davis pointed out that that Alcoa had completely satisfied the Council of National Defense as to its ability to take care of all the country's needs. If any additional expansion was needed, Alcoa was "financially able but can and will do so without soliciting any government assistance whatever."<sup>44</sup> Alcoa officials even used the courtroom

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42 United States Temporary National Economic Committee, *Investigation of Concentration of Economic Power* (Washington: Government Printing Office, 1940).

43 US Bureau of Mines, *Mineral Raw Materials* (New York: McGraw-Hill Book Company, 1937), 3.

44 Arthur Vining Davis to Marshall Field, 13 November 1940, Heinz History Center, Pittsburgh,

stand during the antitrust trial as a platform to stress its ability to deliver all the metal that could be needed, thereby making the argument that there was no need to break up the monopoly for reasons of national security.

In its efforts to avoid the dangers of over-expansion and tarring its opponents with the ‘unpatriotic’ brush, Alcoa was being helped by the fact that the Roosevelt administration was jerry-building the administrative framework for mobilization of the domestic economy. To direct the mobilization effort Roosevelt brought in a substantial number of dollar-a-year men, industry executives who remained on the payrolls of their companies while filling positions in the federal government for a symbolic remuneration.<sup>45</sup> Beyond their natural propensity to rely on their old contacts and refrain from making dispositions that could hurt their own companies, the dollar-a-year men also operated on the assumption that established firms were more likely to deliver the goods on time.<sup>46</sup> This led to a great concentration in the letting of government contracts that was by no means unique for the aluminium industry. The Raw Materials Division of the National Defense Advisory Commission (NDAC) was led by Edward Stettinius, who as former chairman of the board of U.S. Steel was definitely not adverse to big business. Exuding optimism over the cooperation of industry executives and the acquisition of strategic materials in general, all through the fall of 1940 Stettinius echoed Alcoa’s line that it would be able to take care of all military and civilian requirements.<sup>47</sup> As the scepticism about the sufficiency of Alcoa’s expansion mounted, Stettinius assured both the President in private and the public during press conferences that the supply was adequate. Two days after one such event, he wrote to Davis to inquire whether Alcoa was pleased with the publicity he was giving the company and thanked them for financing the necessary expansion themselves.<sup>48</sup>

The policy of leaving everything to the monopolist could be justified as long as Alcoa could provide sufficient quantities of metal. But in 1940, when Alcoa itself

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Records of the Aluminium Company of America\MSS #282\ Box 75\folder 3. Thanks to Espen Storli for providing me with this source.

45 Bruce Catton, *The War Lords of Washington* (New York: Harcourt, Brace, 1948).

46 John Miller, “Military Procurement Policies: World War II and Today,” *The American Economic Review* vol.42 no.2 (May 1952): 453–475.

47 Edward Stettinius, Progress Report, PR 32, 13 July 1940, FDRL, National Defense Advisory Commission\Box 9\Industrial Materials – Stettinius, folder 2 of 2. Stettinius also advocated the adequacy within the administration. A chart prepared in August 1940 over danger points in supply of industrial materials listed aluminium as potentially deficient under a maximum war effort, but not under the current program. Stettinius to Hopkins, 12 August 1940, FDRL, Harry L Hopkins Papers\Box 302\Book 2, Stockpiling Materials.

48 Civilian Production Administration, *Aluminium Policies*, 20-30.

told the aircraft companies to expect shortages to appear in 1941, even Alcoa's allies in the armed forces began growling. There was a growing sensation within the NDAC that the mobilization agency was taken for a stroll down the garden path by Alcoa. Stettinius on the other hand had his head firmly buried in the sand. He steadfastly clung to his belief that there were no serious shortages of aluminium supplies for aircraft or other military items, and that all fears stemmed from lack of understanding of the programs for increasing the capacity of the aluminium industry. Even in December 1940, during the last week before it was replaced by a new mobilization agency with broader powers, the NDAC echoed Davis in labelling the public anxiety as unfortunate, without basis in fact, and serving no patriotic purpose.<sup>49</sup>

Shortages were already appearing however, and at this stage it became apparent that some kind of formal priority control was needed to direct the increasingly scarce aluminium where it was most needed. Alcoa had already informally introduced preferences to assure deliveries for military production, and Stettinius now proposed formally vesting these powers in Alcoa. This would put Davis, who was still fighting monopoly charges filed by the government, in the position to determine which of Alcoa's competitors in fabrication would get the metal, using the authority of the government itself. Such a proposal naturally abhorred the New Dealers in the administration on grounds of principle. Given Alcoa's track record, Roosevelt himself expressed scepticism towards having the priorities fixed by anyone with close ties to Alcoa.<sup>50</sup>

While the administration gradually was coming to the realization that Alcoa could not deliver sufficient amounts of aluminium for the war effort, Alcoa was being challenged on its home turf by the Reynolds Metals Company, a fabricator attempting to integrate backwards into smelting. The company founder, Richard Reynolds, liked to recount the story of how he went to Europe searching for aluminium for his rolling mills and presses, but found that the Germans were pouting all available metal into their aviation program. Fearing the German lead in the production of war metals, Reynolds begged Davis to expand Alcoa's productive capacity only to have Davis scoff at his proposal.<sup>51</sup> Reynolds decided to get into smelting himself, but was unable to secure financing. Eventually he found a staunch ally

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49 NDAC Press Release PR 330, 29 December 1940, FDRL, National Defense Advisory Commission\Box 16\Aluminium.

50 David Ginsburg to James Rowe, 21 January 1941, FDRL, Franklin Delano Roosevelt, Official File\OF 4314 Aluminium Priorities Board.

51 Richard Reynolds, *Opportunity in Crisis: The Reynolds Metals Story* (New York: Newcomen Society of America, 1956).

in Senator Lister Hill, a Democrat who strongly supported public development of electric power, military readiness measures and a strong air force. More importantly, like any Congressman worth his salt, Hill was especially fond of sponsoring industrial development in his native Alabama. Hill assisted Reynolds in obtaining electricity from the Tennessee Valley Authority, and also put Reynolds in touch with the Reconstruction Finance Corporation (RFC).<sup>52</sup> Reynolds, who had known the importance of proximity to power, christened his new facility Listerhill as a gesture of gratitude.

Reynolds Metals would for many years afterwards suffer from accusations that it was an incubator firm, a competitor created and sustained by the Democratic Party as a means to pierce the monopoly of Alcoa with its well-known Republican affiliation.<sup>53</sup> The RFC did not however take up the case on its anti-trust implications or its importance for national defence. Under the stewardship of the conservative Texan banker Jesse Jones, the RFC could hardly be described as a hotbed of reforming firebrands. Jones was committed to sound banking as opposed to spending for military and political purposes, and his greatest pride was the balance sheets of the RFC.<sup>54</sup> Jones also got along very well with Arthur Davis of Alcoa and his brother Edward Davis of Alcan, and would later in the war give very favourable contracts to both companies, causing much consternation among the trustbusters.<sup>55</sup> While Alcoa and Alcan were in the position to drive hard bargains with the RFC, Reynolds was very much the solicitor and Jones knew it. He forced Reynolds to mortgage everything he owned, and even went so far as demanding an 'Oklahoma guarantee,' which meant that Reynolds had to add a sentence to the loan agreement saying "And if I don't pay this note I am an S.O.B".<sup>56</sup> Reynolds not only had to pay higher interests on its government loans than Alcan did for the Shipyards project but even paid

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52 Virginia Van Der Veer Hamilton, *Lister Hill; Statesman from the South* (Chapel Hill: The University of North Carolina Press, 1987), 96–7.

53 Robert Sheehan, "Look at the Reynolds Boys Now," *Fortune*, August 1953, 106–178. However, Alcoa was not without political contacts in the Democratic Party either.

54 Clifford Durr, "The Defense Plant Corporation" in *Public Administration and Policy Development*, ed. Harold Stein (New York: Harcourt, Brace, 1952), 294–312.

55 Ickes went so far as to suggest to Roosevelt in private that he had been duped by Jesse Jones. Harold Ickes to Franklin Delano Roosevelt, April 13, 1943, Library of Congress\Harold Ickes Papers\Box 93\Aluminium. Ickes a few years later labeled the Alcan contract "embarrassingly unbusiness-like." Harold Ickes, The Shipyards Story, undated manuscript, Library of Congress\Harold Ickes Papers\Box 399\Aluminium 1950–51.

56 Jesse Jones, *Fifty Billion Dollars, Thirteen Years with the RFC, 1932–1945* (New York: Macmillan, 1951), 328. See also Bascom Timmons, *Jesse H. Jones* (New York: Henry Holt and Company, 1956), 298f. This story was also referred to by Richard Reynolds during the Truman hearings.

more than Alcoa for the power it purchased from the Tennessee Valley Authority.<sup>57</sup>

The difficulties Reynolds had in securing financial support stemmed in large part from the close ties between Alcoa and the conservative businessmen running the mobilization effort. A year later the influential journalist I.F. Stone revealed that pressure had been brought to bear on Jesse Jones to refuse the RFC loan, and that Averell Harriman and a representative of the War Department went to Secretary of the Interior Harold Ickes to make him refuse to give any publicly owned power to Reynolds.<sup>58</sup> As it turns out, it was none other than William Batt of the NDAC Raw Materials Division who approached Jones and raised doubts about the reliability of Reynolds as well as its ability to complete the smelter.<sup>59</sup> Batt did so even though NDAC was only concerned with industrial mobilization for defence, and the RFC had categorized the Reynolds loan as an ordinary business transaction. Harriman was also joined in his entreaties on Alcoa's behalf by no less august figures than Undersecretary of War Robert Patterson and ultimately the Secretary of War Henry Stimson himself.<sup>60</sup> They got nowhere. The curmudgeonly Ickes seems to have relished the chance to snub both the dollar-a-year men at NDAC and the two Republicans in charge of the War Department, and therefore kept the development of electric power at Bonneville in the Pacific North-west outside Alcoa's control.<sup>61</sup>

As soon as the Reynolds deal was struck, Alcoa pursued a two-pronged strategy to maintain its monopoly. First, to signal its intention to dominate the new company and eventually squeeze it out of business, Alcoa cut its prices. Reynolds subsequently was never able to turn a profit from ingot during the war, but instead had to rely on making its money on fabrication. Secondly, Alcoa's attorneys argued in court that they could no longer be charged with having a monopoly, seeing as there was another firm that had entered the industry as bold as you please. A week later the trial was brought to a close, although a year would pass before a verdict was handed down. In late 1941 Judge Caffey decided the case in favour of Alcoa and brought an end to the threat of dissolution under the monopoly charges.<sup>62</sup>

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57 Lister Hill to Roosevelt, February 11, 1943, FDRL\Franklin Delano Roosevelt, Official File\OF5633.

58 I. F. Stone, *Business as Usual: The First Year of Defense* (New York: Modern Age Books, 1941), 26–36, 89.

59 Civilian Production Administration, *Aluminium Policies*, 14 and 14a.

60 Harold Ickes, *Lowering Clouds: The Secret Diary of Harold L. Ickes, vol.III, 1939-1941* (New York: Simon and Schuster, 1955), 431, 434.

61 Harold Ickes, 7 June 1941, Library of Congress\Harold Ickes Papers\Box 93\Aluminium.

62 *New York Times*, 7 October 1941.

That Alcoa was acquitted was not surprising, as antitrust by then had been put on the backburner for the duration of the war. Congressmen sympathetic to Alcoa had called a moratorium on the controversy between “so-called monopolies” and the administration: “this is no time to squabble over monopoly nor attempt to place blame, when planes are so sorely needed”.<sup>63</sup> As Roosevelt himself wrote to the Secretaries of War, Navy and the Attorney General, the war effort must come first, and everything else had to wait. Only direct fraud should be prosecuted at once, since if the allies lost “antitrust, as indeed all American institutions, would become quite academic.”<sup>64</sup> While Thurman Arnold filed an appeal, it was allowed to languish as long as the war lasted. Arnold himself was kicked upstairs to the Court of Appeals for the District of Columbia, while the Department of Justice had to resolve itself to fight big business and cartels by using its knowledge of international cartels to pick bombing targets in Axis countries.<sup>65</sup>

### **The Truman Hearings: Fiddling on Capitol Hill?**

While antitrust was no longer the dominant factor in the relationship between the government and Alcoa, the failure of the latter to provide the metal necessary for mobilization strained the relationship to the utmost. Harold Ickes fumed that “when the story of this war comes to be written, it may have to be written that it was lost because of the recalcitrance of the Aluminium Co. of America”.<sup>66</sup> By spring 1941 the crisis was sufficiently severe to warrant an investigation by the powerful Senate Special Committee to Investigate the Defense Effort, also known as the Truman Committee. Senator Harry Truman, no friend of big business, worked hard to rectify problems stemming from complacency, fraud or laxity in the defence effort.<sup>67</sup> The Truman hearings revealed the significant extent to which the NDAC, and its successor, the Office of Production Management (OPM) not

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63 Strategic Materials, Interim Report pursuant to H.Res 162, 77<sup>th</sup> Cong., 1st session, House of Representatives 21 July 1941, NARA, RG 169, Records of the Foreign Economic Administration, Office of the Administrator, Records Analysis Division\Historical monographs\Box 1\Chap II – Early measures.

64 Roosevelt to the Secretary of the Navy, War and Attorney General, 20 March 1942, FDRL, Franklin Delano Roosevelt, Official File\OF 932 Salvage 1941–1943.

65 Thurman Arnold, Memorandum on the Board of Economic Warfare Work of the Antitrust Division, 11 August 1942, FDRL, Francis Biddle Papers\Box 1\Antitrust cases and cartels.

66 Minority Report, Section IV, Strategic Materials, Interim Report pursuant to H.Res 162, *Supra note III*.

67 Donald Riddle, *The Truman Committee: A Study in Congressional Responsibility* (New Brunswick: Rutgers University Press, 1964); Roy Jenkins, *Truman* (New York: Harper and Row, 1986), 49–52.

only relied exclusively on Alcoa for information, but also discouraged the entry of other companies or the development of alternative processes.<sup>68</sup>

On the stand, William Batt, by now the OPM Deputy Director of Production, conceded that there in fact existed a tremendous shortage of aluminium, as the military requirements alone exceeded the previous year's estimates for civilian and military production combined. A representative of the NDAC was also taken to task by the Senators for stating that there was surplus metal for civilian needs in the fall of 1940, at a time when Alcoa knew it was unable to fill any civilian orders. The Committee also heard the testimony of Alcoa Senior Vice President G.R. Gibbons, but was sufficiently uneasy about him that it introduced the requirement of an oath to tell the truth before his appearance. Gibbons was forced to admit that Alcoa knew it was unable to meet civilian requirements, but claimed that Alcoa had not been consulted by the NDAC about the optimistic press releases. Obviously, the oath was not entirely sufficient. Grenville Holden, the OPM consultant on aluminium, was especially hard pressed on why he had discouraged other entrants when the monopolist was failing to keep up with requirements. Holden replied that it was all about getting the metal from the one company with the proven ability to produce, monopoly or no monopoly. It also transpired that Alcoa's engineers had led Holden to believe that the technical barriers to entry were far higher than they actually were. The hearings ended with a scathing indictment delivered by the Chairman of the Federal Power Commission who accused the company of simply sitting on extensive water right to keep them off the market, thus hindering expansion for war production.<sup>69</sup>

The Truman hearings are significant because they reveal the extent of the struthonine strategy pursued by the NDAC and later the OPM. Alcoa officials would later claim that it did not become clear that a government financed program was necessary before the summer of 1941, while Alcoa's contemporary historian also blamed the slowness of the country itself to realize what demands the war would make on the American economy.<sup>70</sup> Such arguments are dispelled by the revelation

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68 Charlotte Muller, "The Aluminium Monopoly and the War," *Political Science Quarterly* vol.60 no1 (March 1945): 14–43.

69 This section is based on the Verbatim Record of Proceedings of Senate Committee Investigating National Defense Program, 12 May 12 1941, Harry S Truman Library, Independence (Henceforth HSTL), RG 46, Senate Special Committee to investigate the National Defense Program\Box 2\Verbatim Record of Proceedings, May 6 – 12, 1941 and *Idem.* May 14 and 15 in HSTL, RG 46, Senate Special Committee to investigate the National Defense Program\Box 2\Verbatim Record of Proceedings, May 12–20, 1941.

70 Thomas Jolly, "The Recent Expansion of the Aluminium Industry," *Science*, New Series, vol.96 no.2480 (Jul. 10, 1942): 29–32; Carr, *Alcoa*, 250.

that Alcoa knew it would not be able to supply aluminium for civilian production already in 1940. As for its ability to expand, George Smith on the other hand remarks that the company could neither fully afford to expand sufficiently nor fully comprehend the need to do so.<sup>71</sup> This underplays the importance of Alcoa's efforts to keep other companies out of the smelting business however, and only makes the government's acquiescence even more serious. The Truman committee on the other hand concluded that Alcoa had finagled the OPM into believing the supply was adequate in order to discourage others from entering the business, despite its own lack of a clear-cut plan for taking care of the shortages.

At the height of the controversy over Alcoa's monopoly during the Second World War, Oscar Ewing, Alcoa's legal counsellor and the assistant chairman of the Democratic National Committee, wrote to Vice President Henry Wallace: "The size of the Aluminium Company of America is utterly unimportant if Hitler wins. Nero fiddled while Rome burned. Some people fiddle with the aluminium monopoly issue while civilization is being destroyed."<sup>72</sup> Placing the responsibility was not the chief aim of the Truman committee however. The discussions were not over the evil of the monopoly *per se*, but of the effects of Alcoa's attempts to retain it. Size was less important than efficiency, and even Thurman Arnold had made it clear that his efforts were not directed against any supposed evil of bigness, but rather the inefficiency that marked industries where monopolies kept production down in order to maintain price levels.<sup>73</sup> The Truman hearings, when seen in conjunction with the archival evidence, make it clear that Alcoa was in fact one such monopoly.

The historian Wyatt Wells claims that discussions about Alcoa's monopoly delayed the government's decision to get involved in the expansion of the aluminium industry.<sup>74</sup> But by convincing the mobilization agencies to discourage new entries since Alcoa itself would carry the burden of providing the additional capacity, it is evident that it was Alcoa that delayed the involvement of the government. Furthermore, the hearings served to highlight the fact that even with Alcoa's OPM-supported expansion program and the dollar-a-year-men's reluctant acceptance of Reynolds Metals, the United States still faced the prospect of an annual estimated

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71 Smith, *Transformations of Alcoa*, 192.

72 Civilian Production Administration, *Aluminium Policies*, 72, n120. Ewing would also later claim that Ickes and Attorney General Francis Biddle had been more interested in defeating Alcoa than in defeating Hitler. HSTL\Oral History, Oscar Ewing.

73 Thurman Arnold, *The Bottlenecks of Business* (New York: Reynal & Hitchcock, 1940).

74 Wyatt Wells, *Antitrust and the Formation of the Postwar World* (New York: Columbia University Press, 2002), 63.

deficit of 300,000 tons, or 25% of the monthly requirements, in the peak year in 1942. The Truman committee concluded that the government would have to put up the money for a vast new expansion program, including power and any other facilities, with the government holding title to the plants.<sup>75</sup> Instead of causing delay, the immediate effect of the Truman hearings was to strengthen both the conviction that further expansion of the aluminium industry was urgent, and that government financing was necessary to get sufficient production for the defence program.<sup>76</sup>

### **The Levee Breaks: The Defense Plant Corporation**

The introduction of government financing would provide the opportunity to alter the composition of the aluminium industry quite radically, but such an outcome was by no means predetermined. While disposal of the government-owned plants were eventually used to break the monopoly, Alcoa still retained the advantages inherent in its position as the only proven supplier of aluminium. The powers necessary for a government-financed expansion had been given to the RFC in June 1940. RFC subsequently created a subsidiary Defense Plant Corporation (DPC) to provide private industry with the cash to construct facilities for defence production.<sup>77</sup> After the Truman hearings the OPM turned to the RFC to provide the cash to build a great number of smelters in a hurry. The DPC in turn had to approach Alcoa and Arthur Davis to ask for the technology. Since only Alcoa could provide the know-how, Davis could drive a hard bargain. Additionally, as befitted one of Jesse Jones' fiefdoms, the DPC did not pay any particular attention to the antitrust implications either. The resulting agreement between Jones and Davis became so immensely profitable for the company that it would eventually turn into a political hot potato. Some of the more generous provisions eventually had to be removed to placate Truman and an increasingly hostile public opinion.<sup>78</sup>

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75 For the complete text of the Committee report on aluminium see Verbatim records of the proceedings of Senate Committee Investigating National Defense Program, 27 June 1941, HSTL, RG 46, Senate Special Committee to investigate the National Defense Program\Box 3\Verbatim Record of Proceedings, June 27–July 7 1941.

76 Business and Defense Services Administration, *Aluminium*, II–10.

77 Gerald White "Financing Industrial Expansion for War: The Origin of the Defense Plant Corporation Leases," *The Journal of Economic History* vol.9 no.2 (Nov., 1949): 156–183.

78 I. F. Stone, "Making Defense Safe for Alcoa," *The Nation*, 4 October 1941. Ickes called it a damnable contract, prejudicial to the interests of the United States. *Time*, November 10, 1941. In his memoirs Truman took credit for causing the most favourable sections of the contracts to be revised in the fall of 1941. Harry S Truman, *Memoirs of Harry S Truman: vol.1, Year of Decisions* (New York: Doubleday & Company, 1955), 176.

Alan Milward asserts that the strategy of the American government was to take the Reynolds Metals Company and shower it with favours in order to create a new producer of primary metal of an equal size to rival Alcoa.<sup>79</sup> That is manifestly wrong. Alcoa remained the sole trusted source of technical and engineering advice for the OPM, and reaped many advantages from its position. The Alcoa chief engineer helped the OPM pick the sites of the DPC aluminium smelters, without consulting the engineers of the Bonneville Power Administration, despite the fact that the Bonneville engineers could claim a certain expertise when it came to provision of power in the Northwest.<sup>80</sup> Alcoa was also to build the plants, even if other companies could win the contracts to operate them. This proved unacceptable to several companies interested in entering the industry, such as the Bohn Aluminium and Brass Corporation as well as the Union Carbide and Carbon Corporation. Consequently the only new entry was the Olin Corporation which operated a puny smelter at Tacoma. Alcoa was also accused of picking plant sites that would not remain competitive in a post-war environment.<sup>81</sup> While these allegations were vigorously denied, the archival evidence demonstrates that the OPM was well aware that Alcoa had chosen plant sites for Bohn and Union Carbide that could not be operated profitably after the end of the war.<sup>82</sup> It also took the direct appeal of Secretary of Interior Ickes to President Roosevelt to make sure that the contracts did not give Alcoa the option to purchase the DPC plants after the war.<sup>83</sup> If these options had not been removed, Alcoa could have emerged from the war even more firmly entrenched as a monopolist.

Despite the accusations against Alcoa and the mobilization agencies that had relied on it, Pearl Harbour drove Alcoa and the government into an even warmer embrace. The government at first failed to realize how much more aluminium would be needed to defeat the Axis, and thought some minor additions to the capa-

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79 Alan Milward, *War, Economy and Society, 1939-1945* (Los Angeles, University of California Press, 1979), 70.

80 Bonneville Power Administration, Press Release N-635, 20 September 1941, FDRL, Herbert Marks Papers\Box 41\Power – Aluminium.

81 Harold Stein, “The Disposal of the Aluminium Plants” in *Public Administration and Policy Development* ed. Harold Stein (New York: Harcourt, Brace 1952), 313–362.

82 Melvin deChazeau to Leon Henderson, 15 September 1941, 2 October 1941 and 4 November 1941, FDRL, Leon Henderson Papers\Box 31\Aluminium expansion. Union Carbide had been authorized to operate the Spokane smelter on September 26, 1941, for 30,000 tons and Bohn Aluminium, the Los Angeles smelter, for 35,000 tons, and the Olin Corporation for the 15,000 ton smelter at Tacoma.

83 Gerald White, *Billions for Defense: Government Financing by the Defense Plant Corporation during World War II* (Tuscaloosa: University of Alabama Press, 1980), 42–44.

city already planned would be sufficient.<sup>84</sup> But it was soon evident that the United States would need far more aluminium in order to bring the war to the Japanese and German homelands, and there was no time to quibble over the distribution of the contracts. In the meantime Roosevelt had replaced the existing organizational structure with a War Production Board (WPB), a fully fledged mobilization agency with potentially vast powers. After a mere month of existence the WPB had assigned to Alcoa the responsibility for building a staggering 320,000 tons of new capacity. The government's continued reliance on Alcoa was further cemented with the creation of a Joint Aluminium Committee to establish the military requirements of aluminium, composed by a representative of Alcoa, the WPB and both the armed services.<sup>85</sup> Violent protests ensued from Reynolds and many companies that utilized aluminium. Even Roosevelt at first raised a critical eyebrow over the fact that all the new capacity was to be operated by Alcoa, but relented when Jesse Jones informed him that it was per the instructions of the War Production Board. Jones himself discounted the President's misgivings about the monopoly implications as evidence that "some meddler had been talking to him."<sup>86</sup>

The overall strategy had crystallized, and for the remainder of the war the government would rely on Alcoa to build and operate the aluminium plants needed for the war effort. But until the smelters came on stream, it was necessary to deal with the shortages of aluminium and other metals. Even the armed forces came around to accepting the necessity of slowing down the production drives in order to assure the best possible distribution of scarce raw materials.<sup>87</sup> During the summer and fall of 1942 a Controlled Materials Plan was devised and implemented by the mobilization agencies to direct the ebb and flow of the American economy by controlling the supply of copper, steel and aluminium. This program, which Robert Cuff calls the most ambitious attempt to direct the American economy ever undertaken, ensured that aluminium would be diverted to production of airplanes until the DPC plants were completed.<sup>88</sup> The expansion programs eventually brought

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84 Isador Lubin to Harry Hopkins, 2 January 1942, FDRL, Harry L Hopkins Papers\Box 327\Book 7, Stockpiling.

85 Business and Defense Services Administration, *Aluminium*, II-11.

86 Jones, *Fifteen Billion Dollars*, 327, 329; Stein, *Disposal*, 318. For a later and unsuccessful attempt by Roosevelt to advance the fortunes of Reynolds, at the behest of Truman and Lister Hill, see Roosevelt to Jones, 18 November 1944 and Jones to Roosevelt, 25 November 1944, FDRL, Franklin Delano Roosevelt, Official File\OF5633.

87 Somerwell to Nelson, 15 May 1942; Patterson, Forrestal and Eberstadt to Don Nelson, 29 June 1942, FDRL, Harry L Hopkins Papers\Box 327\Book 7, Stockpiling.

88 Robert Cuff, "From the Controlled Materials Plan to the Defense Materials System 1942-1953," *Military Affairs* vol.51 no.1 (Jan 1987): 1-6.

American aluminium production to its peak by 1943, enabling the WPB to cut back the production in the least cost-effective plants. The controls remained for the duration of the war.

**Table 2.1 The DPC expansion program: alumina and aluminium plants<sup>89</sup>**

Alumina	Operator	Plant site	Capacity in tons
	Alcoa	Hurricane Creek, Arkansas	777,500
	Alcoa	Baton Rouge, Louisiana	500,000
Aluminium	Operator	Plant site	Capacity in tons
	Alcoa	Burlington, New Jersey	54,000
	Alcoa	Jones Mills, Arkansas	72,000
	Alcoa	Los Angeles, California	90,000
	Alcoa	Queens, New York	144,000
	Alcoa	Riverbank, New York	53,000
	Alcoa	Spokane, Washington	108,000
	Alcoa	St. Lawrence, New York	54,000
	Alcoa	Troutdale, Oregon	72,000
	Olin Corporation	Tacoma, Washington	21,000

### **“Every person who shall monopolize ... shall be deemed guilty”?**

In 1943, with the Axis armies on the defensive and surplus material cluttering the docks and warehouses, Washington officialdom began turning its attention to the post-war organization of the American economy. Roosevelt instructed his administration to start thinking about surplus disposal in part to stave off challenges from Republicans in Congress. Particularly salient was the question of how to dispose of the plants and facilities financed by the government, as the government in almost all cases either held title or the right to acquire title

<sup>89</sup> Adapted from Business and Defense Services Administration, *Aluminium*, VII-18. The figures were given in million lbs and are converted to short tons for the sake of simplicity. For an alternative set of figures, see John DeMille, *Strategic Minerals; A Summary of Uses, World Output, Stockpiles, Procurement* (New York: McGraw-Hill, 1946), 39.

to them.<sup>90</sup> On the other hand, many companies had received contracts which contained options to buy or lease the facilities they had constructed on the government's behalf at very advantageous prices. The Department of Justice in particular questioned the legality of these options, as it felt the administration should be able to dispose of these plants in a way that would allow newcomers into established fields.<sup>91</sup> Suffice to say, that sentiment differed strongly from the opinion of many of the dollar-a-year men who felt that the war production effort should not be allowed to upset the established patterns of industry.

The aluminium industry stood out as a prime candidate for an industry where the prewar patterns could be altered. The appearance of surpluses of aluminium had somewhat reduced the ire against Alcoa, but there was still a widespread sense that the monopoly had been harmful to the war effort. Alcoa had continued to prosper with impunity since the Truman hearings, but in early 1944 the WPB declared that the supply of aluminium was sufficient for future war uses.<sup>92</sup> Thus emboldened, Congress enacted a measure to reopen the case against Alcoa. Since the Supreme Court was unable to muster a quorum, Congress enabled the U.S. Court of Appeals for the Second Circuit to hear the government's 1942 appeal. The case was argued in January 1945, and a decision was handed down on March 12, 1945. The court reversed the verdict of 1942, and found Alcoa guilty of possessing an illegal monopoly under Section 2 of the Sherman Act. The question of intent was rendered moot by the fundamental premise of the ruling that "No monopolist monopolizes unconscious of what he is doing."<sup>93</sup>

The conviction of Alcoa has been hotly debated ever since, and George David Smith also accuses judge Learned Hand of bending over backwards to align his decision with the powerful sentiment of antitrust.<sup>94</sup> That explanation is unconvincing, as many monopoly sector firms had been allowed to materially strengthen their position during the war, without the increasing concentration of power being matched by any corresponding activism on the behalf of the government.<sup>95</sup> Ellis Hawley has concluded that by this stage "the 'golden days' of antitrust enforce-

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90 Milton Katz to Donald Nelson, 19 January 1943, HSTL, Papers of Milton Katz\Box 15\War Production Board File, Postwar Plans.

91 Attorney General Francis Biddle to Roosevelt, 22 May 1943, FDRL, Oscar Cox Papers\Box 68\War Materials, Acquisition and financing of war plants, 1943.

92 DeMille, *Strategic Minerals*, 38.

93 Irwin Stelzer, *Landmark Antitrust Cases: Landmark Decisions* (Illinois: Irwin, 1986), 19–27.

94 Smith, *Transformations of Alcoa*, 211–12.

95 Gregory Hooks, *Forging the Military-Industrial Complex; World War II's battle of the Potomac* (Chicago: University of Illinois Press, 1991), 197.

ment, already tarnished and corroded, had come to an end.”<sup>96</sup> Anti-Alcoa sentiment on the other hand, remained strong. The company had only partially redeemed itself through designing, building and operating the DPC plants on behalf of the government, and a judge on an antitrust crusade could easily have opted for dissolution. But instead of breaking up Alcoa, the court left the job of creating competition in the aluminium industry to the government, recognizing the enormous transformative potential of the DPC plants. As the court concluded: “Dissolution is not a penalty, but a remedy; if it the industry will not need it for its protection, it will be a disservice to break up an aggregation which has for so long demonstrated its efficiency.”<sup>97</sup> While Ayn Rand called the conviction of Alcoa in 1945 the “most shocking court decision in this grim progression”, referring to the rulings under the antitrust laws, it is evident that this decision can hardly be construed as an attempt to appease even the least militant among the trustbusters.<sup>98</sup>

The Department of Justice, which still believed in dissolution suits as the best way to break up the powerful corporate empires, also recognized that surplus property disposal was of more immediate importance at that particular juncture. Not only would liquidation of those assets determine the future structure of the industry, but the Attorney General also had an advisory role when it came to the disposal of surplus property.<sup>99</sup> Both the Roosevelt and the subsequent Truman administrations therefore resolved themselves to bring the monopoly to an end through other means. As it would turn out, the disposal of the DPC plants would prove a far more effective antidote to monopoly than almost a decade of litigation.

## **The Disposal Program: The Monopoly is Broken**

The political struggle over how to dispose of the surplus property after the war had ebbed and flowed like the armed conflict that had spawned it. One of the key questions was whether the government should sell all surplus plants to the highest bidder as quickly as possible or whether the disposal program should be used to further other ends. After a protracted tug of war Congress passed the Surplus

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96 Ellis Hawley, *The New Deal and the Problem of Monopoly, A Study of Economic Ambivalence* (Princeton: Princeton University Press, 1966), 443.

97 Stelzer *Landmark Antitrust Cases*, 19–27; Carr, *Alcoa*, 232.

98 Ayn Rand, “America’s Persecuted Minority: Big Business” in *Capitalism; The Unknown Ideal*, ed. Ayn Rand (New York: The New American Library, 1967): 44–62. Quotes appear on page 57.

99 Francis Biddle to Walton Hamilton, 22 February 1945, FDRL, Francis Biddle Papers\Box 1\Anti-trust cases and cartels, 1945 and undated.

Property Act in October 1944, creating the Surplus Property Board. The Surplus Property Board was charged with two sets of contradictory objectives. First it was to assure the most effective use of the property for war purposes and simultaneously do its utmost to facilitate the reestablishment of a peacetime economy. Also, it was to discourage monopolistic practices and strengthen small business, even while striving to obtain a fair price for the surplus property.<sup>100</sup> These conflicting guidelines left a lot of room for interpretation by the Board.

To assure a proper interpretation of these objectives, President Truman turned to an acquaintance from his native Missouri, Stuart Symington.<sup>101</sup> Symington was a firm believer in air power, and this strongly influenced the Surplus Property Board's attitude towards the aluminium industry. The Board took the view that "the lessons of air power are expected to cause other nations to develop to a maximum their light metal industries. Our own national security will therefore justify measures necessary to promote a large and healthy American aluminium industry." Competition was necessary to provide additional employment in the expected post-war slump and increasing the number of operating plants could reduce possible bottlenecks, thereby removing the hazard of interruption during wartime.<sup>102</sup> There was no lack of takers either. ASARCO, Reynolds, Permanente Metals, Bohn Aluminium & Brass Corp, Olin Industries and Columbia Metals Corporation all signalled their intention to take over various DPC aluminium plants. The executives of Alcoa apparently did not realize that the entire program was meant to deprive them of their monopoly. They suggested that Alcoa should not only be allowed bid for the smelters and alumina plants, but also asked to participate in the formulation of the program. The Department of Justice naturally strongly disagreed, and the Attorney General used his statutory capacity to rule on the sales to determine that selling the DPC plants to Alcoa would violate the antitrust laws.

The disposal of the DPC plants shows the extent of the irritation with Alcoa that surfaced once the war had been brought to a successful conclusion. Almost all other lessees of DPC plants were allowed to keep the plants they constructed

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100 Louis Cain and George Neuman, "Planning for Peace: The Surplus Property Act of 1944," *The Journal of Economic History* vol.41 no.1 (March, 1981): 129–135.

101 HSTL\Oral History, Stuart Symington. Reynolds Metals Company, as the savvy political operator it was, would contribute to Symington's later political career. Linda McFarland, *Cold War Strategist: Stuart Symington and the Search for National Security* (Westport: Praeger, 2001), 10.

102 United States Surplus Property Board, *Aluminium Plants and Facilities: Report of the Surplus Property Board to the Congress, September 21, 1945* (Washington: Government Printing Office, 1945).

after the war, but not Alcoa. Harold Stein, who himself participated in the formulation of the program, admits that the government sought to thwart Alcoa at every turn. Alcoa held leases to the DPC plants running until 1948, but the leases were cancelled after the government invoked escape clauses through some rather creative use of statistics. The Surplus Property Administrator also tried to strong-arm Alcoa into surrendering the patents and necessary know-how needed to operate the alumina refineries at Baton Rouge and Hurricane Creek.<sup>103</sup> When Symington fired what became known as ‘the shot heard round the aluminium world’ by threatening to notify Congress that there could be no disposal program until Alcoa was dissolved by the courts, Alcoa agreed to provide royalty-free licenses on some of its patented processes.<sup>104</sup> Alcoa nevertheless fought back against some of the most expansive suggestions for subsidies to its eventual competitors, labelled by Carr as “socialistic suggestions”.<sup>105</sup> That was a rather safe political bet. Many congressmen reacted strongly to any mention of the word ‘subsidy’, and even President Truman himself did not want to use subsidies to create competitors for Alcoa.<sup>106</sup>

With subsidies out of the question, the Surplus Property Board rigged the disposal program to give preference to bidders assumed to possess the experience, organization and the financial resources necessary to go up against Alcoa. It also reckoned that the competitors would have to be fully vertically integrated to match Alcoa’s ability to capture economies along the value chain. These considerations led it to give preference to Reynolds and the Henry Kaiser-controlled Permanente Metals (later Kaiser Aluminium and Chemical Corporation). The latter already had experience with magnesium production. Reynolds and Kaiser took over the Hurricane Creek and Baton Rouge alumina refineries respectively, both equipped with Alcoa’s patents. Kaiser bought the Spokane and Tacoma smelters and Reynolds laid its hands on both Jones Mills and the great prize of the Troutdale smelter. The idea was that these smelters would allow Reynolds to provide its own substantial fabrication facilities with primary metal. The government thereby accepted that the monopoly would be replaced by an oligopoly, in which the new primary producers also would be able to compete with its own customers as Alcoa had done.<sup>107</sup> By

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103 See Stein, *Disposal*, 331–336 on the cancellation of the leases and pages 345–352 on the patents issue.

104 James Olson, *Stuart Symington: A Life* (Columbia: University of Missouri Press, 2003), 70f.

105 Carr, *Alcoa*, 264–269.

106 Public Papers of the President, Harry S Truman, 1945: 172. The President’s News Conference, 18 October 1945.

107 Dewey Anderson, *Aluminium for Defense and Prosperity* (Washington: Public Affairs Institute, 1951). John Krutilla, “Aluminium: A Dilemma for Antitrust Aims,” *Southern Economic Journal*, vol.22 no.2 (Oct., 1955): 164–177. Ronald Graham suggests that the new oligopoly was even more

1947, the Surplus Property Board concluded that substantial progress had been made, but that the future survival of Reynolds and Kaiser would be determined by their skill in smelting and marketing.<sup>108</sup> The question remained whether this would mark the end of the government's involvement in the aluminium industry.

## Into the Cold War

The beginning Cold War ensured a strong governmental interest in aluminium for another decade, primarily through a renewed emphasis on expansion as well as creating a strategic stockpile of aluminium. As long as the disposal program was under way, the armed services had kept its distance from the aluminium industry. While aluminium had been relisted as a strategic material in 1944, during the early post-war years the Munitions Board preferred purchasing bauxite for the stockpile, believing it gave more security for each dollar. The Munitions Board considered using the stockpiling program to achieve broader economic goals to be dangerous, political or even immoral.<sup>109</sup> Consequently it did not heed the repeated urgings by the Department of Interior, the Surplus Property Administrator and the Aluminium Industry Advisory Committee that a stockpile of aluminium should be established to provide a secure market for Kaiser and Reynolds.<sup>110</sup>

But as civilian demand grew far beyond what anyone had anticipated, many officials became increasingly worried about whether the industry would be able to supply the armed forces in addition to the civilian demand.<sup>111</sup> The war scare of early 1948 especially brought many Cabinet members around to the view that the raw material supply for a future war had to be secured.<sup>112</sup> In June 1949 a report

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industrially and financially concentrated than the previous monopoly. See Ronald Graham, *The Aluminium Industry And The Third World; Multinational Corporations And Underdevelopment* (London: Zed Press, 1982), 59.

108 United States War Assets Administration, *Aluminium Plants and Facilities, First Supplementary Report of the War Assets Administration to the Congress, February 12, 1947* (Washington: Government Printing Office, 1947).

109 Glenn Snyder, *Stockpiling Strategic Materials: The Politics of National Defense* (San Francisco: Chandler Publishing, 1966).

110 United States President's Materials Policy Commission, *Resources for Freedom, vol. V, Selected Reports to the Commission* (Washington: Government Printing Office, 1952), 141.

111 Meeting of Power-For-Aluminium Task Group With Executives of Permanent Metals Corporation, 10 September 1948, NARA, RG 304, General Correspondence of NSRB, Sept. 47 – June 1949\Box 26, 334 O – 334 R\Power for Aluminium Task Force.

112 James Forrestal, *The Forrestal Diaries*, ed. Walter Millis (New York: The Viking Press, 1951), 410.

from the Aluminium industry advisory committee warned that the United States faced a 250,000 ton deficit during the first two years of a hypothetical war. After conducting its own study of the mobilization requirements for aluminium, the Munitions Board established an interim stockpiling objective of 250,000 tons on November 17, 1949.<sup>113</sup> While the Munitions Board lacked both the dollars to make direct purchases in the market and was prohibited from purchasing materials that were not surplus to civilian demand, in a neat compromise Reynolds and Kaiser both got contracts for deliveries of metal to the stockpile in lieu of cash payments for their DPC smelters.<sup>114</sup>

While Reynolds and Kaiser were allowed to pay for the smelters they had acquired at a fraction of their value with the production from the very same smelters, this was not enough to dislodge the old monopolist. Alcoa had emerged from the war with its own reduction capacity doubled. It also possessed very sizable financial reserves due to the accelerated amortization certificates offered by the government to promote industrial expansion during the war.<sup>115</sup> In 1947 Alcoa petitioned for a ruling to end the charges of monopoly against it, consistent with the claims of the Surplus Property Board that the disposal program had gone very far towards establishing competition. The Department of Justice hit back with a petition claiming that Alcoa was actively seeking to extend its monopoly. But once again the company could take comfort in the fact that aluminium was a vital commodity for national defence. With demand exceeding supply by as much as 30%, Alcoa was eventually allowed to purchase the DPC smelter at Massena. This DPC plant shared servicing facilities with a privately owned Alcoa smelter, and was offered on the condition that Alcoa would designate a similar amount of its older and less efficient capacity as stand-by for defence purposes, thereby ostensibly depriving it of any competitive advantage. The Attorney General tried to block this decision, but was overruled.<sup>116</sup>

The penchant of the government for cooperation with Alcoa in times of crisis also manifested itself in the reopened antitrust case. When the verdict was handed

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113 Fifth Amendment to Current list of Strategic and Critical Materials as Revised, 20 August 1948, NARA, RG 330, Secretary of Defense, Munitions Board\Box 126, MB 231 to MB 285\MB 274.

114 Munitions Board Staff Paper, 16 December 1949, NARA, RG 330, Secretary of Defense, Munitions Board\Box 126, MB 231 to MB 285\MB 274.1.

115 Merton Peck, *Competition in the Aluminium Industry* (Cambridge: Harvard University Press 1961), 18–19.

116 Stein, *Disposal*, 354–6. The shortages were so acute that the Department of Commerce even considered reactivating some of the closed wartime plants and operate them with high-cost power. See Department of Commerce, Office of Domestic Commerce, Initial Report on Critical Commodity Areas, 24 January 1949, FDRL, Louis Bean Papers\Box 35\Aluminium.

down in June 1950, Alcoa yet again dodged the bullet, even though the court found that Alcoa retained a monopolist's potential to dictate prices through its control over Alcan. The control was being maintained though the interlocking ownership of Alcoa and Alcan, with a small number of owners holding the majority of the shares in both companies. The Department of Justice urged dissolution, or failing that, a divestiture of the company's assets in order to set up a fourth producer. The court would not consider such drastic measures however, as it could hamstring the leading producer of a vital commodity "in times of international tension."<sup>117</sup> The court merely ordered each shareholder to divest himself of his stocks in either Alcoa or Alcan. The judges hoped that elimination of cross-ownership would lead Alcan to compete vigorously in the American market, and prove itself to be "fully worthy of Alcoa's steel."<sup>118</sup>

### **Back into the Fold: The Korean War and its Aftermath**

Three weeks after the ruling in the antitrust case was handed down, North Korean troops 'dashed on towards that thin red line tipped with steel', the 38<sup>th</sup> parallel that divided Korea into two. The international crisis they unleashed fomented a fundamental change in the American grand strategy for waging the Cold War. While the Americans previously had sought to contain communist influence chiefly through economic diplomacy, they now feared the existence of a Moscow-directed global communist conspiracy that had shifted from subversion to direct military aggression.<sup>119</sup> The decision to meet the threat from the Soviet Union from a position of overwhelming military strength, while at the same time intervening militarily in Korea, again led to a vastly increased demand for aluminium for military purposes.

The Truman administration soon inaugurated a comprehensive program for industrial mobilization under the *Defense Production Act* of September 8, 1950. The President gained the authority to set military priorities for the production of essential commodities and to control prices.<sup>120</sup> Under the new defence mobiliza-

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117 Smith, *Transformations of Alcoa*, 270–3.

118 Duncan Campbell, *Global Mission; The Story of Alcan, vol. I* (Toronto: Ontario Publishing, 1985), 413.

119 The outbreak of the Korean War was previously seen as a clear example of sudden communist aggression also by historians, but particularly Bruce Cumings has stressed the domestic origins of the conflict. See Bruce Cumings, *The Origins of the Korean War, 2 vols* (Princeton: Princeton University Press, 1981, 1990).

120 Chong-do Hah and Robert Lindquist, "The 1952 Steel Seizure Revisited: A Systematic Study in Presidential Decision Making" *Administrative Science Quarterly* vol.20 no.4 (Dec 1975): 587–605.

tion program, a combination of control, expansion and stockpiling would secure the resources necessary to contain the forces of communism. One of the newly formed emergency agencies, the National Production Authority, immediately placed aluminium under allocation control during the fall of 1950. In September 1950 the Munitions Board asked Alcoa, Kaiser and Reynolds, as well as the two prospective producers Apex and Harvey, to attend a meeting to decide how the vastly increased American requirements for aluminium could be met. It soon became clear that Alcoa, Kaiser and Reynolds were not ready to undertake the tremendous expansion urged by the government.<sup>121</sup>

Following the landings of American troops at Inchon, the forces of the United Nations pushed the North Korean troops towards the Yalu River. This brought on a massive Chinese intervention which ended all hope of an early end to the war, and further intensified the fears that the conflict could escalate. President Truman declared a national emergency and to put the American economy on a war footing he established an Office of Defense Mobilization (ODM) in mid-December 1950. One of the ODM's first actions was to announce a comprehensive expansion program for the aluminium industry, based on certificates of accelerated amortization for 85% of the new facilities over five years. The expansion program also provided the primary producers with a safety mechanism. The companies received 'put rights', meaning they would be able to sell any surplus aluminium from their expanded facilities to the government stockpile for a period of five years after they completed their new smelters.<sup>122</sup> The only thing the government demanded in return was the right of first refusal for this metal. Their faith in future markets thus fortified, the companies managed to secure 600 million dollars worth of loans to pay for the expansion. The government itself also gave an explicit guarantee for a 76 million dollar loan to Reynolds.<sup>123</sup>

The industrial mobilization process yet again taxed the available supplies of aluminium. The Truman administration implemented a new Controlled Materials Plan to ensure the proper allocation of steel, copper and aluminium. The Executive Branch also embarked on a crash program to build a stockpile of aluminium and other materials that would be needed for a global showdown with the Soviet Union. The stockpiling objective for aluminium was raised to 700.000 tons, and

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121 Business and Defense Services Administration, *Aluminium*, VII-13.

122 Peck, *Competition*, 150.

123 Samuel W. Anderson, Memorandum for John Steelman, Acting Director ODM and Henry Fowler, Defense Production Administrator, 19 August 1952, NARA, RG 277, National Production Authority, Defense Production Administration Subject Files\Commodities\Box 34, Commodities 1951-52 to Asbestos, Crocidolite 1951-52\Aluminium (Admin).

the Munitions Board also introduced a ‘danger point’ at 350,000 tons which had to be accomplished as soon as possible. Congress readily offered whatever money was needed, but the problem was that there was no aluminium to be had. Despite the resolve of the National Production Authority to take “whatever action is necessary to assure delivery of aluminium to the stockpile”, electricity shortages and booming demand from both military and civilian industry ensured that Alcoa, Reynolds and Kaiser couldn’t provide anything but a trickle of metal for the stockpile.<sup>124</sup> Apex and Harvey also withdrew from the expansion program, leaving the government in a quandary.

The solution was a new round of expansion programs that was announced in the fall of 1951. Once again Alcoa was tapped to expand its capacity in the national interest. It got a certificate for another 85,000 tons of smelting capacity, which brought its total certificate for expansion up to 205,000 tons. This was more than Reynolds, but less than Kaiser, both of which through the expansion programs surpassed the total capacity controlled by Alcoa before the Korean War. But Alcoa also expanded tremendously with the support of the government, and thus was able to retain its position as the dominant producer in the industry. Harvey received another certificate but withdrew once again, leaving the certificate for a subsidiary of the copper giant Anaconda. The National Production Authority defined these projects as ‘definite top priority’ and resolved that “nothing is to be allowed to interfere with completion of the aluminium projects on schedule”.<sup>125</sup>

Despite these very sizable increases in the American aluminium production it was not sufficient. Supply and requirements estimates showed a 1 million ton deficit for a five year war, which could only be met through an additional 200,000 ton capacity by the domestic aluminium industry. To cover this deficit the Defense Production Administration announced a third and final round of expansion by the fall of 1952.<sup>126</sup> Unlike the previous expansion rounds, this was only open for new entrants into the industry, allowing the government to expand capacity, secure

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124 Vital Material Coordinating Committee, VMCC- 19, 18 June 1951, NARA, RG 277, Defense Production Administration Subject Files\Committees, VMOC, Agenda and Summaries, Volumes I & II, 195. Thomas Nichols to Nigel Bell, 7 May 1951. NARA, RG 277, National Production Authority, Policy Coordination Bureau\Subject File of the Assistant Administrator for Policy, 1951-53\Subject File, A\Box 1\Aluminium – Stockpile.

125 Dean Bowman to Henry Fowler, Manly Fleischmann and all NPA Assistant administrators, 5 October 1951, NARA, RG 277, National Production Administration, Office of the Administrator, Organizational Subject Files\Office of Assistant Administrator\Box 3\Aluminium.

126 Malcolm Catlin, ODM to Russell Forbes, Defense Materials Procurement Agency, 6 March 1953, NARA, RG 291, Records of the Federal Property Resources Service\Defense Materials Procurement Agency Program Files 1949-58\FRC Box 6\DMPA Contracts, Book 1, A THRU M.

supplies for stockpiling and to promote competition in one fell swoop. Alcoa was shut out of a government-financed expansion program for the second time in less than a decade, but this time it was not alone. Its fellow oligopolists Reynolds and Kaiser now found themselves in the same position Alcoa had occupied for several decades. They reaped the benefits of governmental financial support in order to provide a vital commodity, but were increasingly perceived as a barrier to further competition. As Truman wrote to the vice president of Reynolds Metals Company in March 1952:

”During World War II, I knew more about the aluminium situation than anyone in the country, and history is just repeating itself now. While we have succeeded in getting some competition for ALCOA, the competitors have become almost as tight-fisted about further competition as ALCOA has always been. I shall continue to put forth every effort of which I am capable to increase aluminium production.”<sup>127</sup>

The expansion programs strengthened the main challengers to Alcoa and allowed a host of new producers to surmount the barriers to entry into aluminium reduction. Alcoa’s monopoly on both the business of the government and its ire against anti-competitive behaviour was definitely coming to an end.

**Table 2.2 Certificates for expansion offered during the three expansion rounds<sup>128</sup>**

	1950	1951	1952	Total
Alcoa	120,000	85,000	0	205,000
Reynolds	100,000	80,000	0	180,000
Kaiser	100,000	128,000	0	280,00
Harvey Machine Company	<del>72,000</del>	<del>50,000</del>	54,000	54,000
Apex Smelting	54,000	0	0	54,000
Anaconda	0	50,000	0	50,000
Olin Industries	0	0	110,000	110,000
Wheland Company			50,000	50,000
Total	446,000	343,000	214,000	1003,000

<sup>127</sup> Duncan Campbell, *Global Mission; The Story of Alcan, vol.II* (Toronto: Ontario Publishing, 1990), 13.

<sup>128</sup> Business and Defense Services Administration, *Aluminium*, VII–14. Harvey declined the offers of certificates for 1950 and 1951.

By 1953 Eisenhower had moved into the White House and the guns had fallen silent in Korea. With the war at an end, and almost all the new smelters coming on stream by 1954, the American metals markets were swamped by a flash flood of aluminium. The government availed itself of the opportunity to acquire the one million tons of aluminium it needed to fulfil the secret minimum objective for the stockpile.<sup>129</sup> Steadily rising civilian demand kept the market from collapsing for a time, but in 1957 the market finally and definitely slumped. Desperate primary producers turned to their ‘put rights’ to pour aluminium into a government stockpile already bursting at the seams. As Eisenhower administration was gradually coming to the realization that the threat of supply shortages of strategic materials had become a thing of the past, it refused to accept the metal.<sup>130</sup> While the question of exactly how to dispose of the surplus aluminium would take another decade to settle, the implications were clear.<sup>131</sup> There was no further need for the American government to involve itself in the production of primary aluminium, either with Alcoa or any of its competitors. As the antitrust case was finally put to rest that very same year, it was definitely the end of an era.

## Conclusion

“Antitrust was destined to become the nemesis of Alcoa” writes George David Smith in his history of Alcoa, but it was Ares rather than the moody Goddess of Rhamnous who dictated the terms of the business-government relationship in the four decades between 1917 and 1957.<sup>132</sup> The military significance of aluminium

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129 “Defense position in Aluminium” ODM Memorandum for Defense Mobilization Board meeting 90, 9 November 1955, NARA, RG 469, Records of Foreign Assistance Agencies\Office of Industrial Resources, Office of the Director\Records Relating to the Defense Mobilization Board\Box 1\Defense Mobilization Board (FOA) Sept – Dec 1955 (1 of 2).

130 For a particularly clear and influential exposition of how stockpiling priorities had to be adapted to the technological imperatives of the atomic war, see Special Stockpile Advisory Committee, Stockpiling for Defense in the Nuclear Age, 28 January 1958, NARA, RG 396, Records Relating to Emergency Preparedness\Interdepartmental Materials Advisory Committee, Records of IMAC Meetings 1953-73\Box 4, 43 THRU 56\meeting 46.

131 Eisenhower managed to halt the tidal wave of metal by threatening to annul the contracts and leave settlement to the courts, but that only brought temporary respite. The surplus aluminium was kept in the stockpile in the anticipation of any possible upward revisions of stockpiling objectives. By 1965 the government still held 940 000 surplus tons of primary aluminium in the national stockpile, and another 528 000 tons in special inventories set up under the Defense Production Act.

132 Smith, *Transformations of Alcoa*, 67.

allowed Alcoa to establish a close relationship with the American government during the two World Wars as well as the Korean War. As long as it could provide the metal necessary to win the wars, Alcoa reaped substantial financial benefits, enjoyed secure markets and the ability to shape the requirements of its biggest customer, and even found shelter during the worst storms of antitrust sentiment. It has frequently been insisted that it was Alcoa's competitive strengths that sealed the antitrust case against it, but this contribution has shown that it was only when Alcoa failed to provide the metal needed by the American war machine that its monopoly was irretrievably lost. A generous supply of misguided advice could not make up for the lack of metal, and the American government entered the aluminium industry to provide for itself. Alcoa continued to prosper as an operator of the smelters for the duration of the conflict, but unlike other lessees, many of them dominant corporations like Alcoa, Alcoa was not allowed the option to purchase the DPC plants after the war. However, the rising tensions between the United States and the Soviet Union soon brought Alcoa back into the fold. The old monopolist again found itself on the receiving end of substantial subsidies to expand its own capacity, and they were sufficiently generous that Alcoa managed to retain its position as the dominant player in the industry. It was only the gradual realization that a global war in the nuclear era would be fundamentally different from the industrial wars of the past that ended the era of close cooperation in military affairs as well as the ultimately futile antitrust litigation. But for the duration of those four decades, the overriding concern of the government was very accurately summed up by Harry Truman: "We want aluminium, not excuses".<sup>133</sup>

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133 David McCullough, *Truman* (New York: Simon and Schuster, 1992): 287.

# Trade and Politics: the Western Aluminium Industry and the Soviet Union in the Interwar Period

Espen Storli

As political economies go, few were more politically charged than the political economy of trade between the Soviet Union and the West in the interwar period. This trade was more than just a regular exchange of goods or services for money or other goods; at every level it permeated with politics and that was not only because all foreign trade with the Soviet Union was done through state monopolies. From the Soviet side, trade in the period was inextricably linked to the security question. Once the chaos of the civil war had ended and the foreign interventionists had been thrown out, the Soviet regime had to find a way to co-exist with a hostile West. Trade was an instrument which could be used to drive a wedge between the foreign powers and to avoid isolation by a capitalist bloc. The promise of lucrative trade was also deliberately dangled in front of Western businessmen and governments in the attempt to gain diplomatic recognition from foreign states and thus reduce the threat of another assault on the Soviet Union from the Western powers. In addition, foreign trade was a tool which was used to promote the domestic political aim of industrial development to create a better society, a continuing theme in Soviet history in the interwar period.<sup>1</sup> For the Soviet Union, aluminium was a case of both warfare and welfare.

For the Western powers, the question of trading with the communists was interwoven with the larger issue of what relations, if any at all, to have with the Soviet Union. Though all the major powers in the period eventually opened up for the possibility of doing business with the Soviet trade agencies, the trade continued to be intimately linked to politics. One reason for this was the fact that nearly all trade with the Soviet Union had to be done on credit, and the scope and terms of the credit arrangements was in reality mostly decided by political authorities. In addition, the political relationship between the Soviet Union and the major Western

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1 See for instance Teddy Uldricks, "Russia and Europe: Diplomacy, Revolution, and Economic Development in the 1920s," *The International History Review*, vol.1, no.1 (Jan. 1979): 55–83.

powers was continuously shifting and every time the diplomatic relations broke down, it had direct repercussions on trade.

The aim of this article is to study how the politics of East-West trade influenced the development of the international aluminium industry. In the course of the interwar period, the Soviet Union established itself as a large consumer of aluminium and during the Great Depression the country became one of the most important aluminium markets in the world. While consumption fell drastically in all other countries after 1929, the Soviet Union's aluminium consumption tripled from 1929 to 1931.<sup>2</sup> Since the Soviet Union did not have any domestic aluminium industry before well into the 1930s, its entire demand had to be met by imports. The Soviet contracts were very attractive prospects for the Western aluminium producers, yet trading with the Communists was complicated. First, the diplomatic entanglements of the problematic relationship between the large Western powers and the Soviet Union had a tendency to spill over into the commercial sphere. Second, the nature of the Soviet contracts was very unusual since all sales were conditioned on long-term credit arrangements, something which of course entailed quite considerable risks. Consequently, producers who had access to favourable credit guarantee schemes were best placed to carry out business with the communist regime.

The political side of the Western trade relations with the Soviet Union in the interwar period has been well researched, and there exists a host of studies which analyse this issue from a diplomatic history or international relations perspective.<sup>3</sup> Much less has been done on the economic aspects of this trade, and the existing research either look into specific companies' experience with Soviet trade, or study how the foreign trade influenced the domestic development of the Soviet Union.<sup>4</sup>

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2 Metallgesellschaft, *Statistische Zusammenstellungen über Aluminium, Blei, Kupfer, Nickel, Quecksilber, Silber, Zink und Zinn*, 37. Jahrgang 1926–1935, Frankfurt am Main, 5.

3 Important contributions include Katherine Siegel, *Loans and Legitimacy: The Evolution of Soviet-American Relations 1919–1933* (Lexington: University Press of Kentucky, 1996); Joan Hoff Wilson, *Ideology and Economics: U.S. Relations with the Soviet Union, 1918–1933* (Columbia: University of Missouri Press, 1974); R. O. Morgan, "The Political Significance of German-Soviet Trade Negotiations, 1922–5," *The Historical Journal*, vol.6, no.2 (1963): 253–271; Michael Jabara Carley, "Episodes from the Early Cold War: Franco-Soviet Relations, 1917–1927," *Europe-Asia Studies*, vol.52, no.7 (Nov. 2000),: 1275–1305; Patricia Flor, *Die Sowjetunion in Zeichen der Weltwirtschaftskrise: Außenhandel, Wirtschaftsbeziehungen und Industrialisierung 1928–1933* (Berlin: Duncker & Humblot, 1995).

4 Examples of the first approach includes Roger Munting, "Becos Traders and the Russian Market in the 1920s," *The Journal of European Economic History* vol.25 no.1 (1996): 69–96. See also Anthony Heywood, *Modernising Lenin's Russia: Economic Reconstruction, Foreign Trade and the Railways* (Cambridge: Cambridge University Press, 1999).

This article follows a different approach. The study object is an entire industry branch, the aluminium industry, and the main research question concerns the effect that the Soviet trade had on the development of the international aluminium industry. Despite being one of the largest export markets for aluminium in the period, the Soviet sales have not previously been subject to any detailed investigation.<sup>5</sup> The article shows that the Soviet orders for aluminium, especially at the height of the Great Depression, was of such a magnitude that it altered the power relations between the Western aluminium producers and that the politics of East-West trade in this period actually had the power to transform the business landscape. The article thus contributes to give a more profound understanding of the economic relations between the Soviet Union and the Western world in the interwar period.

### **Trade between the Soviet Union and the Western World in the 1920s**

The Soviet Union was one of the few markets to grow during the global economic depression after 1929, and exports to the country appeared to be a potential “El Dorado” to many Western corporations.<sup>6</sup> However, trade with the Communists was difficult. There were serious political obstacles, and since the Soviet Union was constantly pressed for hard currency, all the purchases had to be financed through credit arrangements. These difficulties notwithstanding, the trade could be very profitable for those corporations that managed to overcome the pitfalls. The Soviet market was for example virtually essential for the survival of German and US machine exports during the Great Depression.<sup>7</sup>

After the Russian Revolution, economic relations with the rest of the world broke down. Yet after the allied blockade was lifted in January 1920, trade between the Soviet Union and the West slowly resumed. The framework for trade was

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5 The partial exception is René Bonfils who recounts the main events in Pechiney’s involvement in the Soviet Union, see René Bonfils, “Pechiney au pays des Soviets. Le contrat russe de 1930,” *Cahiers d’histoire de l’aluminium* 23 (1998): 29–50. Florence Hachez-Leroy gives some information about the French producers’ activities in the Soviet Union. See Hachez-Leroy, *L’Aluminium français: L’invention d’un marché 1911–1983* (Paris: 1999), 167–168, 219 and 222. Kåre Fasting mentions NACO’s presence on the Soviet market in passing. Fasting, *Norsk aluminium gjennom 50 år: forhistorie og historikk 1915–1965* (Oslo: Høyang, 1965), 157–158.

6 Christine White characterizes the Soviet Union as “the elusive eldorado”, see Christine White, “‘Riches have Wings’: The Use of Russian Gold in Soviet Foreign Trade, 1918–1922,” *Contact or isolation? Soviet-Western Relations in the Interwar Period*, in eds, John Hiden and Aleksander Loit. (Stockholm: Almqvist & Wiksell, 1991), 117.

7 Morgan, *German-Soviet Trade*, 254 and Siegel, *Loans and Legitimacy*, 133.

constructed through a series of bilateral intergovernmental trade agreements, and Soviet trade missions were opened in London, Berlin and other European capitals, including Oslo in Norway. This framework for trade was not in itself sufficient. Soviet Russia suffered from a serious famine in the early 1920s, and the country had continuing difficulties in raising tradable export surpluses of foodstuffs and other commodities to cover import demands. Added to this, the international terms of trade for Russian exports had deteriorated from the pre-war years; foreign trade turnover remained below the levels of the Russian empire. The Communist government was forced to finance imports with gold, and by 1922 more than half of its gold reserves were depleted. Trade with gold was in itself difficult. As long as the new regime remained unrecognized, the danger remained that gold exported by the State bank could be seized as security against pre-revolutionary debt. This question was a major obstacle to trade with Great Britain, France and the United States, the three major creditor nations of the Russian empire. Much of Soviet Russia's trade with the West was therefore directed through Scandinavia, especially Sweden, or the Baltic states.<sup>8</sup>

The trade in gold could not continue, and after 1922 imports mostly had to be based on export earnings and foreign credits. Companies that wanted to do business with the Soviet Union had to secure credit arrangements either through government guarantees or through financial institutions. Great Britain was the first major power to both conclude a trade agreement with the Soviet Union (in 1921) and to grant full diplomatic recognition (in 1924), but the British government was not willing to give in to the recurring Soviet requests to grant credits to help them buy British goods.<sup>9</sup> Whitehall's position was that no credit would be given until the Russians had paid off the pre-war debts. France followed the same policy, and would not give any credits before the debt question had been settled.<sup>10</sup> Following the lead from the French authorities, the French banks also refused to discount Soviet bills of exchange, something which meant that the cost of credit on the French private market for Soviet trade was exceedingly high.<sup>11</sup> The United States, meanwhile, pursued a policy of non-recognition towards the Soviet Union

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8 Roger Munting, "British business and the politics of trade with the USSR during the New Economic Policy (NEP)," *Business History* 48:2 (2006): 255–266.

9 Andrew Williams, *Trading with the Bolsheviks. The Politics of East-West trade, 1920–39* (Manchester: Manchester University Press, 1992), 55, 83.

10 Edward Carr, *Foundations of a Planned Economy 1926–1929*, Vol.12 in *A History of Soviet Russia* (London: Macmillan, 1976), 61–64 and Williams, *Trading with the Bolsheviks*, 141.

11 Michael Jabara Carley, "Five Kopecks for Five Kopecks: Franco-Soviet trade negotiations, 1928–1939", *Cahiers du monde russe et soviétique*, vol.33, no.1 (1992): 26.

until 1933, but after the allied blockade was lifted in 1920, US companies were allowed to trade with the communists at their own risk.<sup>12</sup> However, the US authorities refused to authorize long-term credit for American sales to the Soviet Union, so only short-term credit was available for the Soviet trade.<sup>13</sup> Although the official US policy was not to encourage credit sales, American banks in several instances were willing to help in backing credits, while other American sellers were able to organize their own credit through non-banking channels.<sup>14</sup>

Germany and Italy were the only major countries whose governments were willing to endorse credit sales to the Soviet Union. Germany established full diplomatic contacts with the Russians through the Rapallo Treaty in 1922. In 1925 and 1926, German banks granted major trade credits backed with state guarantees.<sup>15</sup> The first credit was in the range of RM 100 million (*Reichmark*) (approximately \$23.8 million), while the latter was RM 300 million (\$71.5 million). Similarly, under a 1927 trade treaty, Italy agreed to provide 75% of export credit up to ITL 350 million (*Italian lira*) (\$18.4 million).

It is no coincidence that the German and Italian credit arrangements were granted in this period. In 1926, the USSR's Supreme Economic Council (*Vesenkha*) started to draw up the first five-year plan. The plan's main idea was to commit to a policy of rapid industrialisation through large-scale investments in power generation, transport and capital construction. Industrialization, however, could only be achieved through massive imports of Western machinery, goods and technology. Planners strictly rationed imports to give priority to raw materials and machinery to meet the demands of heavy industrial investment. As the Soviet economy became more import dependant, it became even more reliant on credits. Through the credit guarantees of their respective governments, Italian and German companies were able to secure large sales to the Soviet Union.<sup>16</sup>

British companies were not well positioned to take advantage of the increased Soviet demand for industrial goods. The British government continued to refuse

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12 White, *Russian Gold*, 119.

13 Siegel, *Loans and Legitimacy*, 98–100.

14 Williams, *Trading with the Bolsheviks*, 45; Munting, *Politics of Trade*, 266 and Ernest Ropes: "The Shape of United States-Soviet Trade, Past and Future," *Slavonic and East European Review, American Series*, vol.3 no.2 (Aug. 1944): 5.

15 Munting, *Politics of Trade*, 260.

16 David Shearer, *Industry, State, and Society in Stalin's Russia, 1926–1934* (Ithaca and London: Cornell University Press, 1996), 25; Edward Carr and Robert Davies, *Foundations of a Planned Economy 1926–1929*, Vol.10 in *A History of Soviet Russia* (London: Macmillan, 1969), 705–718; Robert Davies and Stephen Wheatcroft, "Further Thoughts on the First Soviet Five-Year Plan", *Slavic Review* 34, no.4 (1975): 797.

to back credit sales to the Soviet Union. In May 1927, after British police raided the London offices of Arcos, the Soviet's main trading arm in Britain, diplomatic relations between the two countries were broken off and the 1921 trade agreement was suspended. This breach was not fully repaired before 1930.<sup>17</sup> It is important to note that Canada followed Great Britain's lead and broke off all relations with the USSR in 1927.<sup>18</sup>

Despite the setback in relations with Britain, the Soviet Union gradually became a more significant trading partner for the West. After the Communist regime implemented its new economic policy in the latter half of the 1920s, the Soviet Union became a very important market for certain industries. In 1930, for instance, the USSR was the third largest buyer of US industrial equipment and the largest market for American agricultural machinery and supplies.<sup>19</sup> For firms that were able to manoeuvre around the political pitfalls and secure credit backing, exports to the Soviet Union proved to be a very profitable business during some of the most economically troubled years of the interwar period. This was certainly the case for the international aluminium industry.

## **The Aluminium Industry and Soviet Trade**

The interwar aluminium industry was dominated by a few large vertically integrated companies. The largest producer was the American company Alcoa, while in Europe the Swiss AIAG, the German VAW, the British BACO and the French aluminium syndicate Aluminium Française (AF) controlled the markets. The producers had a long history of cartel cooperation and throughout the interwar period they continued to jointly regulate the markets, first through a series of producer meetings in the early 1920s, then through formal cartel accords from 1926 and onwards. Alcoa did not participate in the 1926-cartel, but when the cartel was reorganized in 1931, Alcoa's Canadian sister-company, Aluminium Limited (the later Alcan), joined.<sup>20</sup>

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17 For the Arcos raid see Edward Carr, *Foundations of a Planned Economy 1926–1929*, Vol.12 in *A History of Soviet Russia* (London: Macmillan, 1976), 25–35; Williams, *Trading with the Bolsheviks*, 87–88.

18 Williams, *Trading with the Bolsheviks*, 188.

19 Christine White, *British and American Commercial Relations with Soviet Russia, 1918–1924* (Chapel Hill: University of North Carolina Press, 1992), 228.

20 The aluminium cartels are discussed in detail in Espen Storli, *Out of Norway Falls Aluminium: The Norwegian Aluminium Industry in the International Economy, 1908–1940*, PhD-thesis, NTNU Trondheim 2010.

The Russian market had traditionally been the domain of the French aluminium producers, but after the outbreak of the Russian revolution the trade links were severed. It was not until the beginning rapprochement between Great Britain and the Soviet Union at the start of the 1920s that the connection was opened up again. In the winter of 1920–1921, Leonid Krasin, the head of the Soviet trade delegation to Britain, approached BACO to purchase aluminium and asked the company to send a representative to Moscow to negotiate. The British company was sceptical and instead passed the opportunity on to AF, who had more experience with doing business in that part of the world. AF's president, Louis Marlio, was intrigued by the offer, and in May 1922 he sent Michel Glouchevitch to the Soviet Union as an agent for the French aluminium producers. Glouchevitch, who was half-Serbian, half-Russian, had been stationed at the Serbian Embassy in St. Petersburg before the war, and after the war had taken a position with a French coal exporting company in which AF held shares. Glouchevitch managed to get a small order from the Soviets, and returned to Moscow again in 1923 and secured more orders. Encouraged by these early successes, Marlio took the initiative to establish *Comptoir Franco-Russe*, a trading company created with the aim of doing business in the Soviet Union and neighbouring countries.<sup>21</sup> Marlio served as the President of the trading company, while Glouchevitch became its Managing Director. AF and other large French industrial companies made a two-year deal with the “comptoir” to act as agents in the Soviet Union.<sup>22</sup>

Alcoa soon followed AF into the Soviet market. In 1925, the company first exported aluminium from its Canadian subsidiary, and after the success of this first shipment, the company was encouraged by the Soviet government to set up an aluminium industry in the country.<sup>23</sup> In 1926, Alcoa sent Walter Lyman Brown to negotiate with the Soviet authorities. Brown was a former European director of the American Relief Administration and had been instrumental in directing the American humanitarian relief during the Russian famine of 1921.<sup>24</sup> During the

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21 Undated manuscript by Michel Glouchevitch, “Memoirs of a Serbian businessman in Russia” (translated from Serbian), original in the possession of Glouchevitch's descendants in the United States.

22 Minutes of meeting of AF's Board of Directors, 21 March 1924, Box 500-2-17777, file: Comptoir Franco-Russe 1925–1938, Pechiney archives, Institute pour l'histoire de l'aluminium, Paris (hereafter Pechiney archives). This early contact between AF and the Soviet government is also mentioned by Florence Hachez-Leroy, *L'Aluminium français: L'invention d'un marché 1911–1983*, Paris 1999, 167.

23 Williams, *Trading with the Bolsheviks*, 187.

24 Xenia Joukoff Eudin, Harold H. Fisher and Rosemary Brown Jones, *Soviet Russia and the West 1920–1927: A Documentary Survey*, (Stanford: Hoover Library on War, Revolution, and Peace, 1967), 28–29.

summer of 1926, Brown negotiated with the *Vesenkha*, and the parties reached an agreement in July. In exchange for \$100,000, Alcoa received a two-year concession to search for bauxite in the Soviet Union. Before returning to the United States, Brown recruited Jonas Lied to act as Alcoa's local representative. Lied was a Norwegian businessman and adventurer who had made a vast fortune in tsarist Russia. In order to do business in the country he had taken a Russian citizenship. During the revolution, all his assets were confiscated, but he continued to reside in the country, eking out a meagre existence in the vain hope of getting his properties back.<sup>25</sup> In June 1926, Alcoa sent the bauxite expert Edmund C. Harder and the power expert John Thorpe to the Soviet Union. Thirteen months later the pair returned to the United States and reported that the bauxite deposits that they had located were of little or no value to the aluminium industry.<sup>26</sup>

At the same time as Alcoa's agents were out looking for bauxite in the Ural Mountains, the Soviet government placed an order for 500 tons aluminium with the American company. It appeared that AF had been outmanoeuvred by Alcoa and had lost out on the Soviet market. The contract was signed in December 1926.<sup>27</sup> In February 1927, Thorpe, on behalf of Alcoa, started a new negotiation round in Moscow. Alcoa offered the same price and terms that had been agreed to in the first contract, but this time the Soviet government instead agreed to purchase 400 tons aluminium from AF. Alexander Shliapnikov, the director of *Metalloimport*, the Soviet Union's metal trading company, informed Jonas Lied that AF had accepted to sell their aluminium at a considerably lower price than Alcoa's offer, and that if Alcoa was willing to match AF's price, the US company would receive an order for 1,000 tons.<sup>28</sup>

The fact that the two competitors actually competed on prices and conditions might, at first glance, seem very natural. In the interwar aluminium industry, however, this competition was a blatant breach of standard business practice. The large aluminium producers had since the start of the producer meetings in 1923 agreed to harmonize their prices, and after the European companies had esta-

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25 Jonas Lied, *Over de høye fjelle* (Oslo: Ernst G. Mortensen, 1961), 236–240.

26 Edwin S. Fickes, *History of the Growth and Development of the Aluminum Company of America*, unpublished manuscript 1937, 266, Alcoa records, MSS#282, Heinz History Center, Pittsburgh (hereafter Alcoa records).

27 Undated and unsigned Memorandum, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

28 Memorandum by John Thorpe, 11 April 1927. See also letter from Shliapnikov to George Hodson, Alcoa's representative in England, 24 March 1927, both in box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives. In the source material Shliapnikov's name is spelled in a number of ways (Chliapnikoff, Schliapnikoff, Chljapnikof) but I choose to employ the modern spelling.

blished a cartel in 1926, they reached an understanding with the US company that they should offer the same terms on different markets. In accordance with this agreement, Alcoa had stuck to the official cartel selling price in the first contract with the Soviet Union in 1926. In the second contract round, Alcoa again offered the same conditions, but AF undercut them and secured the deal.

The Alcoa directors were furious. The company refused the Soviet advances for lower prices. After ascertaining that the French were in fact selling their aluminium at considerably less than Alcoa's proposed terms, Alcoa's representatives approached AF. On 11 April 1927, Charles Moritz, André Henry-Couïannier and John Thorpe knocked on Louis Marlio's door. Marlio afterwards described the visit as "extrêmement désagréable" and he found the situation to be "très difficile". The representatives wasted no time and accused the French of cheating on the agreement. Marlio tried to defend himself by pointing out that Shliapnikov had told the French negotiators that Alcoa had sold below the official price in the first contract, but since he had no more proof than the Russian's word his argument was brusquely pushed aside.<sup>29</sup> To resolve the situation, Marlio had to promise to give part of the contract to Alcoa.<sup>30</sup> The agreement between AF and the Soviet Government concerned a total quantity of 2,400 tons aluminium, and Alcoa was allotted 1,000 tons out of the contract.<sup>31</sup> Although Edward Davis, Alcoa's Vice-President and Sales manager, acknowledged Marlio's gesture and thanked him for his "desire to be equitable in the settlement of this incident", the Frenchman still worried about the considerable moral damage sustained by his company.<sup>32</sup>

To avoid any further damage to the company's moral capital, Marlio made sure that during the next negotiation round with Metalloimport, AF stuck to the official price. The prospective buyers did not take kindly to the offer. Shliapnikov complained that the proposed conditions were excessive and that all his clients, the Soviet fabricators, were very unhappy. However, Shliapnikov had a solution. He knew that Alcoa insisted that the French should follow the official price, but he suggested that the Soviet Union and AF could sign a contract that appeared to respect

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29 Marlio based his argument on a letter from Michel Glouchevitch. According to Glouchevitch the Soviet negotiator Shliapnikov had told him that Alcoa's representatives in Moscow, Berlin and London had made him "un tonne de promesses" about lower prices. See "projet de lettre de M. Glouchevitch à M. Marlio", box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

30 The account is based on letter from Marlio to Glouchevitch, director of the Comptoir Franco-Russe, 11 April 1927, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

31 Unsigned and undated memorandum on the Soviet sales entitled "Note sure les contrats russes", box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

32 Letter from Edward Davis to Louis Marlio, 13 April 1927, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

the price, but which had a secret appendix awarding the Soviets a rebate and more generous credit terms than Alcoa (and the cartel) would allow.<sup>33</sup> If the French were willing to follow this procedure, Shliapnikov guaranteed that he would soon give AF another contract.<sup>34</sup>

The prospect of large aluminium orders was tempting enough for the French directors to overcome any moral qualms. In August 1927, AF signed a contract for delivery of 2,000 tons aluminium to the Soviet Union. The price and credit terms were set in accordance with cartel policy, but in a secret supplement AF awarded the buyer a considerable rebate.<sup>35</sup> The Soviet Union was given nine-month credit for the purchases. AF was able to get the Aluminium Association (European aluminium cartel) to guarantee 50% of the credit sales while the *Société Financière pour le Développement du Commerce Français avec les Pays de l'Europe du Nord* (Sofidenord) guaranteed for 30%.<sup>36</sup> Since Sofidenord demanded compensation totalling 5% of the guaranteed sum annually, it was a rather expensive solution. Sofidenord was a credit institution controlled by the Parisian *Banque Commerciale pour l'Europe du Nord*. The bank was originally established by a group of St. Petersburg traders, but after France recognized the Soviet Union in 1925, the Soviet government took over the bank and used it to facilitate commercial transactions between France and the USSR.<sup>37</sup>

This time, Marlio was not caught in the act by Alcoa. To prevent the other cartel members from learning of the secret agreement, he gave instructions about how the affair was to be settled so that the books of the French aluminium companies did not reveal the true nature of the deal.<sup>38</sup> AF's accounts were regularly scrutinized

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33 Two letters from Shliapnikov to Marlio, both dated 30 June 1927, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

34 Unsigned memorandum "Contrats russes de 1927", dated 24 September 1927, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

35 The official selling price was £ 109 per ton for 99,5% aluminium and £ 106 per ton for 99–99,5% aluminium, the price for both qualities were reduced by £ 6.10.0. Unsigned and undated memorandum on the Soviet sales entitled "Note sure les contrats russes", box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

36 The cartel guarantee was divided among the cartel members according to their production quotas. As a result AF covered 33,1%. Unsigned memorandum "Contrats russes de 1927", dated 24 September 1927, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

37 The information about the bank has been culled from the website of VTB Bank France, the successor to the Banque Commerciale pour l'Europe du Nord, see <http://france.vtb.com/rus/web.html?!=170&s1=2249> (retrieved 27 October 2009). Confer letter from Louis Marlio to Remy, Banque de France, 15 November 1929, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

38 Letter from Marlio to Level 2 August 1927, quoted in Hachez-Leroy, 168.

by the cartel as a part of the cartel agreement, which made it necessary to cook the books.

Shliapnikov was true to his word, and in October AF signed a new contract with its new favourite customer. This time the Soviet Union asked for 3,000 tons aluminium, and the contract was arranged in the same manner, with an official price in the contract and a secret rebate agreed between the two parties. AF gave Metalloimport a nine-month credit, of which 50% was guaranteed by the cartel and the other half by Sofidenord.<sup>39</sup>

Alcoa's directors were far from pleased by yet again losing out on a lucrative contract with the Soviet Union. The company had invested heavily in the hunt for bauxite in the country and obviously thought that the American company had a right to participate in the French sales. Instead, AF had won three contracts in a row. Once again, angry Alcoa-representatives came knocking on Marlio's door. Henry-Couïannier and Ludwig Braasch, Alcoa's German agent, complained to Marlio in December 1927 that AF was not following the correct procedure for sales to the Soviet Union. Although the Alcoans knew nothing about the secret price rebate, they had learned that AF was giving more generous credit terms than were allowed. Marlio had to promise that the credit arrangements would be modified so that they were in line with the cartel's official policy. The Frenchman now did two things. First, he sent confidential letters to the other cartel members to warn them against giving Alcoa any information about the Soviet contracts.<sup>40</sup> Then he got his Soviet client to alter the official agreement, so that all traces of "illegal" activity were erased. The conditions that violated the cartel policy were instead put in a secret addendum to the contract. Modifying the contract cost the French company FF 10,000 in bribes.<sup>41</sup>

Marlio was taking a risk when he undercut the official cartel price, but his motives were understandable. A key component of the cartel agreement was that each member was allocated a sales quota. As Hachez-Leroy has shown, in 1926 the French producers had been unable to fill their sales quota, and if this situation persisted, they would likely see their quota lowered in future cartel negotiations.<sup>42</sup>

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39 Unsigned and undated memorandum on the Soviet sales entitled "Note sure les contrats russes", box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

40 Letter from Marlio to Murray Morrison, 17 December 1927, box 00-2-15940, file: correspondence with BACO 1901-1932, Pechiney archives. Although I have not found letters with the same content sent to AIAG and VAW it is very likely that they were indeed despatched.

41 Unsigned memorandum "Note sure les contrats russes", dated 27 June 1928, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

42 Hachez-Leroy, *L'Aluminium français*, 168.

The magnitude of the Soviet orders ensured that the French producers would maintain their quota. If the other members discovered that the deals depended on undercutting the cartel's price policy, however, they would not view the business transactions kindly. As long as Marlio managed to keep the secret, there was no problem.

From December 1926 to October 1927, the Soviet Union placed four contracts with AF and Alcoa consisting of a total amount of 7,900 tons aluminium (6,400 tons for AF and 1,500 tons for Alcoa). Virtually overnight, the Soviet Union had become one of the largest aluminium markets in the world. It had also become a highly contested market and the competition between AF and Alcoa was plainly contributing to the souring relationship between the European producers and the North American company. In a bid to avoid further complications between the two parties, Marlio and Alcoa's Henry-Coüannier decided in advance of the next negotiation round with the Soviet Government that whichever company got the contract would allocate one-third to the other company. The French were again successful, but in keeping with the agreement 1,333 tons of the total 4,000 tons were passed on to the North American group (by this time Alcoa had established Aluminium Limited to take care of all business outside of the US). As in the former French contracts, the Soviet Union received a secret rebate covered in full by the French aluminium producers. AF and Aluminium Limited's decision to divide the Soviet market between them was a watershed moment that changed the whole *modus operandi* of the sales to the Soviet Union. Equally important was the initiative taken by the Soviet authorities in demanding that the two sellers should try to place part of the sales under a Norwegian state operated credit guarantee.<sup>43</sup>

The reason that Norway comes into this story is that both AF and Aluminium Limited had Norwegian subsidiaries. Together with BACO, the two companies owned the Norwegian aluminium company DNN, each with a third share. DNN operated two aluminium smelters with a combined production potential of over 15,000 tons yearly. Both AF and Alcoa/Aluminium Limited used production from DNN to fill the Soviet orders, so in that sense it was natural that the Soviet representatives should point in this direction.<sup>44</sup>

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43 Addition dated 10 January 1930 to the unsigned memorandum "Note sure les contrats russes", dated 27 June 1928 and unsigned and undated memorandum on the Soviet sales entitled "Note sure les contrats russes", both in box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

44 For more details on DNN, or *Det Norske Nitridaktieselskap* which was the company's full name, see Storli 2010.

## The Norwegian State Guarantee

The arrangement referenced by the Soviet negotiators was a programme instigated by the Norwegian state in 1922. Before World War I, Russia had been one of the main buyers of Norwegian herring, but after the Russian revolution that market was closed to Norwegian exports. This trade had been especially important for the fishermen in the northern Norway, and when other export opportunities also disappeared in the post-World War I depression, the population became increasingly more destitute. To ail the ravages of the depression, Norwegian authorities started negotiations with the Soviet trade delegation in November 1921 to secure contracts for large deliveries of fish to the Soviet Union.<sup>45</sup> It was soon clear that full cash on delivery payments was out of the question, and that the negotiations had to be based on partial credit guarantees. The Norwegian government agreed to grant credit of up to NOK 11 million (more than £400,000). Some 34% of the total sales were paid in cash upon delivery, while the Soviet government issued sola bills for the rest.<sup>46</sup> The Norwegian state gave guarantees for herring export to the Soviet Union in 1922, 1923, 1924, 1927 and 1928. The Soviet regime punctually fulfilled all their obligations on the issued bills.<sup>47</sup>

Fish, however, is not the main issue here. The success of the fish sales was closely monitored by Norwegian industrial companies, which hoped to find a market in the Soviet Union. In November 1926, *Leningrad Trading & Shipping Company* petitioned the Norwegian government to grant guarantees for credit sales of industrial products to the Soviet Union.<sup>48</sup> The company acted as agent for several large Norwegian companies in the Soviet Union and as such was a Norwegian equivalent to the *Comptoir Franco-Russe*. The company's request was supported by the Federation of Norwegian Industries (*Norges Industriforbund*) and a long list of large industrial firms. However, no aluminium producers signed the peti-

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45 *Stortingsforhandlingene*, (henceforth SF) Stortingsproposisjon nr. 50, 1922: "Om delvis statsgaranti ved kredittsalg til Russland av russebehandlet saltfisk og saltet storsild og vårsild av innevevende års fangst".

46 A sola bill of exchange is an unconditional order in writing, signed and addressed by the drawer (the exporter usually) to the drawee (the confirming bank or the issuing bank usually), requiring the drawee to pay the drawer a certain sum of money at sight or at a fixed or determinable future time.

47 SF, Stortingsproposisjon nr. 37, 1927: "Om delvis statsgaranti ved kredittsalg til Sovjetrepublikkforbundet av tørrfisk og russebehandlet saltfisk samt av saltet storsild og vårsild", 2.

48 Copy of letter from Andreas G. Wefring of the Leningrad Shipping & Trading Company to the Norwegian Government, 8 November 1926, box 1914, Norges Industriforbund, saksarkiv II, Riksarkivet, Oslo.

tion.<sup>49</sup> The Leningrad Trading & Shipping Co. argued that Norwegian exports to the USSR had suffered as a consequence of the huge credits granted by Germany and large financial institutions in other countries. The Norwegian government brought the petition before the *Storting* without endorsing it, and in May 1927 it was eventually turned down.<sup>50</sup>

However, the matter did not go away and was subsequently taken up by the Soviet trade delegation in Norway.<sup>51</sup> The Soviet representatives claimed that their country would be able to purchase considerable amounts of Norwegian goods if they received credit terms, and they would also be willing to buy more fish from northern Norway. This offer was a winning combination, since it aided both Norwegian industry and its northern population, making it far too tempting to turn down for the Norwegian Government. In late January 1929, the Norwegian government sent a bill to parliament which extended the State guarantee to cover industrial products as well. The bill was recommended by a sub-committee in February. The question was then fiercely debated in a plenary session in the *Storting* on 19 February before finally winning a majority vote.<sup>52</sup> *The Norwegian state would guarantee credit sales to the Soviet Union for up to NOK 15 million (about £825,000). The guarantee would cover up to 75% of the value of the exported goods, but the deliveries had to be predominantly of Norwegian manufacture.*<sup>53</sup> *This last stipulation proved to be decisive in the development that followed.*

*In just under two years the Storting had made a complete turnaround. The 1927 petition had been the work of Norwegian business interests but was turned down, some months later the same petition – this time from a foreign power – met with success. What had changed in the meantime?<sup>54</sup> Why would the Norwegian authorities say no to their largest industrial companies, especially companies with strong connections in the political establishment, and yes to the Soviet Union? The*

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49 *SF*, Stortingssmeddelelse nr. 8, 1927: “*Om statsgaranti for norske eksportørers fremtidige varekredit til Russland.*” The Department of Trade’s proposition was issued 4 February 1927.

50 *SF*, Stortingstidende 5 July 1927, 1928.

51 *SF*, Innst. S. nr. 27, 1929: “*Innstilling fra den forsterkede næringskomite nr. 1 om delvis statsgaranti ved kredittsalg av norske varer til Sovjetrepublikkforbundet*”, 63.

52 *SF*, Stortingstidende 19 February 1929, 373–389.

53 *SF*, Innst. S. nr. 27, 1929: “*Innstilling fra den forsterkede næringskomite nr. 1 om delvis statsgaranti ved kredittsalg av norske varer til Sovjetrepublikkforbundet*”, 65.

54 The same question was actually raised by the representative Garnes in the parliamentary debate in 1929: “Kva er det, som har hendt desse tvo siste åra, som no gjer det rådelegt å gå til ei so stor utviding av denne trygda?” (What has happened during these last two years which now makes it advisable to accept such a large extension of this public assistance?), see *SF*, Stortingstidende, 19 February 1929, 373.

answer was aluminium, coupled with an alliance between AF, Aluminium Limited and the Soviet authorities.

The Soviet trade delegation in Norway singled out aluminium as especially important already in the initial contacts with the Norwegian government.<sup>55</sup> After Metalloimport and AF had settled the aluminium contract in November 1928, the Soviet Union made its next move in Norway. Early in December Alexander Shliapnikov, Metalloimport's director, came to Oslo where he met up with Michel Glouchevitch, the director of the Comptoir Franco-Russe, and Jean Pertuisot, AF's sales director.<sup>56</sup> Their actions became public knowledge a few months later. In the parliamentary debate on the question of extending the credit guarantee scheme, Lars Oftedal, the Minister of Trade, revealed that he had been approached by representatives from the aluminium industry which had told him that if the guarantee was not extended to cover aluminium, operations would cease at one of the works in Norway.<sup>57</sup> Earlier in the debate, Oftedal had referenced the soft-spoken but urgent appeals of certain leading industrial groups; he might more properly have qualified these appeals as menacing. The threat was clear and unmistakable. Either the aluminium producers got what they wanted or Norwegian workers would lose their work. The cabinet minister did not disclose which plants would be closed, but it would likely have been one of DNN's works, since they were jointly owned by Aluminium Limited and AF.

The initiative to assert pressure on the Norwegian government came from the Soviet Union, and not from the aluminium producers. This initiative must be understood in connection with the Soviet's constant need for credit to be able to purchase foreign goods. During the first four aluminium contracts in 1926 and 1927, the aluminium producers had either supplied credit on their own risk, or with the help from the cartel or through the Soviet-controlled Sofidenord. In the instances where Aluminium Limited and AF had given credit, the companies had naturally enough been unwilling to grant it for long periods, and typically no more than six months. By using Sofidenord, Shliapnikov had been able to get AF to agree to extend the credit for nine months. Yet it is natural to assume that Sofidenord's funds were limited, and by tying up large sums in aluminium, the Soviet Union reduced its opportunities to purchase other goods from France. The petition from the Leningrad Trading & Shipping Company in 1927 showed a way out of this

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55 SF, Innst. S. nr. 27, 1929: "*Innstilling fra den forsterkede næringskomite nr. 1 om delvis statsgaranti ved kredittsalg av norske varer til Sovjetrepublikkforbundet*", 63.

56 Addition dated 10 January 1930 to the unsigned memorandum "Note sure les contrats russes", dated 27 June 1928, box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

57 SF, Stortingstidende 19 February 1939, 384.

dilemma. Both Aluminium Limited and AF already used their Norwegian works to deliver large parts of the Soviet sales, and if the parties could get the Norwegian government to take on the risk, DNN could take over the dominant share of the deliveries.

From the start aluminium dominated the Norwegian guarantee for industrial sales. In 1929, a total quantity of 3,900 tons of aluminium valued at more than NOK 5.2 million (about £285,000) was covered by the state guarantee.<sup>58</sup> The Norwegian state guaranteed 75% of the total aluminium sales, more than one-third of the total value of the sales covered by the Norwegian credit arrangement that year. In the following years, aluminium remained the main beneficiary of the guarantee. Yet, Aluminium Limited and AF were not able to keep the Soviet market exclusively for themselves. The reason for that was to be found in Norway, however not in DNN.

## **NACO in Crisis**

DNN was one of five different Norwegian aluminium companies in the interwar period, and just like DNN, the four other producers were also controlled by foreign companies. Foremost among the other Norwegian producers was NACO. Since 1923, Alcoa/Aluminium Limited had a controlling interest in NACO, with 50% of the shares and a majority on the board of directors, while the rest of the shares were in the hands of Norwegian shareholders. To explain the subsequent events, it is necessary to outline the governance structure of NACO. The NACO board consisted of seven directors, four elected by Aluminium Limited and three by the Norwegian shareholders. Aluminium Limited's four representatives were two American directors, the company's Norwegian legal consultant Herman Christiansen, and NACO's managing director Sigurd Kloumann. The two American directors rarely turned up at the board meetings, it was therefore usually left to Christiansen and Kloumann to speak Aluminium Limited's case. Unlike the other Norwegian aluminium companies in the period, NACO had a great deal of independence from its foreign owner, and it maintained its own sales organisation, although it was only allowed to sell autonomously on the Scandinavian market. In the rest of the world all sales had to go through Aluminium Limited.<sup>59</sup>

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58 SF, St. prp. nr. 13, 1930: *Om delvis statsgaranti ved kredittsalg av norske varer til Sovjetrepublikkforbundet*, p. 2.

59 NACO's history before 1940 is treated in detail in Storli, *Out of Norway*.

The problem for NACO was that the Scandinavian market was rather small and that the orders received through Aluminium Limited dried up in 1928. As a consequence, by January 1929, NACO had large unsold stocks on hand and the liquid funds were running dangerously low. If the company did not increase its sales immediately, all production would have to be stopped. In this desperate situation, the board of directors convened for a crisis meeting. The board settled on a plan. From sources within government they had been informed that the Soviet trade delegation had approached Norwegian authorities with the purpose of getting a large order for aluminium from AF covered by the proposed credit guarantee. The contract between AF and the Soviet Union concerned 4,000 tons aluminium. The directors appointed by the Norwegian shareholders argued that NACO should contact the Norwegian government and demand to get a substantial part of the contract. The board also decided to make an urgent appeal to Aluminium Limited to get help in securing NACO's existence.<sup>60</sup>

NACO's plea to the government was successful. After having been contacted by NACO's Norwegian directors, the government immediately approached the Soviet trade delegation in Norway and told them that if NACO did not receive orders from the Soviet Union as large as the ones given to DNN (through AF), the credit guarantee would be shelved.<sup>61</sup> The Soviets were unable to meet the demands outright, as the contract had already been signed with DNN.<sup>62</sup> But the Norwegian stance was effective. Not only did the Soviet Union purchase an additional amount of aluminium from NACO, a contract for 700 tons, but the intervention of the Norwegian authorities also induced Aluminium Limited to transfer its share of the Soviet orders for 1929 from DNN to NACO.<sup>63</sup> In total NACO sold 1,800 tons aluminium to the Soviet Union in 1929, and the orders helped alleviate NACO's precarious financial position.<sup>64</sup>

The Norwegian government backed NACO because, unlike DNN, NACO was 50% owned by Norwegian capital. The Norwegian ownership set the company apart from the other Norwegian aluminium producers and it was viewed by the

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60 Minutes of Board meeting 9 and 10 January 1929, box 37, file: 1115-2-2, NACO archives, Hydro bedriftshistoriske samlinger, Notodden (hereafter NACO archives).

61 Letter from the Department of Trade to the Soviet Trade Delegation in Norway, 11 January 1929, Handelsdepartementet, Handelskontoret: Eksportkredittordningen Sovjet, box 240, Riksarkivet.

62 Letter from the Soviet Trade Delegation in Norway to the Department of Trade, 16 January 1929, Handelsdepartementet, Handelskontoret: Eksportkredittordningen Sovjet, box 240, Riksarkivet.

63 Report from Kloumann to the Board of directors, dated Oslo 23 May 1929, box 38, file 1115-2-3, NACO archives.

64 Memorandum by Sigurd Kloumann, 7 March 1930, box 81, file: *bilagsmappe 31-33*, NACO archives.

authorities to be more “Norwegian” than DNN and thus it merited special treatment. In addition, the fact that NACO produced its own alumina gave the company a better position than its other competitors, which relied on imported alumina. The Norwegian Government’s decision in 1929 to make the credit guarantees contingent upon NACO receiving an equal share of sales to the Soviet Union alongside DNN changed the way AF and Aluminium Limited could operate on the Soviet market. The two companies were willing to pay this price, as the Norwegian credit was much more generous than what could be arranged elsewhere.

In June and October 1929, Louis Marlio signed two new contracts with the Soviet Union for the total amount of 6,000 tons aluminium. As previously arranged, Aluminium Limited was allocated one-third of the orders, most of which was passed on to NACO.<sup>65</sup> A total of 2,500 tons were placed under the Norwegian credit guarantee, which was split between DNN and NACO. Sofidenord supplied the credit for most of the remaining order, while AF had to bear the risk for the rest. The secret rebate was covered in full by AF.<sup>66</sup> Marlio obviously still did not want Aluminium Limited and his fellow cartel members to know that he was cheating on the official cartel policy.

In line with its five-year plan, the Soviet Union wanted to set up a domestic aluminium industry but needed to import the technology. In late 1929, Soviet representatives negotiated with VAW, Aluminium Limited and AF to have the producers provide assistance in setting up aluminium works. The French producers won the contract, which was signed in January 1930.<sup>67</sup> Marlio used the contract to cement his grip on the Soviet market. He told Edward Davis that the Soviet authorities had agreed to give him all aluminium orders for the next four years in return for supplying technical assistance and said that AF was willing to let Aluminium Limited continue to get one-third of all future contracts if the Americans kept out of all direct sales activity in the Soviet Union. Edward Davis approved of the offer. He was afraid that if his company did not cooperate, they would only drive down prices and still lose out on the Soviet contracts. However, he could only accept the offer after having been assured by Kloumann that NACO would not object to

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65 Report for the period May-September 1929 from Kloumann to NACO’s Board of Directors, box 82, file: *bilagsmappe 29-30*, NACO archives.

66 Addition dated 10 January 1930 to the unsigned memorandum “Note sure les contrats russes”, dated 27 June 1928 and unsigned and undated memorandum on the Soviet sales entitled “Note sure les contrats russes”, both in box 500-2-17777, file: *contrats russes 1927-1940*, Pechiney archives.

67 The contract is discussed in detail in René Bonfils, “Pechiney au pays des Soviets. Le contrat russe de 1930”, *Cahiers d'histoire de l'aluminium* 23 (1998), 29–50.

it, and that the Norwegian company would not sabotage the agreement by selling directly to the Soviet Union.<sup>68</sup>

## NACO's Soviet Putsch

With harmony restored in the aluminium camp and with privileged access to the profitable Norwegian credit guarantee, the aluminium sales to the Soviet Union could continue. In April 1930, AF signed a new contract with the Soviet Union. One-third of the volume was given to Aluminium Limited, which again allocated its part to NACO.<sup>69</sup> In July 1930, AF arranged to sell 1,000 tons aluminium wire bars to the Soviet Union. At the insistence of the Norwegian government, half of the order was allocated to a third Norwegian aluminium company, Haugvik Smelteverk, while AF and Aluminium Limited divided the rest among themselves, with 250 tons going to DNN and 250 tons to NACO. A predominant part of the contract was covered by the Norwegian credit guarantee, which explains why the order was split between all the three Norwegian aluminium companies interested in making a sale to the Soviet Union.<sup>70</sup>

Having established order on the Eastern front, Marlio was optimistic for the future. At a cartel meeting in August 1930, he revealed to the other cartel members that he was negotiating with the Soviet Union for a large contract, probably concerning 10,000 tons aluminium, for 1931. However, since the Soviet authorities would only allow 50% of the order to be placed under the Norwegian state guarantee, he demanded that the cartel should carry the risk of the other half of the sale. In return, considerable parts of the contract would be given to AIAG and VAW.<sup>71</sup>

The future did not work out the way Louis Marlio planned. Although the Soviet Union did indeed sign a huge contract for aluminium in January 1931, the selling

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68 Telegram from Edward Davis to Sigurd Kloumann, 28 March 1930, printed as exhibit 880 in *District Court of the United States for the Southern District of New York, United States of America vs. Aluminum Company of America, et al* (hereafter US vs. Alcoa). Marlio describes his proposal in letter to Max von der Porten, VAW's general director, 5 April 1930, box 00-2-159541, file: correspondence with VAW 1926-1931, Pechiney archives.

69 NACO sold about 1,800 tons to the Soviet Union in 1930 (Annual report 1932, box 51, file 9002A, NACO-archives) and according to Louis Marlio, Aluminium Limited's share amounted to 1,800 tons in that year (see Marlio, 58).

70 Unsigned and undated memorandum on the Soviet sales entitled "Note sure les contrats russes", box 500-2-17777, file: contrats russes 1927-1940, Pechiney archives.

71 Transcript of cartel meeting, 7 August 1930, box 00-2-15940, file: reunions du comité 1930-1932, Pechiney archives.

company was not AF, but NACO. The transaction, which represents a decisive moment in NACO's history and had important repercussions for the company's standing in the international industry, has been overlooked in the existing literature. Except for a brief mention in Kåre Fasting's commissioned history on NACO, this huge contract – the largest single contract in the aluminium industry before World War II – has been completely ignored. According to Fasting, the contract, which he claims consisted of 17,000 tons aluminium, was the work of Sigurd Kloumann. Fasting argues, not very convincingly, that NACO won the contract first and foremost because the company had lowered its production costs for alumina and aluminium considerably.<sup>72</sup> Kloumann himself claimed that he was the important factor. Late in his life, he repeatedly asserted that he had personally secured the Soviet contracts for NACO despite the competition from both AF and Aluminium Limited.<sup>73</sup>

The source material to a certain degree validates Kloumann's account; he really did play a major role. But the reason NACO succeeded in winning this contract at the expense of AF can be found in events that occurred far beyond the control of Sigurd Kloumann. External factors opened a window of opportunity for the Norwegian industrialist, and he made the most of the situation.

After the Russian revolution, relations between the new Communist regime and France were difficult. The French state, banks and private investors had lent enormous amounts of money to tsarist Russia, and were also the largest investor in the country. The Soviet authorities refused to accept responsibility for this debt, and did not pay compensation for the French investments seized through nationalization. As long as the debt question remained unsettled, the changing French governments had trouble establishing a normal state of affairs with the Soviet regime. Depending on who was in power in France, the authorities pursued ever-shifting policies of rapprochement and distancing towards the Soviet Union. In 1930, the French government reverted to a hard stance towards the Soviet Union.<sup>74</sup> In October 1930, less than two months after Marlio had informed the cartel about the large contract that he was confident to land, France issued antidumping clauses against goods from the Soviet Union. The Soviet regime responded by banning French imports.<sup>75</sup> The confrontation had direct implications for the alumi-

72 Fasting, *Norsk Aluminium*, 157.

73 Note by Sigurd Kloumann on his professional life 15 August 1947, Landssviksak 4226, box 6, file IX-1-4, Landssvikarkivet, Riksarkivet. See also letter from Kloumann to Nils Olav Young Fearnley, 4 August, 1943, private archive material kept by Thomas Fearnley, Nittedal.

74 Carley, *Franco-Soviet Trade*, 30–33.

75 Telegram from Edward Davis to Kloumann, 24 October 1930, printed as exhibit 818 in *US vs. Alcoa*.

mium sales. When Louis Marlio went to Moscow in December, he found that the Soviet negotiators were much less receptive towards AF than they had been on his previous travels. Marlio took this to be a result of the new French policy towards the Soviet Union.<sup>76</sup>

NACO was ready to step into AF's position, and the key was the Norwegian state guarantees and Aluminium Limited's new policy on sales to the Soviet Union. As we have seen, since 1928 AF and Aluminium Limited had a working agreement that the companies should split the Soviet orders based on a two-to-one ratio. In the summer of 1930, however, Edward Davis, "actuated by [his] extreme fear of the Russian situation", pulled Aluminium Limited out of the agreement. Davis wanted Aluminium Limited to proceed on its own in the Soviet Union in order to have better control over the credit risk borne by the company. At the time, Davis told Marlio that Aluminium Limited would pull out of the Soviet market completely, or else quote prices so high that it was unlikely that the company would get any business there.<sup>77</sup> Marlio had reason to feel confident.

Shortly after the agreement between AF and Aluminium Limited was terminated, however, Aluminium Limited was again, indirectly, dealing with the Soviet authorities. In July 1930, the Soviets contacted NACO and offered to buy 900 tons of aluminium wire bars.<sup>78</sup> The deal was enthusiastically supported by the Norwegian authorities and was made on the condition that the sale be executed by NACO alone.<sup>79</sup> However, the Soviet market was not allocated to the Norwegian company, so NACO had to get permission from Aluminium Limited.<sup>80</sup> The deal marked a turning point. Since 1927, the French producers had taken care of all negotiations with the Soviet Union, setting aside a piece of the action for Aluminium Limited. Due to NACO's dire financial straits, the Canadians had allocated their share of the sales to the company, but in practice NACO had played the role of a sub-contractor, leaving the contract negotiations with the Russians to AF. Now Sigurd Kloumann and NACO established a direct link with the right people in the Soviet Union. The

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76 Bonfils, *Le contrat russe*, 4.

77 Letter from Edward Davis to Kloumann, 24 October 1930, printed as exhibit 818 in *US vs. Alcoa*. In the letter Davis give an account of his company's changing policies towards the Soviet market from 1928 and onwards.

78 Copy of telegram from Kloumann to the Norwegian board members of NACO, 26 July 1930, box 38, file 1115-2-3.NACO-archives. Confer letter from Kloumann to the Soviet trade representation in Norway, 29 August 1930, box 1914, saksarkiv II, Norges Industriforbund, Riksarkivet.

79 See copy of letter from Sigurd Johannessen, chairman of the Norwegian Commission of Russian affairs (Russlandskommisjonen) to the Department of Trade, 31 July 1931, box 1914, saksarkiv II, Norges Industriforbund, Riksarkivet.

80 Letter from Edward Davis to Kloumann, 24 October 1930, printed as exhibit 818 in *US vs. Alcoa*.

direct channel combined with the fact that Kloumann was better placed than AF to make use of the Norwegian state guarantee, meant that NACO was established as an independent player on the Soviet market.

NACO's big chance came when the relationship between France and the Soviet Union broke down in October 1930. In November, the Soviet authorities approached NACO in order to start negotiations for a large contract. After having received the go-ahead from Edward Davis and Elmer MacDowell (Aluminium Limited's sales director), Kloumann and two co-directors went to Moscow together with a large delegation of Norwegian politicians, bureaucrats and businessmen to negotiate with the Soviet Government for the next year's sales to be placed under the Norwegian credit guarantee.<sup>81</sup> In Moscow, NACO offered the official cartel price and conditions, but the offer was rejected by the Soviet representatives. After returning to Norway, the NACO delegation nevertheless kept in touch with the Soviet trade representation in the country, and in December the company made a new offer. The price and credit rate remained the same, but the Soviet Union would not have to pay interest during the credit period.<sup>82</sup> The Soviet negotiators accepted the new terms, but explained that at the moment they were only able to sign a contract for 1,000–1,500 tons and that the situation did not allow them to sign a binding agreement for deliveries in 1931. NACO's Board of Directors, though pleased with the order, chose to take a gamble. They would not accept this contract unless the Soviet Union gave a binding promise concerning the sale of next year's quantity.<sup>83</sup>

Thus by the end of December 1930 both AF and NACO had made an offer to sell the Soviet Union all the aluminium the country needed for 1931. Marlio only became aware of NACO's intrusion on the Soviet market in early January 1931 and he immediately made overtures to André Henry-Coüannier, Aluminium Limited's representative in Paris, to find out what was going on. Henry-Coüannier, with Edward Davis' blessing, told Marlio to find a joint solution with NACO. The Frenchman imagined that he could find an agreement along the lines of what they had previously accepted, namely that AF should be allocated at least two-third of the sales.<sup>84</sup> On 22 January, the Soviet Union finally signed the contract for 1931.

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81 SF, Stortingstidende 3 February 1931, 72.

82 The account is based on minutes of meeting of NACO's Board of Directors, 12 December 1930, box 82, file: *bilagsmappe 36-38*, NACO archives.

83 Minutes of meeting of NACO's Board of Directors, 18 and 19 December 1930, box 82, file: *bilagsmappe 36-38*, NACO archives.

84 Transcript of cartel meeting, 15 January 1931, box 00-2-15940, file: *reunions du comité 1930-1932*, Pechiney archives.

The whole contract concerning 8,000–10,000 tons aluminium was awarded to NACO (the contract was later increased to a total of 11,500 tons).<sup>85</sup> Louis Marlio and AF had been shut out from the Soviet market by Sigurd Kloumann and NACO.

### **NACO and AF on the Soviet Market**

The decision was a huge blow for AF, but Marlio did not give in without a fight. The contract was so large that NACO could not fill it alone. Kloumann's plan was to supplement the NACO-produced aluminium with Aluminium Limited's quota of the metal made by DNN and by deliveries from Haugvik Smelteverk. Thus, he would also meet the Norwegian Government's demand that the credit guarantee be enjoyed by all Norwegian aluminium companies interested in selling to the Soviet Union. The aluminium sales covered by the credit guarantee in 1930 had been divided according to the quota of 40% to NACO, 40% to DNN and 20% to Haugvik Smelteverk. Kloumann was willing to keep the same allocation in 1931. Still, the plan contained a flaw. Marlio was able to stop Kloumann from getting access to DNN's metal. In March 1931, the French owners, with the support of co-owner BACO, passed a resolution stipulating that DNN would not make any deliveries to the Soviet Union under the Norwegian Government guarantee unless the company's Supervisory Board gave its approval in advance.<sup>86</sup> The resolution was aimed directly against Aluminium Limited and NACO, and it put a stop to the initial plan.

With that possibility out of the way, Edward Davis gave NACO's Norwegian Directors two choices. Either NACO took the whole contract in its own name and borrowed the aluminium needed from Aluminium Limited's share of DNN's production, or NACO ceded 40% of the contracted amount to DNN as a company, meaning that DNN's French and British owners also got an opportunity to participate in the contract. The Board decided that since the Soviet authorities had told Kloumann that they would not buy aluminium from any French company, NACO should continue on its own and borrow the additional metal from Aluminium Limited.<sup>87</sup> Yet they soon changed their mind. The Board reconvened only four days

85 Minutes of meeting of NACO's Board of Directors, 14 March 1931, box 82, file: *bilagsmappe 36-38*, NACO archives.

86 Minutes of the meeting of DNN's Surveillance Committee, 12 March 1931, Box 001-14-20488, file: DNN, Pechiney archives. Confer letter from André Henry-Couannier to Elmer MacDowell, 12 March 1931, printed as exhibit 857 in *US vs. Alcoa*.

87 Minutes of meeting of NACO's Board of Directors, 14 March 1931, box 82, file: *bilagsmappe 36-38*, NACO archives.

later, and the directors now decided to try to get the Soviet buyer to accept that DNN participate directly with 40% of the contract. The change of heart was caused by the realisation that NACO, even with borrowed aluminium, would have difficulty filling the orders within the tight delivery schedule the company had agreed to with the client. In addition, by letting the other company in on the deal, it would also be possible to establish “a friendly cooperation with DNN in the future”.<sup>88</sup>

The decision must have been well received by Edward Davis. At the same time as Marlio and Kloumann were driving the conflict between AF and NACO to new heights, Davis was working hard to establish a new cartel where both the Europeans and the North American company participated. Marlio was due to come to Montreal in April to discuss the cartel scheme, and Davis worried that the “relatively small matter” of NACO’s Soviet contract should interfere with the major subject to be discussed in Canada. “It would be a pity for Mr. Marlio or any of them, to get their backs up over the Norsk-Russian affair and prejudice their views as to the agenda of the meeting”, wrote Davis to Henry-Coüannier a few days before the whole affair was resolved peacefully.<sup>89</sup>

In May 1931 Sigurd Kloumann went to Berlin to meet with Louis Marlio to make the arrangements for DNN’s participation in the January contract with the Soviet Union. The pair also discussed future cooperation on the Soviet market. Marlio, who at the start of the year wanted to have at least two-thirds of the contracts, was now prepared to accept a much lower cut. Although no settlement was reached at this time, they continued to discuss the question through the summer and autumn.<sup>90</sup> The question of the Soviet market was also discussed as an integral part of the new cartel agreement, and in Paris in July 1931 the large producers agreed that in the event of a new Russian contract, 50% of the sales would be supplied by the Norwegian companies which enjoyed a guarantee. At the request of the two cartel members without a Norwegian subsidiary, the German VAW and the Swiss AIAG, the remaining 50% would be divided among the members of the cartel. It was stipulated that each cartel member receive a cut of the total sales to the Soviet Union which was proportionate to the total production

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88 Norwegian original: “[...] for om mulig at etablere et venskabelig samarbeide med D. N. N. i fremtiden [...]”, minutes of meeting of NACO’s Board of Directors, 18 March 1931, box 82, file: *bilagsmappe 36-38*, NACO archives.

89 Letter from Davis to Henry-Coüannier, 15 March 1931, printed as exhibit 856 in *US vs. Alcoa*.

90 Transcript of cartel meeting, 8 May 1931, box 00-2-15940, file: reunions du comité 1930-1932, Pechiney archives, telegram from André Henry-Coüannier to Edward Davis, 9 May 1931, printed as exhibit 854 in *US vs. Alcoa*, and minutes of meeting of NACO’s Board of Directors, 12 June 1931 and 18 and 19 September 1931, both in box 62, file: *bilagsmappe 39-41*, NACO archives.

quotas in the cartel. Louis Marlio was given the task of making the final arrangements with Sigurd Kloumann.<sup>91</sup>

Late in the autumn of 1931, Marlio could reveal at a cartel assembly that he had struck a deal with Kloumann along the lines of the cartel stipulation. The aluminium producers would negotiate the 1932 contracts with the Soviet Union in two rounds, first Kloumann in the name of the Norwegian companies, and then later Marlio would negotiate with the Soviet authorities. The Norwegian companies would receive 50% of the sales, while a total quantity of 2,500 tons of the next 50% would be given to the Italian producers SAVA and SIDA. These two companies were in a similar position to NACO as they were only partly owned by a cartel member, AIAG and VAW respectively – and the remainder of the shares was owned by domestic interests, Montanistica in the case of SAVA and Montecatini in the case of SIDA. Like NACO, neither SAVA nor SIDA participated in the cartel, so giving them a part of the Soviet sales was a good way of making sure that they would cooperate with the large producers. There was an additional factor here as well. Italy was one of the few countries willing to supply a state guarantee for credit sales to the Soviet Union and by allocating some deliveries to companies with domestic ownership interest it would be easier to get the sales covered by a guarantee. The remaining part of the Marlio-contracts with the Soviet Union was divided among the European cartel members.

When Kloumann was invited to come to Moscow to negotiate the contract for 1932, he first went to Paris to meet with Marlio and decide on prices and conditions to be quoted to the Soviets.<sup>92</sup> In accordance with the wishes of the Norwegian Government, the two parties decided to divide the Norwegian sales to the Soviet Union along the previously established lines, that is 40% to NACO, 40% to DNN and 20% to Haugvik Smelteverk. The spirit of cooperation was now dominating most aspects of the industry and it was also trickling down to the NACO-AF relationship. The result of the new arrangement was that the Soviet sales, which initially had been exclusively controlled by AF and Aluminium Limited, now were divided among the cartel members and four smaller companies which were not directly involved in the cartel.

The arrangements made in 1931 were applied to the contracts for both 1932 and 1933. The aluminium producers negotiated in two rounds with the Soviet autho-

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91 Cartel agreement, 3 July 1931, journals of Alliance Aluminium Company, records of British Aluminium Company, Glasgow University Archive Services, British Alcan archive, UGD 347, 21-45-6.

92 Minutes of meeting of NACO's Board of Directors, 6 October 1931, box 81, file: *bilagsmappe 42-46*, NACO archives.

rities, Kloumann taking care of the first negotiations on behalf of the Norwegian producers, while Marlio handled the second. The contracts secured by Kloumann were divided among DNN, NACO and Haugvik according to the established ratio.<sup>93</sup> The Marlio contracts were covered by the guarantees supplied by the Italian and German governments and Sofidenord. In both 1932 and 1933 a substantial part of the Marlio contracts were left uncovered by guarantees, and the risk had to be borne by the sellers.<sup>94</sup> Even the portion covered by a credit scheme proved expensive. Sofidenord's services could only be used for sales from France to the Soviet Union, but since AF filled its quota of Soviet sales from DNN, the cartel producers arranged it so that in 1932 VAW and AIAG delivered their portion from cartel stocks of aluminium in France. In order to have this arrangement accepted by the Soviet negotiators, Marlio had to pay a huge bribe to his contacts in the regime.<sup>95</sup>

The arrangement between Marlio, supported by the European cartel members, and Kloumann, on behalf of NACO, disintegrated in 1934. At a meeting in December 1933, Marlio told the Board of Directors of the aluminium cartel that a conflict had broken out with Kloumann on the subject of the Soviet sales.<sup>96</sup> Although the minutes do not disclose what the base of the conflict was, it stemmed from the fact that the cartel changed its policy on contact with the Soviet Union. From the time the new cartel was organized in 1931, cartel members had channelled all sales to Russia through the negotiations carried out by Louis Marlio. For the 1934 sales, the cartel decided to let the producers negotiate for themselves. However, if a cartel member sold a quantity of aluminium to the Soviet Union, it was obligated to purchase the same quantity of metal from the cartel's central stock. The separate negotiation policy was not intended to apply to Norway. The cartel decided that Kloumann should negotiate with the Soviet Union and the Norwegian government for inclusion in the state guarantee on behalf of the Norwe-

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93 The negotiations with the Soviet authorities for the 1932 contract is treated in detail in letter from Kloumann to Marlio, 4 November 1931, box 73, file: *bilagsmappe 47-49*, NACO archives. For more information about the 1932 contract see: minutes of meeting of NACO's Board of Directors 25 and 26 January 1932, box 81, file: *bilagsmappe 42-46*, NACO archives, minutes of meeting of NACO's Board of Directors 25 and 26 April 1932, agreement between DNN, Haugvik Smelteverk and NACO for Soviet sales, 8 April 1932, both in box 73, file: *bilagsmappe 47-49*, NACO archives. For information about the 1933-contract, see minutes of meeting of NACO's Board of Directors, 15 August 1932, box 73, file: *bilagsmappe 50-53*, NACO archives.

94 See minutes of cartel meeting, 6 October 1932, file 00-2-15928B, Pechiney archive.

95 Letter from Marlio to Kloumann, box 500-2-17777, file: *contrats russes 1927-1940*, Pechiney archives.

96 Minutes of cartel meeting, 20 December 1933, file 00-2-15928B, Pechiney archive.

gian aluminium industry. The sales he arranged with the Soviets should be split between NACO, DNN and Haugvik based of the established allocations.<sup>97</sup>

The only problem with the new arrangement was that NACO's Norwegian owners did not accept it. Their rejection was due in part to the fact that NACO had not been consulted in advance as regards the new policy, and in part because the Soviet demand for aluminium was showing clear signs of waning. In the first instance, the Norwegian owners' ire was directed towards Aluminium Limited. At the February cartel meeting, the cartel producers decided to establish a fixed price below which the members were not allowed to quote when selling to the Soviet Union. Edward Davis promised that NACO would adhere to the policy, but did not discuss it with the representatives of the Norwegian owners in advance. The Norwegian directors were first told of Davis' promise in mid-February 1934.<sup>98</sup> The information sparked a stream of telegrams and letters where Kloumann tried to convince Aluminium Limited as to the imprudence of Davis' action and to find a way out of the quandary.<sup>99</sup>

NACO's Norwegian owners refused to accept the new policy. In a meeting with cartel representatives in March 1934, Kloumann declined to accept to negotiate along the lines proposed by the cartel. He argued that under the new policy NACO ran the risk of finding itself in direct competition with the other producers. If that was the case, he might as well compete with DNN and Haugvik, since these companies, in reality, were little more than extensions of the other producers. In short, he preferred NACO to keep its freedom. Then the meeting took an interesting turn. The cartel representatives argued that it was in Kloumann's interest to limit the competition, especially the competition from the other Norwegian producers. At this point the cartel played its trump card: The Board of the cartel had reasoned that the best result would be obtained if the Norwegian aluminium producers presented a unified front towards the authorities. Surely Kloumann did not dream of negotiating alone both with the Soviet Union and with the Norwegian government?<sup>100</sup>

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97 Minutes of cartel meeting, 10 February 1934, file 00-2-15928, Pechiney archive. The decisions concerning Norway were not included in the minutes, but can be found in the report written by Dupin after the conference with the NACO management, 12 and 13 March 1934, file 00-2-15928, Pechiney archive.

98 Letter from Braasch to Kloumann, 15 February 1934, box 82, file: *bilagsmappe 59-61*, NACO archives.

99 Confer letter from Kloumann to Braasch 23 February, telegram from Christiansen and Kloumann to Braasch, 26 February, telegram from Braasch to Kloumann 27 February and letter from Kloumann to Braasch 6 March 1934, box 82, file: *bilagsmappe 59-61*, NACO archives.

100 Louis Marlio was prevented from attending, but was originally supposed to have presided at the

This was exactly what Kloumann intended. He was not at all concerned about meeting the Norwegian authorities alone, after all, his company was “*beaucoup plus norvégienne*” (much more Norwegian) than the other companies and was therefore better placed to be covered by the credit arrangement. Kloumann reasoned that it would be possible to get a priority on these guarantees; perhaps NACO might be the only company granted support? Kloumann would only be willing to include DNN and Haugvik if his company, NACO, was given a guarantee by the cartel of minimum sales of 1,500 tons of aluminium to the Soviet Union in 1934. Alarmed by Kloumann’s stance, the cartel representatives approached Sigurd Johannessen, chairman of the Commission of Russian affairs (*Russlandskommissjonen*), the government institution responsible for administering the Norwegian State guarantee. Johannessen did not put their fears to rest. On the contrary, he warned that if the Norwegian exports of aluminium to the Soviet Union were small in 1934, the Norwegian government might agree to have NACO as the only aluminium producer to receive a State guarantee.

The envoys from the cartel had to return empty-handed. NACO did not accept the cartel decision, and just as Kloumann had predicted, in 1934 the company was the only aluminium producer included in the Norwegian state guarantee. However, NACO only sold 712 tons of aluminium to the Soviet Union in 1934, well below the 1,500 tons guarantee demanded by Kloumann from the cartel and a far cry from the large sales volumes recorded by NACO in the early 1930s.<sup>101</sup>

The key to the breakdown in the agreement between NACO and the other Norwegian companies, which in fact only represented their foreign owners, was the dwindling Soviet demand for aluminium. The trend was already evident in the spring of 1933, when Kloumann reported to his Board that the Soviet Union’s purchasing power was decreasing due to the strong economic pressure. The country was also starting to establish its own domestic aluminium industry. Both factors lead to reduced opportunities for generate aluminium exports from the West.<sup>102</sup> Cooperation was easy when demand was strong, but much more difficult when it began to wane. When the Soviet orders threatened to become very small, exporters were less keen on sharing them with competitors. This mechanism seems

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negotiations. The description of the meeting is based on a report written by Jean Dupin after the conference with the NACO management, 12 and 13 March 1934, file 00-2-15928, Pechiney archive.

101 Annual report 1934, box 51, file 9002A, NACO-archives. In addition to aluminium, NACO also sold 400 tons of alumina to the Soviet Union in 1934, see SF, St. prp. nr. 57 (1935): *Om delvis statsgaranti ved kredittsalg av norske varer til utlandet*.

102 Supplementary report by Kloumann to NACO’s board of directors, 31 May 1933, box 73, file: *bilagsmappe 54-56*, NACO archives.

to have played a part both in the cartel's decision to stop making concerted bids to the Soviet Union and in NACO's insistence that the company would not share the orders with the other Norwegian companies. Of the cartel members, Marlio had the connections and the experience in dealing with the Soviet negotiators. Long practice had made him a master of that very special business environment. It is safe to assume that Marlio was confident that his company would be awarded future contracts with the Soviet Union. The only serious competition came from NACO. Kloumann had also learnt to master the art of trading with the Communists and, unlike Marlio, could rely on the Norwegian state credit guarantee. However, if DNN and Haugvik continued to be allocated three-fifths of all Norwegian sales to the Soviet Union, the French company, which had ownership interests in both companies, would still gain. NACO's refusal put a stop to that idea.

Though the break was not irrevocable; ruptures seldom were in the international aluminium industry, the era of large-scale sales to the Soviet Union based on Norwegian credit guarantees had come to an end. During the years 1935–1937, the Soviet Union more or less stopped importing aluminium, partly because domestic production picked up and partly because the country lacked capital. Aluminium exports to the Soviet Union resumed slowly in 1938, but the country never again became a big importer of the metal.

### **Conclusion: Trading with the Communists**

Trading with the Communist regime in the Soviet Union was not like doing business with normal customers. For one there were huge political risks involved. All purchases were made on long-term credit, and though the Soviet Union generally did pay on time there was always the possibility that the country might default on its obligations. The Soviet Union was a societal experiment of an order never before witnessed, and nobody knew how it would turn out. The regime might suddenly change all the ground rules or it might collapse or be toppled. Either way, the uncertainty was great. It is no wonder that Edward Davis wanted to pull Aluminium Limited out of the Soviet market in 1930. On the other hand, the profits which could be reaped from trading with the Soviet Union were as high as the political risks, and in a situation where the traditional markets were saturated, the huge Soviet orders for aluminium turned out to be something of a salvation for the industry, not the least for the Norwegian aluminium producers.

The analysis of the Soviet sales is an eminent example of the degree to which the market relations in the interwar period were permeated by politics. This was

after all a very *political* economy where the ups and downs in the relations between states could have enormous consequences for firms, as Louis Marlio discovered when he arrived in Moscow shortly after a chill in the Franco-Soviet affairs in 1930. Conversely, business interests could also influence the political process. The aluminium producers' threat to shut down Norwegian capacity, combined with the fact that the Soviet authorities linked all future purchases of fish with the credit extension, played an important part in convincing the Norwegian authorities that it had no choice but to acquiesce to the demand.

However, once the representatives of the large foreign aluminium companies had mobilized to obtain access to the Norwegian state guarantee, they started a train of events beyond their control. Just as the foreign producers could influence political decisions in Norway, the Norwegian political society could influence the development of the aluminium industry. The Norwegian government's activist stance secured a large share of the Soviet contracts for NACO and eventually to Haugvik Smelteverk, and the government also backed NACO in its confrontation with DNN (Aluminium Français) in 1934. As soon as the foreign companies started to depend on the Norwegian state guarantee, they also became more vulnerable to outside influence. Clearly the relationship between the State and industry was reciprocal.

Perhaps the most important insight that can be drawn from the aluminium case concerns the effects of the first Soviet five-year plan on the business landscape of the West. The five year plan was a hugely ambitious scheme for catching up with West and was based on massive imports of Western machinery, goods and technology. Two factors contributed in making it especially important in the West. First, it was a question of timing. Just as the Soviet imports kicked into gear, the World economy was heading for a collapse. In the lean years of the Great Depression, the Soviet Union nearly overnight became one of the most important markets for a range of different industrial products. The second factor was the fact that the Soviet orders were highly concentrated in certain industries, and in these industries, which were basically the most advanced industries of the West, the question of access or not to Soviet trade could alter the power positions of the different producers in the industry.<sup>103</sup> As we have witnessed in the aluminium industry, the Soviet sales meant that AF could maintain its leading position in the aluminium cartel, while at the same time it was the East trade that made it possible for NACO

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103 Katherine Siegel has shown that the Soviet Union in 1931 purchased 58,7% of all locomotive equipment exported from the US, 59% of all metalworking equipment, 65,6% of lathes, 73,8% of foundry equipment and 97,4% of turbines. Siegel, *Loans and Legitimacy*, 133–134.

to operate so independently of its foreign owner Aluminium Limited. Research into other industries which profited from the Soviet import drive will probably reveal a similar picture and thus help us to better explain the development of international business in the period. It is somewhat ironic that the Bolshevik ambition of building a communist dream state actually turned out to have a huge impact on the development of the economies of the capitalist West.



# International Cartels and National Affairs: Autarky, Alternative Technologies and the Creation of an Italian Strategic Aluminium Industry during the Interwar Period

Marco Bertilorenzi<sup>1</sup>

The Italian aluminium industry changed significantly during the interwar years. From being dominated completely by foreign investments, and with hardly any role played by the Italian government at the beginning of the period, this industry became one of the main pillars of the so-called *Autarchia*, the policy of substituting imports adopted by the Italian government after economic sanctions were imposed by the League of Nations during the second half of 1930s. The government assigned great importance to the expansion of Italian production of aluminium not only as a measure of import substitution, but also in order to improve its preparedness for war. This article seeks to explore how both political powers and private firms managed this change, with particular emphasis on how the autarchic policy impacted on their relationships.

The autarchic policy can hardly be characterized as a success. As Rolf Petri has shown, in spite of the resounding political propaganda about achievements of national economic independence, the Italian government was not able to reduce the requirements of foreign raw materials such as carbon for the treatment of alumina (the mid product for obtaining aluminium from mineral sources). Furthermore, both the necessary know-how and the required patents remained under foreign control during the whole period.<sup>2</sup> It can also be argued that the turn to autarchy did not provoke any profound changes to the ownership structure because it entailed

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2 Rolf Petri, "L'Industrie italienne de l'aluminium à la veille de la Seconde Guerre mondiale," in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy (Paris: Armand Colin, 1997), 143–152; Piero Scotti, *Geografia dell'alluminio italiano* (Genova: Edizioni Lupa, 1948).

neither a nationalisation of foreign investments nor a complete Italianisation of foreign-owned assets. Rather, the main significance of the Fascist intervention in aluminium industry was the progressive end of the international governance in this industry, dominated by an international cartel framework, and the arrival of new national regulations, managed by an original cooperation between private actors and public agencies.

The study of Italian aluminium industry during interwar period provides insight about the historical debate about so-called “corporatism” and about wider relationships between private industry and fascist public institutions. Business-government links have been the object of many studies concerning both Italy and Germany, which underlined both the role of government in supporting national private actors and the impact of governments’ actions in reshaping of strategies and structures of national enterprises.<sup>3</sup> Recently, Cornelia Rauh explored the Swiss aluminium firm strategy in Germany pointing out that it adapted its strategy to new Nazi economic order following pragmatic choices.<sup>4</sup> In our study, it will be showed how the adoption of autarkic policies was intertwined with the development of the international cartel in this industry and with the foreign investments in Italy. During 1920s and the first part of 1930s, the Italian aluminium industry was largely steered by international cartels, afterwards the regime’s planning drove investments, with production and trade controls dictated by strategic and military considerations. In other words, the Italian aluminium industry changed from being a “self-regulated” industry to be placed under a system dominated by state dirigism. What provoked this transformation? How did foreign investors react to this change? How did national actors interact with international interests? This chapter seeks to explore these issues.

The choices made by the fascist regime regarding the aluminium were influenced by the complex of general economic policies adopted by the Italian government during this period. The Italian historiography has often claimed that a proper

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3 For instance see Harold James and Jakob Tanner, eds. *Enterprise in the Period of Fascism in Europe* (Hants: Ashgate, 2002); Richard Overy, “German Business and the new Nazi order” in *Business and politics in Europe, 1900-1970: essays in honour of Alice Teichova*, ed. Terence Richard Gourvish (Cambridge: Cambridge University Press, 2003), 171–186; Peter Hayes, *Industry and Ideology. IG Farben in the Nazi Era* (Cambridge: Cambridge University Press, 2001); Raymond Stokes, “From the IG Farben Fusion to the Establishment of BASF AG (1925-1952)” in *German Industry and Global Enterprise. BASF: The History of a Company*, ed. Werner Abelshauser et al. (New York: Cambridge University Press, 2004), 206–301; Stephan Lindner, *Inside IG Farben. Hoechst during the Third Reich* (New York: Cambridge University Press, 2008).

4 Cornelia Rauh, *Schweizer Aluminium für Hitlers Krieg? Zur Geschichte des “Alusuisse” 1918–1950* (München: Verlag C.H. Beck, 2009).

fascist economic doctrine did not exist, and that the Italian regime adopted different choices and strategies to changing conjunctures.<sup>5</sup> From adopting policies inspired by economic liberalism during 1920s, the features of the Mussolini regime changed during the great depression, and it embraced programs that forecasted a progressively bigger role for the state in the economic life, especially in monetary policies, international trade and industrial planning.<sup>6</sup> For instance, the Italian government created new institutions to intervene in economy such as the IMI (Istituto Mobiliare Italiano) in 1931 and the IRI (Istituto per la Ricostruzione Industriale) in 1933.<sup>7</sup> Yet Italian aluminium producers never became directly controlled by IMI or IRI; relationships between fascist regime and producers took another route.

The Italian government became one of main actors in the development of the aluminium industry during the 1930s, acting as its planner and backer but without direct ownership. Italian companies were, indeed, part of the international cartel schemes, and at the end of 1920s they achieved a special status that allowed them to produce at full capacity and to sell the unsold production to the cartel in the exchange for not investing in new capacity. All other cartel members, in contrast, had to curtail their production due to the global slowdown of demand. The Italian aluminium industry lost these advantages after the Fascist regime recognized the strategic importance of this metal in 1934, when exports of this metal were banned and the continuation of the agreements with the cartel were no longer possible. Furthermore, the involvement of the Italian government went deeper than simple control over foreign trade: it considered aluminium production to be of vital importance, and it sponsored a great expansion of Italian output. The great abundance of bauxite in Italy made this metal the perfect candidate for a direct application of the principles of autarchy: the government established *ad hoc* structures with the aim of planning investments and of supporting aluminium companies through public loans.

This article is organized in three parts. The first section discusses the Italian aluminium industry until the Great Depression: how and why the leading international firms invested in (or divested from) the Italian aluminium industry, as

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5 Gianpascquale Santomassimo, *La terza via fascista. Il mito del corporativismo* (Roma: Carocci, 2006).

6 Guadalberto Gualerni, *Industria e Fascismo. Per un'interpretazione dello sviluppo economico italiano tra le due guerre* (Milano: Vita e Pensiero, 1971); Pierluigi Ciocca and Gianni Toniolo, *L'economia italiana nel periodo fascista* (Bologna: Il Mulino, 1976); Gianni Toniolo, *L'Economia dell'Italia Fascista* (Roma-Bari. Laterza, 1980).

7 Ernesto Cianci, *La nascita dello stato imprenditore in Italia* (Milano: Mursia, 1977); Donatello Serrani, *Lo stato finanziatore* (Milano: Franco Angeli, 1971).

determined by their global strategies. In the second part, we will describe the *ad hoc* position that Italian production obtained in international cartel schemes until it came to an end in the mid-1930s. The third part, finally, will analyse how the government got involved in the aluminium industry.

## **Foreign Investments in the Italian Aluminium Industry during the 1920s**

During 1920s, the world aluminium industry was led by a few international producers: the Aluminum Company of America (Alcoa), the Swiss Aluminium Industrie Aktiengesellschaft (AIAG), the British Aluminium Company (BACO), the German Vereinigte Aluminium-Werke (VAW) and two French companies, Alais, Forges et Camargue (AFC) and Electro-Chimie (EC), which were part of a national cartel, the Aluminium Français. AFC was the outcome of a merger of two main French producers in 1921, the Produits Chimiques d'Alais et de la Camargue (PCAC) and of the Société Electrométallurgique Française (SEMF).<sup>8</sup> All of these companies, except VAW that was created during the First World War, were the first comers of the aluminium industry: they accumulated technical and commercial know-how over the time, and had established strong relationships since the dawn of this industry through joint ventures, patents licensing and the settlement of international cartels and other agreements.<sup>9</sup>

The Great War imposed a break in the international cooperation of the aluminium companies and afterwards it took some time to form a new cartel. That was due mainly to the formation of new producers, such as VAW, and to Alcoa's refusal to participate in a cartel scheme due to fear of anti-trust prosecution. For this reason, the first half of 1920s was a period of general matching up between firms, which were pushed to expand their output, to research new technologies, and to trade and invest abroad with the final aim to acquire better positions in an eventual new international cartel. Italy was one of the countries in which international groups focused their international strategies of cooperation and competition:

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8 Claude Gignoux, *Histoire d'une entreprise française* (Paris : Hachette, 1955) ; Ludovic Cailluet, *Stratégies, structures d'organisation et pratique de gestion de Pechiney des années 1880 à 1971* (Thèse de doctorat, Université de Lyon III, 1995) ; F. Hachez-Leroy, *L'Aluminium français, L'invention d'un marché, 1911–1983* (Paris : CNRS Éditions, 1999).

9 A good account on the history of each company is provided in Donald H. Wallace, *Market Control in the Aluminum Industry* (Cambridge: Harvard University Press, 1937). See also Ernst Rauch, *Geschichte des Hüttenaluminiumindustrie in der westlichen Welt* (Dusseldorf: Aluminium Verlag, 1962).

beside a minor smelting operation started in 1906, the Società Italiana per la Fabbricazione dell'Alluminio (SIFA) formed by the association of an electrochemical Italian group and a German metal trader<sup>10</sup>, almost all leading international companies invested deeply in this country from 1916 to the end of 1920s. Indeed, AFC, Alcoa, AIAG and VAW were able to establish strong positions in Italy during this period through the creation of subsidiary companies and by investing in new technologies.

PCAC did the first investment during the Great War for dealing with the Italian demand because the production of SIFA was insufficient to supply military needs. This collaboration between the Italian government and the French company made possible the creation of Alluminio Italiano (AI), a subsidiary of PCAC, with a first provisional plant in central Italy. Furthermore, in 1916 PCAC took control over the German assets of SIFA, after their confiscation as enemy property. After the war, the French Group had a good position in Italy and was expected to develop Italian aluminium production through the construction of a new and more efficient plant in Borgofranco, near Aoste, after having stopped the provisional plant. The post-war period, however, was very difficult for the Italian aluminium industry: the general crisis pushed AFC, which inherited the Italian plant after the merger of PCAC and SEMF in 1921, to postpone new investments and this choice frustrated further French expansion in the Italian peninsula. After the recovery, the expansion of Italian market during the 1920s was fulfilled by imports (tab.4.1), which soon escaped from French control.<sup>11</sup>

Import levels varied during 1923–1928, but their average amount was about 4,000 t/y, which represented more than the half of national demand. In 1925, when the demand experienced an unexpected growth spurt, imports supplied almost 78% of the national demand for aluminium. This trend of imports was not in contradiction with the main policy of the fascist regime in this period, which wanted to participate in the rebuilding of international trade to improve Italian exports of finished goods.<sup>12</sup> Yet this influx of metal was driven by a serious lack of national production, which was unable to satisfy the growing demand for aluminium and thus attracted other investments. The 1920s were, indeed, a period of expansion

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10 Archivio Banca Intesa San Paolo (ABISP), Fondo Banca Commerciale Italiana (BCI), direzione generale, ufficio finanziario, 3, “Fabbricazione Alluminio Bussi”, 31 October 1916.

11 Pechiney archives, Institut pour l'histoire de l'aluminium, Paris, France, 056-00-12349, 1921, Società Idroelettrica Villeneuve et Borgofranco, Turin, Contrats de vente et location, Fournitures d'aluminium au gouvernement italien (1916-1918), and Pechiney Archives, 056-00-12347, “Réunion Société de Villeneuve et Borgofranco, 2 février 1921.”

12 About general import trends in late 1924 and 1925 see Giorgio Calendoro, *Storia dell'Italia Moderna. Il fascismo e le sue guerre, 1922–1945* (Milano: Feltrinelli, 1993), 103.

for aluminium; new applications were found for the metal in particular in the automotive industry, in railroads, and in electrical industry.<sup>13</sup> Fiat, in particular, grew at an impressive pace, and its exports reached high levels. By 1925, this company became the largest Italian buyer of aluminium.<sup>14</sup>

AFC did not immediately recognize the expansion of Italian consumption. The French group began to study the possibility to enlarge Borgofranco only in 1924, when it involved Alcoa in AI, offering an important participation in the Italian affair.<sup>15</sup> AFC asked for financial help from Alcoa, more than for economic reasons, in order to reach a new cartel agreement or to arrange some combinations or informal agreements with the American producer.<sup>16</sup> Alcoa was investing in Europe at this time and in 1921 it initiated a strategy for controlling large amounts of bauxite ores in Istria, a region rich in this raw material that became Italian after the Versailles treaty.<sup>17</sup> Thus, Alcoa bought 50% of shares of Alluminio Italiano and backed the investment to increase the capacity of production of Borgofranco (from 1,500 t/y to 2,200 t/y). However, this output was insufficient to cover the whole Italian demand and other groups had the opportunity to take a position in Italy.<sup>18</sup>

Exploiting this lack of production, in 1925 Montecatini, one of greatest Italian enterprises, announced its intentions to invest in aluminium production. After the Great War, Montecatini started a phase of deep expansion towards electrochemical productions and rapidly expanded its hydroelectrical energy facilities.<sup>19</sup> In 1925,

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13 Pechiney Archives, 056-00-12347, Conseils d'administration, comptes rendus des activités, Alluminio Italiano et St. Hydro-Electrique de Villeneuve et de Borgofranco, procès-verbal réunion du 20 mars 1923. "Note sur l'industrie de l'aluminium en Italie, 21 juin 1924."

14 Valerio Castronovo, *Fiat: Una storia del capitalismo Italiano* (Milano: Rizzoli, 1999), 228. Valerio Castronovo, *Giovanni Agnelli. La Fiat dal 1899 al 1945* (Torino: Einaudi, 1977), 278–281.

15 George David Smith, *From Monopoly to Competition. The transformation of Alcoa, 1888-1986* (Cambridge, Cambridge University Press, 1988), 138–140.

16 Marlio wrote that Aluminium Français shared its Italian plant with Alcoa "dans le désir de bonne entente internationale et pour continuer la politique de ces dernières années, il offre à ses collègues Américains une participation analogue à la participation norvégienne dans des nouveaux agrandissements; il lui paraît d'ailleurs qu'il serait peut-être utile de réserver également une part à d'autres collègues directement intéressés au marché italien par leur voisinage et par les importations qu'ils font à ce jour sur ce marché", Pechiney Archives, 056-00-12347, "accords commerciaux", document without title, 1925. AF shared with Alcoa also a factory in Norway and one in Spain, with the same modalities of the Italian affair. See Hachez-Leroy, *L'Aluminium Français*, 163-4, 220-2.

17 ABISP, BCI, 6. Archivi Aggregati, Società finanziaria industriale italiana (Sofindit), Archivio Sofindit, Presidenza e Direzione, SOF 327, fasc.5 (società diverse), Sfac. "l'alluminio Italiano", 1937, and Scotti, *Geografia dell'alluminio italiano*, 9-14.

18 Pechiney Archives, 056-00-12348, AI 1924-25, "Pourparlers avec ALCOA, Versements aux Américains".

19 Franco Amatori and Bruno Bezza, eds. *Montecatini, 1888-1966. Capitoli di storia di una grande impresa* (Bologna: Il Mulino, 1990), 40–42.

the original idea was to establish an aluminium plant in Crotona, in the south of Italy, where it could dispose of the energy surplus of some hydroelectrical facilities, but in 1926 it changed its plans, preferring to establish a smelter in the northern Italy, near Mori (Trentino). The idea was to build an alumina plant in the Porto Marghera as well, a zone in which the government was providing subsidies for industrialisation.<sup>20</sup> Montecatini, however, had neither the necessary know-how nor the ownership of bauxite mines for entering into aluminium production and needed to find an ally.

After the Versailles' treaty, Italy annexed the Istria, a former Austria-Hungarian region in its northeast boundaries, in which a large amount of bauxite deposits were discovered during the Great War by the Central Empire powers. Istria's high-grade bauxite, however, was controlled since the beginning of the 1920s by Alcoa, which formed a subsidiary in 1921 (the Società Mineraria Anonima Triestina) or by German interests, which acted through a Swiss holding company (the Bauxit-Trust of Zurich) that created an Italian subsidiary (the Società Anonima per l'Escavo e l'Industria dei Minerali d'Alluminio) in 1920.<sup>21</sup> Montecatini needed to involve an actor to help it in creating an integrated aluminium production complex: after an initial refusal by AIAG, which had been considering the opportunity to invest in Italy since 1925, and after having approached Alcoa and AFC<sup>22</sup>, the Italian chemical trust established an alliance with VAW in 1926.

The German group wanted to test a new alumina patent, known as the "Haglund" process, which was particularly suitable for Italian economy because it used less imported carbon and caustic soda than the original Bayer process.<sup>23</sup> VAW had the idea to supply the German production with low-cost alumina produced in Italy, using Istria's bauxites, and to take a solid position in this country's expanding market with the support of Montecatini.<sup>24</sup> The alliance with Montecatini was really important because this provided VAW with a very influential partner for its Italian strategies. The main problem of VAW was the experimental nature of the Haglund process: to find the political aid and approbation through its alliance with Montecatini could have been a decisive factor during the initial stages of this process. From this convergence of interest built upon strategic and technological

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20 Società Mineraria Montecatini, *Relazione annuaria agli azionisti*, 38 esercizio, 1925.

21 Associazione fra le Società Italiane per Azioni, *Notizie Statistiche sulle Società Italiane per Azioni*, 1928.

22 Alcoa Archives, Heinz History Center, US. V. Alcoa, Equity 85-73, Exhibits, Ex.n.1082, Letter of Arthur Vinig Davis to Charles Moritz, 25 September 1925.

23 Rauch, *Geschichte der Hüttenaluminiumindustrie*, 75–78.

24 Vereinigte Aluminium Werke Aktiengesellschaft zu Lautawerk, *Geschäftsbericht Über das sechste Geschäftsjahr vom 1 Januar 1926 bis 31 Dezember 1926* (Berlin, 1927).

considerations, VAW and Montecatini formed two new companies in 1926: the Società Italiana dell'Alluminio (SIDA) for the production of aluminium in Mori and the Società Italiana Allumina (SIA) in Porto Marghera (Venice). In these firms, both companies owned 50% of the shares.<sup>25</sup>

AIAG, on the other hand, refused the alliance with Montecatini because it considered this company an untrustworthy ally, one that could wield too much power over the investment. AIAG did not have a national market on which to focus its strategies, unlike the other companies. For AIAG the 1920s was a period of wide search for outlets and for foreign positions.<sup>26</sup> However, the Swiss company did not forego the chance to invest in Italy, one of its main export markets during this period, and took decision to go ahead with the help of an Italian producer of electric power: Marco Barnabò.<sup>27</sup> This partner of AIAG desired to find an outlet for his surplus of electric power and he was disposed to leave the full control of an eventual aluminium production in the hands of AIAG.<sup>28</sup> Barnabò was also involved in Porto Marghera expansion, and he was able to use his political connections in order to gain access from the state's subsidies for the development of so-called "industrial zones."<sup>29</sup> Hence, in December 1926 AIAG and Barnabò set up the Società Alluminio Veneta Anonima (SAVA) in Venice to produce alumina with the Bayer process and aluminium in which the Swiss concern owned the 70% of shares and held the effective control over the investment.<sup>30</sup> Both Montecatini and SAVA planned to have an output of 6,000 t/y and to be able to achieve their investments by 1929.<sup>31</sup>

25 ABISP, BCI, 6. Archivi Aggregati, Archivio Società finanziaria industriale italiana (Sofindit), Presidenza e Direzione, SOF 327, fasc.5 (società diverse), Sfac. "l'alluminio Italiano", 1937 and ABISP, BCI, 2 Amministratori Delegati, Segreteria Toeplitz, CPT, 48/439-478, telegram of Hiller (Bauxit Trust) to Toeplitz (Banca Commerciale Italiana), 14 June 1926 and of Toeplitz to Hiller, 17 June 1926.

26 Direktorium der AIAG, *Geschichte der Aluminium Industrie Aktien Gesellschaft, 1888-1938, vol.II*, (Chippis, 1943), 78–90.

27 About Barnabò, see Maurizio Rebershak, "Barnabò, Alessandro Marco (Marco)", in *Dizionario Bibliografico degli Italiani*, Vol.34, (Rome: Treccani: 1988).

28 Rolf Petri and Maurizio Rebershak, "La SADE e l'industria chimica e metallurgica tra crisi e autarchia", in *Storia dell'Industria elettrica in Italia, Vol.3, Espansione e oligopolio, 1926-1945*, ed. Giuseppe Galasso, (Roma-Bari: Laterza, 1994), 760–1.

29 Alcan Rio Tinto, ex Alusuisse (AIAG) Archives, Zurich, (hereafter ARAZ), AIAG Direktion Protokollen, n.171-340, 1923-1927, "Direktion Protokoll," 14 November 1925), and "Direktion Protokoll," 26 June 1926.

30 ABISP, BCI, 6. Archivi Aggregati, Società finanziaria industriale italiana (Sofindit), Archivio Sofindit, Presidenza e Direzione, SOF 327, fasc.5 (società diverse), Sfac. "l'alluminio Italiano", 1937; Archivio Storico Banca d'Italia, Rome, Italy (hereafter ASBI), cart. Sconti, scart. Pratiche, fasc. 580 sfasc. 1, "Venezia, 1935-38".

31 Pechiney Archives, 056-00-12347, Note sur l'industrie italienne de l'aluminium, 21 June 1928.

The actions of Montecatini worried the French directors of Borgofranco because they knew the financial power of this Italian company, as well as its political influence and its links with Italian financial elites. AFC paid the price for procrastinating the enlargement of their Italian production capacity and was overtaken by the actions of other companies, whose output had reached the level of 12,000 t/y. Faced with these investments, Borgofranco was placed in a difficult position and eventually lost its prominent role in the Italian aluminium industry. Considering this situation as potentially dangerous, AFC divested from Italy in 1928, before SAVA and SIDA started to produce, and sold its stakes in AI to Alcoa. At the same time, SAVA took control over the SIFA, buying it from AFC in order to complete the cycle of production of aluminium using central Italy's deposits of bauxite. On the other hand, Alcoa retained a strategy for Italy: after passing the control over Borgofranco to Aluminium Limited, a Canadian company formed by Alcoa in 1928 to manage its international interests (later renamed Alcan), the Americans embarked on a round of investments in Italy.<sup>32</sup>

The American company was still disposed to invest in Italy because Alcoa expected to use an alternative process for alumina, which it considered very promising. The Blanc patent was registered in 1922 in Italy by an Italian chemist, Baron Luigi Blanc, and its main feature was to produce alumina and potassium salt for producing potash at the same time: the selling price of this salt was considered sufficiently high to offset the high costs of producing alumina. In 1926, Blanc formed the Prodotti Chimici Napoli, with a small experimental plant in which also AFC was involved in at an early stage, before leaving Italy definitively.<sup>33</sup> Fearing that Montecatini could have signed a contract with the Baron Blanc, Alcoa contacted him in April 1928 to purchase the right to use his patent. Afterwards, the American company established a larger experimental plant in Aurelia (near Rome) called Prodotti Chimici Nazionali in which it invested over 100 million Lire. Yet it never functioned satisfactorily.<sup>34</sup>

In order to understand this interest in Italy, it has to be underlined that Alcoa was in a critical situation at the end of 1920s. At the same time that crisis slowed down

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32 AFC exchanged its shares in Alluminio Italiano with the American shares in Aluminio Espanol (AEs): after this operation AI was totally American and AEs was in majority French with a participation of AIAG; René Bonfils, "Pechiney en Espagne, 1925-1985", *Cahiers d'histoire de l'aluminium*, n. 38-39, (2007) : 77-92.

33 Pechiney Archives, 056-00-12347 Borgofranco, cart. 1921/28 Conseils d'administration, 28 January 1928.

34 Smith, *Transformations of Alcoa*, 141. HHC, Alcoa Records, US. V. Alcoa, Equity 85-73, Exhibits, Ex.n. 445, Letter of Edward K. Davis a Baron Blanc, 6 June 1930.

the demand in the US, the American trust was starting a new gigantic smelter at Arvida, Canada, with enormous scale economies and fixed costs of production.<sup>35</sup> Alcoa set up a new company, the Aluminium Limited, to hunt outlets on the global markets. Italy fit well into the global strategy of Aluminium Limited: try to export as much metal as possible all over the world. This strategy was based on the construction of transformation plants and of small smelters in promising markets, along with and the establishment of strong links with political powers able to influence tariff policies towards larger imports from Canada. The Blanc process was optimal for this scheme: the process became interesting for the fascist regime when Alcoa took control over it. The Italian government wanted to develop the production of potash from Blanc's salts through Società Italiana Potassa (SIP), and Alcoa was interested in gaining the goodwill of the fascist regime through its development of the Blanc process.<sup>36</sup> Table 4.1 shows the outcome of those firms' strategies in Italy:

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35 Duncan Campbell, *Global Mission. The History of Alcan, vol.1, to 1950* (Toronto: Ontario Publishing Co, 1985).

36 The Blanc process, indeed, was considered of a great importance directly by Mussolini and by other high level officials of the fascist regime. ASBI, Carte de Stefani, prat. 22, fasc.7, sfasc.43, letter of Dott. Cav. Emilio Sernagiotto di Casavecchia to Benito Mussolini, 9 October 1931.

**Table 4.1. Aluminium production, consumption, imports and exports in Italy and production by company, 1926–1936, metric tons<sup>37</sup>**

	SIFA	AI	SIDA	SAVA	Tot Prod.	Tot Cons	Imports	Exports
1920	1.200		-	-	1.200	2.000	-	-
1921	700		-	-	700	1,000	-	-
1922	800		-	-	800	1,000	200	-
1923	1.473		-	-	1,473	3,323	1,977	-
1924	2,058		-	-	2,058	4,961	2,947	-
1925	1,880		-	-	1,880	8,506	6,693	-
1926	817	1,112	-	-	1,929	5,000	3,780	137
1927	956	1,588	-	-	2,544	5,200	4,226	252
1928	993	1,355	70	1,200	3,618	4,000	2,166	311
1929	815	1,168	4,000	1,390	7,373	9,300	3,520	270
1930	-	1,309	4,870	1,789	7,968	8,200	1,543	710
1931	-	1,060	5,900	4,146	11,106	7,000	1,698	3,018
1932	-	1,288	6,062	6,063	13,413	5,500	410	2,485
1933	-	1,521	4,444	6,106	12,071	7,000	274	3,947
1934	-	1,647	4,899	6,310	12,856	9,400	225	5,933
1935	-	1,685	5,089	7,002	13,776	15,000	228	6,025
1936	-	1,682	7,098	7,094	15,874	17,000	324	701

The surprising aspect of this table is how the relationship of the Italian aluminium industry and the international trade changed as early as 1931. Despite the efforts of the American trust to increase Italian imports, the country became a great exporter during the first half of the 1930s. This was the result neither of political choices nor of the competitive advantages of Italian industry: this was the outcome of the cartel relationships among international firms, which we will now analyse in further detail.

<sup>37</sup> Sources: For the first six lines, ASBI, Carte de Stefani, prat.22, fasc.7, sfasc.42, Letter of Lapenna (Montecatini) to De Stefani, 13 May 1931, in which Sifa and AI production is not distinguished. For the first five columns Riccardo Innocenti, *L'industria dell'alluminio in Italia. Un profilo storico. 1907-1943*, (Master Dissertation, University of Florence, 1984); for the third, Metallgesellschaft yearbook, various years. For the last two columns: ASBI, Consorzio sovvenzioni industriali, Sede principale, p.n.73, f.2.

## The Italian Aluminium Industry in the International Cartels, 1926–1935

In 1925–1926 when the Italian companies were just being established, AIAG, VAW, BACO and AFC were negotiating the creation of a European cartel. In September 1926 AFC, BACO, AIAG and VAW finally formed the Aluminium Association (AA), after three years of meetings and negotiations. In contrast to the pre-war cartels, Alcoa did not take part in this organisation, nor using its Canadian subsidiary.<sup>38</sup> The Aluminium Association was created to avoid over-production in a period in which, after some signs of a slowdown of demand, European firms judged to have over-invested in new capacity and desired to create a scheme to equilibrate the balance of offer and supply.<sup>39</sup> Indeed, the cartel succeeded after a period of informal meetings that, even though they were able to coordinate a progressive reduction of prices (that sunk from 120 £/t to 105 £/t), were considered as insufficient to reduce production in the case of necessity.<sup>40</sup>

Before the incorporations of SAVA and SIDA, the Italian production was included in the general regulations agreed upon at the meetings of the European producers: since 1923, AI and SIFA were represented at these meetings and their production was fully integrated in the international strategy of AFC, its owner.<sup>41</sup> In 1926, when the European cartel was formed, none of Italian firms became members.<sup>42</sup> Neither SAVA nor SIDA had started their production yet, and European firms preferred to postpone discussions about the role of these firms in the cartel since it was a potential source of discord. The ownership of SIDA was ambiguous because VAW had got only 50% of the shares of the company and could not assert complete control. Other firms feared that Montecatini would dump all of

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38 Pechiney Archives, 00-2-15940, Recueil de conventions, contrat du 11 septembre 1926 (3e Cartel).

39 Florence Hachez-Leroy, "Stratégie et cartels internationaux, 1901-1981," in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: Armand Colin, 1997: 164–174. Marco Bertilorenzi, *Il Controllo della sovrapproduzione. I cartelli internazionali nell'industria dell'alluminio in prospettiva storica 1886–1945* (PhD thesis, Università degli Studi di Firenze, 2010): 184–192.

40 Pechiney Archives, 00-2-15942 Aluminium-Association, Correspondance AIAG; Bloch (AIAG) to Marlio (AFC), 19 May 1926; Letter of Bloch to Marlio and Von der Porten (VAW), 30 June 1926.

41 Pechiney Archives, 00-2-15940, Procès-verbal de la réunion tenue à l'Aluminium Français, 12 rue Rocquépine à Paris, le 6 Juillet 1923, "Minutes of meeting held at the Offices of the British Aluminium Company Limited on Friday, 11<sup>th</sup> May, 1923."

42 Pechiney Archives, 00-2-15940, Recueil de conventions, Art. 31 of Aluminium Association's contract of 11/09/1926. "Procès Verbal de la 1ereunion du Comité de l'Aluminium-Association", 11 September 1926.

the production that it could not sell in the national market abroad, thereby thwarting the cartel's attempt to stabilize prices.<sup>43</sup> In order to administrate relationships between cartel companies, Montecatini and the Italian market, AA encouraged the formation of a national cartel, called ASA (Alluminio Società Anonima), for fixing prices in accordance with AA's policies and for allocating quotas between SIDA and SAVA.<sup>44</sup> However, the relationship between the cartel members and the Italian companies were mostly influenced by the changing situation between the European Cartel and Aluminium Limited: while SIDA and SAVA were starting their production in 1929–1930, AA and the Americans were experiencing a growing competition for global outlets, primarily due to the fact that Arvida came on stream. AA members registered many Canadian sales in several markets at very low prices, for instance in India, Japan, Great Britain and Italy. Italy, for this reason, became a kind of battlefield between Europeans and Americans. In these circumstances, AA firms feared that simply reducing the SIDA and SAVA's production would not be sufficient to face the competition from Aluminium Limited in Italy and AA supported Italian companies against Canadian imports.<sup>45</sup>

In this situation, Guido Donegani, the chairman of Montecatini, was able to manoeuvre to gain special benefits for his firm. In spite of the lack of Italian demand and the general slowdown due to the international crisis, Donegani managed to avoid a reduction in Italian production. He did not want to reduce the production of SIDA since Montecatini built the aluminium plant to take care of surplus power, and he was not inclined to start searching for new outlets for its electricity. A long period of inactivity, furthermore, would make it difficult to write off the investments for the construction of Mori. Donegani claimed to have several sales contracts with the Italian government that required him to keep the production running. In particular, he foresaw a market for 9,000 tons during 1930, parts of which would be utilized for energy transmission cables. This was a promising market, because, as Donegani declared, the government had openly asked the Italian companies not only to meet the national demand but also to surpass it, even if it took new investments, to enable the substitution of copper in the electrification of Italy.<sup>46</sup>

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43 Pechiney Archives, 00-2-15940, Aluminium Association, réunions du comité, 2<sup>e</sup> réunion, 15 octobre 1926.

44 Archivio Edison in Corsico, Milano (hereafter AE), Pratiche societarie, ASA, "Alluminio Società Anonima", verbali del consiglio d'amministrazione.

45 Pechiney Archives, 00-2-15933, AIAG correspondence, "Note. Italie", 1929.

46 AE, Servizio Pratiche societarie, "Soc. Montecatini", Sc.3, fasc. 5, Sida, "Consiglio del 16 dicembre 1929," 16 December 1929 and "Consiglio del 23 marzo 1930," 23 March 1930.

It is not clear if Donegani really had the support of the government or if his statements were only a bluff, but the members of the cartel considered him to be a very dangerous competitor if left free from any engagement with the cartel. In particular they feared that if they did not take action the Mussolini regime could finance Italian exports at dumping prices. It was not possible to exclude Donegani from the aluminium world because he was not disposed to sell SIDA to AA members, consequently AA allowed VAW to negotiate with Donegani to put an end to further expansion.<sup>47</sup> In return the cartel would purchase the unsold metal at a price of 5£ below the AA's official price. Once SIDA obtained this agreement, AIAG demanded the same treatment for SAVA, and finally the AA signed a special agreement for the duration of 5 years with ASA at the end of 1929 for taking over all Italian over-production.<sup>48</sup> Recent historiography has questioned whether Donegani was really fully aligned with the Fascist regime.<sup>49</sup> No documentary evidence of government aid to SIDA was found during this research. Yet the most important aspect in our analysis is that the possibility of a political intervention was sufficient to AA to negotiate special agreements with Italian companies.

The consequences of these agreements were shown in the table.4.1; SAVA and SIDA, with the authorisation of the cartel produced at 100% of capacity and sold the metal that the national market was not able to absorb directly to the cartel.<sup>50</sup> That meant that in 1930, when Italian production was still starting, around 700 tons were exported from Italy. This quantity was destined to increase as SIDA and SAVA approached full capacity and it eventually reached 6,000 tons in 1934 and 1935. The European cartel made similar agreements also with other outsiders in Austria and Norway, since the AA considered them as threats to their strategy of long-term price stability.<sup>51</sup> The main difference was that the Italian firms were not

47 Pechiney Archives, 00-2-15940, Recueil de réunions, Aluminium-Association, "Procès verbal de la 19<sup>e</sup> reunion du comité de l'Aluminium-Association, 26-27 septembre 1929". The contract between AA and Italian firms is reproduced in Pechiney Archives, 00-2-14942, Letter of Bloch (AIAG) to Marlio (AFC), 10 December 1931.

48 Pechiney Archives, 00-2-15940, Recueil de réunions, 20<sup>e</sup> Reunion, 19 et 20 décembre 1929 and AE, Servizio pratiche societarie, "soc. Montecatini", Sc.3 fasc. 5 Sida, consiglio del 13/03/1931 and *idem*, ASA, Libro Verballi Consiglio, scat.7. fasc. 3 (Alluminio Soc. per Azioni), "Consiglio del 22 marzo 1930" 22 March 1930.

49 Franco Amatori, "The Fascist Regime and Big Business: The Fiat and Montecatini Cases," in *Enterprise in the Period of Fascism in Europe*, eds. Harold James and Jakob Tanner (Hants: Ashgate, 2002).

50 Pechiney Archives, 00-2-15933, Dossier spécial, Sta Ital. Dell'Aluminio (sic) Sida, 1930-1937, "Italie", 1931 and letter of AIAG to Donegani, 23 January 1930.

51 The cartel also engineered cut-backs and pooled losses in the English, Indian and Japanese markets in order to meet the price competition of Aluminium Limited.

forced to curtail their production in exchange for the allocation of export quotas. Furthermore, Italian firms also exploited the artificially high prices because the real prices in the international markets were in fact lower than the AA's official list prices during 1930–32.<sup>52</sup>

This situation became more complicated after 1931, when the struggle between AA and Aluminium Limited ended, due to the creation of a new global cartel. From 1929 to 1931 the international aluminium industry accumulated over 100,000 tons of unsold stock while total global demand only amounted to 135,000 tons in 1932.<sup>53</sup> Overproduction was the result of the global crisis and of the strong competition between the European Cartel and the American concern at the end of 1920s, as anticipated. After having stated that competition could not provoke further enlargements of its outlet because the global crisis was depressing sales worldwide, Aluminium Limited proposed in 1931 to form a stock-buffering scheme with the Europeans.<sup>54</sup> Without entering in the detail of its negotiations and of its functioning, the Alliance Aluminium Compagnie (AAC) was conceived as a mechanism for purchasing excess stocks, to keep the metal out of the markets during the crisis, and to sell it in the future. At the same time, the output of European and Canadian smelters was reduced in order to make the market able to absorb the previously accumulated stock. The Alliance restricted the output of all its members, and for some periods the plants of cartel members functioned at only 50% or even 30% of capacity.<sup>55</sup>

The agreement between AA and the Italian companies was inherited by the Alliance<sup>56</sup>, and the purchase of additional Italian aluminium disrupted its mechanisms for inventory control. Indeed, AIAG and VAW had the obligation to buy the excess output that SAVA and SIDA produced and that artificially increased the amount of stocks that AAC must purchase from AIAG and VAW. The purchase of stocks by the Alliance was expensive and during 1932–1933 the cartel had a lot

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52 Pechiney Archives, 00-2-15933, dossier special, Notes diverses sur l'Alliance Aluminium Cie, 1932–1944, "Alliance Aluminium Cie, " July 1935.

53 Marlio, *The Aluminium Cartel*, 37.

54 Marco Bertilorenzi, "L'Alliance Aluminium Compagnie, 1931–1939. Organisation et gestion de la branche internationale de l'aluminium entre Grande Crise et Guerre Mondiale," in *Contribution à une histoire des cartels en Suisse*, ed. A. Cortat (Neuchâtel: Editions d'Alphil 2010); George Stocking and Myron Watkins, *Cartels in action. Case studies in International Business Diplomacy* (New York: The Twentieth Century Fund, 1946), 216–273; Florence Hachez-Leroy, "Stratégie et cartels internationaux 1901–1981".

55 Marlio, *Aluminium Cartel*, 37–42; Bertilorenzi, "L'Alliance", 241–2.

56 ARAZ, AIAG Direktion Protokollen, n.171-340, 1923-1927, "Direktion Protokoll", 29 December 1931.

of problems with finding the capital required to continue functioning. For that, the continuous purchase of Italian production was judged as a waste of money by the member firms that had no production in Italy, such as AFC and BACO. Aluminium Limited was not satisfied by this agreement either; this remnant from the days of competition hampered the effectiveness of the Alliance mechanism. The period 1931–1935 coincided with the worst time of the crisis: Italy, with her 6,000 tons of surplus and without any agreement to reduce production according to the Alliance’s scheme, was becoming the Achilles’ heel of the cartel.<sup>57</sup>

The absence of any control over production by Italian plants was considered, in hindsight, to have been a great mistake by the cartel since it undermined efforts to control global overproduction. In a note about Alliance Aluminium of July 1935, Louis Marlio, the president of the cartel, wrote a note about the failures and achievements of the international cartel.<sup>58</sup> Among the Alliance’s mistakes, he pointed out its incapacity to solve the “question italienne”. In the period 1931–1935, Italian smelters profited from the cartel’s weakness, which had no power to control the Italian production because of the agreement of 1929. The government played no direct role in the success of Italian companies vis-à-vis the cartel: the cartel members feared that Donegani, if the exports were not controlled, could become even more dangerous with the help of the government (for instance by securing export subsidies). In this situation, AIAG saw an opportunity for bargaining and obtained the same treatment for its plant. The final reason for this result is perhaps the fact that AIAG and VAW sought to increase their Italian production in order to take advantage of the general stock buffering mechanism. Actually, Donegani was only a minor menace because, *ipso facto*, the government had no real policy during this phase for aluminium. However, the Italian government sharply reversed its attitude soon afterward.

## **The Government’s Policy for Aluminium: From Indifference to the Autarkic Period**

One of main features that we introduced at an early stage in our narrative is the importance of alternative technology in the decisions of foreign companies to

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57 Pechiney Archives, 00-2-15929, Notes sur la Conférence de l’Alliance Aluminium Cie de 4/5/3/1932.

58 Pechiney Archives, 00-2-15933, dossier special, Notes diverses sur l’Alliance Aluminium Cie, 1932-1944, “Alliance Aluminium Cie” July 1935.

invest in for Italy: the Haglund process for the VAW-Montecatini association and the Blanc patent for the North Americans. During the first part of 1930s, Aluminium Limited recognized the fiasco of Blanc patent and halted financing of further research.<sup>59</sup> On the other hand, VAW was also unable to reap the full benefits of its new patent. VAW experienced a lot of technical problems during the initial phase of production with the Haglund process. This process, still in an experimental phase, proved unable to produce good quality aluminium and required further investments. The aluminium produced from the Haglund alumina was too rich in titanium and unsuited for a lot of applications, such as strong alloys for the production of planes. But, the crisis in Germany and the lack of foreign currencies obliged VAW to stop the infusion of capital to SIDA.<sup>60</sup> The poor quality of SIDA's aluminium and also the pollution generated by this production obliged the Italian state to intervene for the first time in the production in 1934.<sup>61</sup>

In 1934, at the same time that SIDA was closed down, the Italian government included aluminium in its trade restrictions scheme, which was launched in the same year to solve its balance of trade and payments problems.<sup>62</sup> Considering the reduced Italian production, due to the closing of SIDA, the government banned further exports in 1935. This decision astonished the Alliance members: while they had been unable to reduce the production of Italian plant for fears of the reaction of

59 HHC, Alcoa Records, US. V. Alcoa, Equity 85-73, Exhibits, Ex.n. 413, Arthur V. Davis, "Operating cost of Leucit process", 11 May 1930.

60 In the meanwhile, in fact, the German government started a policy for development of aluminium, and VAW required having a growing quota since 1933. All additional quotas obliged Vaw to pay to Alliance a fee that caused a lack of international currency of this company. The large involvement of VAW in the economic policy of the Reich obliged the German company to concentrate itself on the German Market and a business such as Montecatini started to be considered as inopportune because it required international currency for buying surplus and for investing in development. VAW, *Bericht des Vorstandes, Jahre 1935* (Berlin: 1936) and VAW Aluminium Zeitschrift, *Hauszeitschrift der VAW und Erftwerk AG für Aluminium* (Berlin: 1932, 1933). About VAW see Manfred Knauer, "Une industrie née de la guerre: l'aluminium en Allemagne de 1890 à 1950," in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy (Paris: Armand Colin, 1997), 127–143.

61 About this aspect of history, see Guido De Luigi, Edgar Meyer and Andrea Saba, "Industrie, pollution et politique: la "zone noire" de la Società Italiana dell'Alluminio dans la province de Trente (1928–1938)," in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy (Paris: Armand Colin, 1997), 314–323.

62 Luigi Spaventa Cotula, ed., *La politica monetaria tra le due guerre. 1919–1935* (Roma-Bari: Laterza, 1993); Felice Guarneri, *Battaglie economiche fra le due guerre* (Milano: Garzanti, 1953). See also the recent Alessio Gagliardi, *L'impossibile autarchia. La politica economica del fascismo e il Ministero scambi e valute* (Milano: Rubattino, 2006).

the Italian government, the latter took the decision to close Donegani's smelter and to stop the troublesome Italian exports at the same time. The action of the Italian government, however, was only the first step towards a broader aluminium policy based on the principle of autarky. Considering the importance that was ascribed to aluminium in the construction of full metal planes and the growing role of air power in the modern warfare, the Italian government encouraged the increase of national production and consumption over the limits imposed by the Alliance.<sup>63</sup> This radically altered the situation: exports were no longer a problem for the Alliance and the Italian aluminium industry was effectively removed from the international panorama.

VAW, considering it was no longer possible to finance further experiments with the Haglund process, liquidated its interests in Italian production in 1935. VAW, indeed, had been interested since 1934 in the new plans for German aluminium expansion, and concentrated all its efforts in that country. The managerial staff of VAW was replaced, new officials more closely affiliated with the new German autarkic policy took over, criticizing the decision to invest in Italy. With the four year plan under Goering's leadership, the aluminium production in Germany became one of the main priorities of German industrial policy. Furthermore, after the great depression, Germany had severe problems with its balance of payments, and Schacht's policy of curtailing expenses in foreign currencies made impossible for VAW to export the necessary capital.<sup>64</sup>

After the Germans divested, AIAG and Montecatini continued to pursue their strategy in aluminium industry, considering the new direction of the fascist regime as a great opportunity to expand after years of recession. Montecatini liquidated the old company and set up a new one, called Società Nazionale Alluminio (SNAL), to manage Mori and a new Bayer alumina plant.<sup>65</sup> At the same time, AIAG grasped the opportunity provided by the new involvement of the Italian government and promptly started investing to expand its Italian aluminium output. AIAG also significantly increased its alumina production, starting a new plant in Porto Marghera in order to supply Montecatini as well.<sup>66</sup> Furthermore, the two companies

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63 ABISP, BCI, 6. Archivi Aggregati, Società finanziaria industriale italiana (Sofindit), Archivio Sofindit, Presidenza e Direzione, SOF 327, fasc.5 (società diverse), Sfac. "L'alluminio Italiano", 1937.

64 Robert J. Anderson, "Germany's Aluminum Economy," *The Iron Age*, 20 June 1940.

65 AE, Servizio pratiche societarie, soc. Montecatini, scat. 3, fasc.5, Sida, "Consiglio del 12 novembre 1934". Pechiney Archives, 00/15-20452 Italie 1927-52 Entretien de M. Donegani avec M. Level, le 27 septembre 1935.

66 ARAZ, AIAG Direktion Protokollen, 1935-1937, "Direktion Protokoll", 8 July 1936.

engaged in another joint venture, integrating their downstream operations: AIAG and Montecatini shared the ownership of Lavorazione Leghe Leggere (LLL), a producer of alloys and metal sheets, which not only expanded its output, but also benefited from the Swiss technical capabilities in this field.<sup>67</sup>

The integration of Montecatini and SAVA in LLL was linked with the emergence of new markets created by the fascist regime. Previously the main customers of both companies had been car and electro-technical producers, which principally bought metal ingots, now the main market for aluminium became light alloy sheets for aeroplane production. At first glance the purpose of the government seemed to be designed to boost aluminium consumption as a substitute for imported metals, even though it did not provide any defined plan spelling out projections of national demand and growth rates. But, as fascist expansionism increasingly dominated Italian foreign policy, the demand for aluminium became driven by war needs.<sup>68</sup> Indeed, the Ethiopian war of 1936 was a good opportunity to increase consumption in the field of aircraft production and thus provided a quick and easy alternative to the export agreement signed with the cartel in 1929. The sanctions introduced by the League of Nations during the war against Ethiopia made this policy all the more effective, since it ended Italian exports and imports of aluminium.<sup>69</sup>

In this new context, SAVA-AIAG and Montecatini found common ground and planned to enlarge their production following a joint national strategy. The two companies also started to increase their capacity after 1935. In February 1935, AIAG approached the government to build an alumina plant in Porto Marghera for a production of 30,000 t/y with the possibility to increase capacity to 60,000 tons in a second stage. AIAG's strategy was to stop alumina production in Switzerland and use Porto Marghera also for exporting a part of the production to its Swiss or German plants.<sup>70</sup> At the same time AIAG and Donegani consolidated their joint

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67 ASBI, Sconti, pratiche n.580, f.1, Direzione Banca d'Italia, Sede di Venezia, "Società Veneta Alluminio Anonima", 23 March 1937.

68 ABISP, BCI, 6. Archivi Aggregati, Società finanziaria industriale italiana (Sofindit), Archivio Sofindit, Presidenza e Direzione, SOF 327, fasc.5 (società diverse), Sfasc. "l'alluminio Italiano", 1937, and "I Consigli delle corporazioni e i problemi da discutere in sede corporativa", *Alluminio. Rivista tecnica del gruppo metalli leggeri della associazione nazionale fascista fra gli industriali metallurgici italiani*, no.6, 1934, 326.

69 "Creazione di un comitato tecnico inter-corporativo per l'alluminio e la potassa," *Alluminio, Rivista tecnica*, no.11937, 33-4.

70 ASBI, sconti, pratiche, cart. 580, fasc.1, sfasc. "Venezia 1935-1938", Andamenti delle attività economiche di Venezia, 24 gennaio 1936, riferito all'anno 1935. See also, ABISP, BCI, 3, direzione centrale, Ufficio Studi, Spoglio Bilanci imprese, faldone 5, cartella 31, *Alluminio Veneto Anonima*, 1936-72. Bruna Bianchi, "L'Economia di Guerra a Porto Marghera: produzione, occu-

efforts: in 1935 AIAG provided Montecatini with the Bayer patent and started cooperating to supply SNAL with alumina.<sup>71</sup> From 1935 onwards, Montecatini greatly increased its production levels. In addition to its alumina plant at Porto Marghera, Donegani started to build a second aluminium smelter in Bolzano, the Industria Nazionale Alluminio (INA), with an initial production capacity of 8,000 t/y.<sup>72</sup> The market for electrical goods and cables provided a good outlet for this expansion, alongside the demand for military aircraft stimulated by the Ethiopian war of 1935–1936.<sup>73</sup> That induced Montecatini and AIAG to double the output of LLL.<sup>74</sup>

Italian government policies towards aluminium were not limited to simply encouraging sales: Italian production turned out to be insufficient to meet Italian war requirements during 1936, and this also obliged Italian firms to import a certain amount of metal from Switzerland and France. This fact was very alarming: some political strategists started to fear the failure to obtain self-sufficiency in a material of such great strategic value as aluminium.<sup>75</sup> The government therefore increased its support for the aluminium industry by making it one of main directories of the so-called Autarchia, for which it opened special lines of credit to help firms to expand their output. At the same time, the government fixed the schedules of expansion in output. In 1937, after a certain period of incubation, a general plan for expansion of aluminium production was launched at the direct order of Mussolini. The significance of the plan was due to the fact that the political powers became the centre of trade, production, and most importantly, investments regulation for the Italian aluminium industry. In a similar way to a cartel, the Autarkic Committee fixed prices, quotas and planned expansions.<sup>76</sup>

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pazione, lavoro. 1935–1945” in *La Resistenza nel Veneziano. La società veneziana tra fascismo, Resistenza, repubblica*, eds. Giannantonio Paladini and Maurizio Reberschak (Venezia: Istituto veneto per la storia della resistenza, 1985), 167–169.

71 Pechiney Archives, 00-15-20452, Italie, 1935, Relations entre AFC et Neuhausen, Question Italienne.

72 AE sc.29 fasc. 54, INA, Industria Nazionale Alluminio di Bolzano. See also Amatori and Bezza, *Montecatini*, 43-44. Archivio Thaon di Ravel – Torino, Fondazione Luigi Einaudi, (ATdR), 5.58-59.14, Corporazione della Chimica, *Piano Autarchico, voll.II, Bozze di stampa (riservato), vol.14. Potassa ed Alluminio* (Roma: 1937), 39–82.

73 About the Italian aircraft industry, see Fortunato Minniti, “La realtà di un mito. L’industria aeronautica durante il fascismo” in *L’Aeronautica italiana. Una storia del Novecento*, ed. Paolo Ferrari (Milano: Franco Angeli, 2004).

74 ABISP, BCI, Ufficio Finanziario, US,s, “S.A. Lavorazione Leghe Leggere”, Dossier bilanci 3031.

75 ASBI, Consorzio Sovvenzioni, Sede Principale, Prat. n. 73, doc. n. 2, 18 November 1937.

76 ATdR, 5.58-59.14, Piano Autarchico; Silvio Golzio, *L’industria dei metalli in Italia* (Torino: Einaudi, 1942), 109. For some technical aspects on the uses of aluminium and the spread of its

In this phase, the government also pondered the possibility to use Blanc's patent as a wider solution to trade and monetary problems. In fact, the country's balance of payments problem and economic difficulties pushed Italy to embark on a policy of import substitution in many fields. The 'Piano autarchico per l'alluminio e la potassa,' indeed, was premised on the use of leucite for the production of both alumina and fertilisers. The Blanc patent was again considered, despite the failure of 1931, as a possible solution for the Italian production of both aluminium and fertilisers. The Italian government attached great importance to this patent and wanted to make the "leucitic-alumina" the central feature of new investments. To achieve this, the government wanted to build, alongside the old smelters, three new ones (A, B and C in the Table 4.2) using alumina extracted from leucite. The Autarkic Committee, in order to manage a rational development of the industry as a whole, calculated the need for aluminium and gave instructions to secure adequate electrical power and raw materials (alumina and bauxite). It stressed a sort of schema of increasing production capacity at each plant as noted in Table 4.2, with annual capacity to reach by enterprises:

**Table 4.2. Production capacity in 1937 and projections of the Autarkic Plan (1938–1942), in metric tons<sup>77</sup>**

Smelters	Prod. 1937	Projected Capacity 1938	Projected Capacity 1939	Projected Capacity 1940	Projected Capacity 1941	Projected Capacity 1942
SAVA Porto Marghera	8,150	17,350	17,500	17,500	20,000	20,000
SNAL, Mori	7,800	8,400	8,500	10,000	10,000	10,000
INA Bolzano	4,700	7,300	9,000	10,000	10,000	10,000
AI Borgofranco	1,600	2,950	3,000	3,000	5,000	5,000
Tot. Old smelters	22,250	36,000	38,000	40,500	45,000	45,000
A from Leucite	-	-	10,000	10,000	10,000	20,000
Bussi (ex SIFA)	-	-	-	5,000	5,000	10,000
B from Leucite	-	-	-	-	10,000	20,000
C from Leucite	-	-	-	-	-	5,000
Total new smelters	22,250	36,000	48,000	55,500	70,000	100,000

The autarkic plan was designed to increase output through the establishment of an "aluminium economy", along the lines of the German model, where produc-

applications see *Alluminio. Rivista tecnica del gruppo metalli leggeri della associazione nazionale fascista fra gli industriali metallurgici italiani*, (Various issues, 1932 to 1939).

77 Source: *Corporazione della Chimica Piano Autarchico*.

tion and consumption had grown nine-fold since 1933, thanks to compulsory substitution of non-ferrous metal with aluminium.<sup>78</sup> From the point of view of private firms, the risk of losing control over national production was eliminated. Indeed, Montecatini and SAVA controlled the new investments. The government did not discriminate towards AIAG-SAVA because it considered the Swiss technology to be superior, and therefore it gave the Swiss concern access to the same financial incentives in order to achieve the objectives of the ‘Piano.’<sup>79</sup> AIAG, furthermore, was able to respond quickly to the Italian government’s demand for more aluminium, since it began developing its facilities before the launch of the ‘Piano.’<sup>80</sup> The only firm that kept a low profile during this period was Aluminium Limited because of its decision to discontinue research on the Blanc patent. The lack of development of Borgofranco also exposed the company to the displeasure of the regime, even though Mussolini never actually proposed to confiscate it.<sup>81</sup>

The whole ‘Piano’ was predicated upon the successful utilization of the Blanc patent, even though there was no evidence about the possibility that it could work. Despite the money lost by Alcoa and Aluminium Limited in the “Leucite Affaire”, the IRI took decision to continue experiments with the patent after taking control over the Società Italiana Potassa, which became the owner of the Aurelia experimental plant. Already in 1934, several experiments had confirmed that the process would fail both from the point of view of economy and quality.<sup>82</sup> In spite of these signs of its failure, the political planners still considered the leucite process to be fundamental to the achievement of the ‘Piano per l’alluminio,’ and re-started the tests in 1937. When it became increasingly clear that the leucite production could not be utilized on an industrial scale, the whole ‘Piano’ suffered huge delays and the war preparedness of the Italian economy was compromised. It was not clear why the Italian authorities continued investing in the Blanch process: the most reliable hypothesis is that in 1937 Japanese government managed to utilize a similar process for producing alumina and ferti-

78 Production passed from 19,000 tons in 1932 to 130,000 in 1937 and consumption from 18,500 to 132,000. See Metallgesellschaft, *Statistische Zusammenstellungen über Aluminium, Blei, Kupfer, Nickel, Quecksilber, Silber, Zink und Zinn*, Frankfurt am Main, Various Annual Issues (1933 to 1938).

79 ASBI, sconti, pratiche, fasc.580 sfasc.1, Cart “Venezia, 1935-38,” 1938.

80 ARAZ, AIAG Direktion Protokollen, 1935-1937, “Direktion Protokoll” 2 July 1937.

81 AtdR, 5.58-59.14, Corporazione della Chimica, *op. cit.*, and ASIRI, Serie Rossa, 020139.5, “Nota sui lavori del comitato intercorporativo della potassa e dell’alluminio”, 29 July 1937.

82 ASBI, Ispettorato al Credito, pratiche n.161, fasc.1, “Ministero delle Corporazioni. Prodotti Chimici Nazionali”, 19 November 1937.

lizer from alumite, and that gave a new impetus to Italian promoters of ‘national’ processes.<sup>83</sup>

The excessive belief in the Blanc process delayed investments for Bayer production and did not leave the time to convert the original plans. As a consequence, only the old plants were expanded and the A, B, and C plants were never started. To compare the Plan with the effective outcome, see table 4.3:

**Table 4.3 Production, national demand and projected production capacity of the ‘Piano’, 1938–1943, metric tons<sup>84</sup>**

Year	AI ALTED	SNAL MONT.	INA MONT.	SAVA AIAG	Tot. Prod.	‘Piano’ without leucite	‘Piano’ with leucite
1938	1,576	7,385	6,443	10,363	25,767	36,000	36,000
1939	2,172	8,603	8,141	15,047	33,963	38,000	48,000
1940	2,463	8,569	11,826	15,932	38,790	40,500	55,500
1941	2,936	7,488	19,234	18,537	48,195	45,000	70,000
1942	2,423	7,143	17,751	16,224	43,541	45,000	100,000
1943	2,140	7,788	20,375	15,889	46,192	-	-

The government’s interventions in aluminium production produced results that fell far short of the goals set out in the ‘Piano’ of 1937. However, this policy was important in its own right because it amounted to a heavy intervention in private business. This policy changed the structure of the Italian industry and created an artificial demand for aluminium, driven by autarkic goals and rearmament programs. Even if this expansion was always presented by Montecatini as a great success for the company and for the whole economic independence of the country<sup>85</sup>, there were some problems with this “state-driven” development. The Italian war demand, indeed, was too artificial to enable a conversion to civilian production after the end of the war. Furthermore the private companies invested in alumi-

83 ASBI, Segreteria Particolare, pratica n.304, fasc.5, “Breve commento alle notizie contenute nel “Journal du four électrique” riguardando “L’industrie de l’aluminium au Japon”, 7 June 1937, and Rivista dell’Alluminio, anno 1936, n. 2, March-April, “L’industria giapponese dell’alluminio”.

84 Sources: Metallgesellschaft yearbooks, Innocenti, *L’industria dell’alluminio*. Corporazione della chimica, *Piano Autarchico*. For demand, part of the difference between production and consumption was supplied by secondary aluminium or by imports.

85 For example, in the annual report of 1939 (year 1938), we can read: “Par sa production d’alumine, le Groupe Montecatini a obtenu, à l’aide exclusive de la technique italienne, un nouveau succès dans une branche dominée jusqu’à hier exclusivement par un cartel international”. Montecatini, *Relation du 50<sup>e</sup> exercice* (Milano: 1938), 17.

num facilities and only undertook modest development of their power facilities. In particular, they did not afford the cost of the stabilisation of water rate with construction of new dams. When the energy production reached full capacity, the established companies hesitated before undertaking large new investments, an attitude that slowed the Italian program.<sup>86</sup> This attitude also provided an opening for new producers in the Italian aluminium industry: for instance, in 1940, Edison launched a proposal to start a production of 10,000 t/y, which would be rapidly expanded to 20,000 t/y. However, without technical know-how and without alumina facilities, it was not able to start its production and it was not able to involve AFC in its schemes.<sup>87</sup>

This period of rapid investments had also a detrimental effect on the production costs, which obliged the companies to demand increases in the price. See the Table 4.4:

**Table 4.4 Price of aluminium on the Italian market, in Lira per kg, 1936–1941<sup>88</sup>**

Year	1936	1937	1938	1939	1940	1941
Price / kg	9.25	9.60	11.00	11.50	12.00	12.70

This price, fixed by the Ministero delle Corporazioni, was rising in order to finance further investments in electricity supply. The main problem with energy supply was the fact that by 1941 the scale production was reached following old technical figures: the great part of hydroelectrical plants was conceived without reservoir dams and the energy produced was not stable as it depended upon climatic conditions. To deal with these problems required new and heavy investments, something that would take some time to take effect.<sup>89</sup> In general the Italian plan spent too much effort on the Blanc process in order to produce alumina and fertilizers at the same time, and underestimated the importance of avoiding bottlenecks in energy production. That meant that the risk involved in increasing energy production was left to private actors that were unwilling to expand unless they could find a ready market for their output.

86 Montecatini, *Relazioni annuale*, 54esimo esercizio (Milano: 1941).

87 Pechiney Archives, 00-1-20047, Aluminium: relations avec les pays étrangers, 1940/1950 Italie: Aluminium – Edison, Ministère de l'Armement ad AFC s.d., but 1940, and letter of Ferrerio (Edison) to AFC, 3 March 1940.

88 Montecatini, *Relazione annuale*, (Milano: 1940).

89 ASBI, Directorio Azzolini, cart.87, fasc.1, sfasc.1, "comitato interministeriale per l'autarchia, verbali della II riunione del 3 febbraio 1939," 5 February 1939.

## Conclusion

The Italian aluminium industry seems to have been caught in middle of a complicated relationship between the strategies of international companies and national government policies. In a certain way, the study of this industry highlights one of the main changes in the European industrial world during the 1930s: the increasing role of the state in economic life. This state's entrance into the aluminium industry spelled the end for the existing relationships with the international cartel: in spite of the good agreements that Italian companies had with the Alliance and foreign currency obtained through cartel exports from Italy, the strategic considerations of the government were able to interrupt it. While agreements with the cartel limited expansions, the Italian government wanted to have a free hand to invest in new facilities for war purposes during a period in which, at the same time, the technological development of the aircraft industry was moving towards mass production of whole metallic planes.

The private firms grasped the opportunities inherent in this changing situation: both AIAG and Montecatini invested in new production before the Mussolini regime formally entered the industry as the main planner and backer. The opportunity of increasing sales and of obtaining high prices, after a period of global crisis and depressed prices, became too attractive for these firms. As we have seen, AFC and VAW divested from Italy, but this was not a consequence of the policy of Mussolini. AFC divested following tactical considerations when AIAG and VAW started their investments, while VAW divested to focus its strategies in Germany because this country started similar policies towards aluminium industry and Hitler's plans absorbed the whole energy of this enterprise. Furthermore, VAW's exit was linked also with the technical failure of its process: the impossibility of finding of workable substitute for the Bayer process frustrated its strategies in Italy. The only company that did not benefit from Italian war expenses was Aluminium Limited. This was due to the deficiencies of the Canadian company's main policies: to import aluminium into Italy, which became impossible after 1934, and technical troubles with the Blanc process further tied the hands of this company within the country.

The new relations established between Italian companies and the fascist regime after 1937 are a great change in regards with the broader history of relationships between private business and political powers. It was not only the Italian state that helped the industry through the imposition of tariffs or, as in this case, with a straight closure of international trade: the state became the planner and the backer of the industry. However, it did not become the direct owner of it, and the

boundaries between business and government became very blurred, as in other industries in which the state intervened with its autarchic plans. The direction of the industry passed into the hands of special committees, formed by both entrepreneurs and politicians, which for a long time were considered as mere expression of old private owner interests that profited from the state's expenditures<sup>90</sup>. In reality, the experience of the *corporazioni* and of the *autarchia* expresses a more intricate network, in which, beside patriotic declarations and nationalistic propaganda, each actor tried to exploit the opportunities linked with the new presence of the state in the Italian economy.<sup>91</sup> In the case of aluminium industry, the power struggle between state bureaucracy, national private actors, and international firms was complicated and produced some monsters, such as the idea to go ahead with the leucite process until late 1937. Due to all these considerations, we argue that the history of the Italian aluminium industry shows how the influence of international cartels or national affairs cannot be seen in isolation, since they acted as a set of interlocking forces that shaped the structure of this industry.

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90 Pietro Grifone, *Il capitale finanziario in Italia* (Torino: Einaudi, 1948). Ernesto Rossi, *I padroni del vapore* (Roma-Bari: Laterza, 1955).

91 Louis Franck, *Il corporativismo l'economia dell'Italia fascista* (Torino: Bollati Boringhieri, 1990).

# A Marriage of Convenience? The British Government and the Aluminium Industry in the Twentieth Century

Andrew Perchard

Reporting to the President of his Canadian parent company – following discussions with government ministers and officials about the commissioning of a new generation of aluminium smelters in the UK – in August 1967, Alcan Aluminium UK's Managing Director John Elton observed:

It is difficult to be concise about the whole position of smelting in the U.K., as Government and Civil Servant views are still being formulated. I think it is now clear that the Government wishes to have aluminium smelting but that the means of achieving it are still muddled, particularly in relation to power.<sup>1</sup>

Elton's comments reflected wider misgivings about the UK government's industrial policy and intervention amongst business groups, and Alcan's own fluid strategic direction.<sup>2</sup> However they masked the long and complex relationship between government and aluminium in the UK. This essay charts the growing importance of aluminium to the UK, and the relationship between the industry (native and Canadian) and the British government. Most advanced industrialized countries had

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1 My thanks to the editors and other contributors to this volume, those at the EBHA conference who offered comments on the paper from which this is drawn, and the following organisations: Centre for Business History in Scotland, Glasgow University Archives (GUA), Hi-hopes, Highlands and Islands Enterprise, l'Institut pour l'histoire de l'aluminium, Rio Tinto Alcan, the UK National Archives (TNA), and the University of the Highlands and Islands.

Letter from P. J. Elton to N. V. Davis, 22 August 1967, Business Information Centre, Rio Tinto Alcan (hereafter RTA), Montréal, 00161-08.

2 Jim Tomlinson, *The Labour Governments 1964–70, Volume 3: Economic policy* (Manchester: Manchester University Press, 2004), 81–6, 96 and 107; Matthias Kipping and Ludovic Caillet, "Mintzberg's Emergent and Deliberate Strategies: Tracking Alcan's Activities in Europe, 1928–2007," *Business History Review* 84, (2010): 79–104.

become reliant on aluminium by the 1930s especially for martial needs, arguably the ‘most important historical motivation for promoting industry’.<sup>3</sup> As the leading historian of the European aluminium industry has observed, the metal became ‘the material of national independence’, with producers enjoying a ‘special relationship with the state’.<sup>4</sup> Despite the mineral reserves of other vital strategic metals within the Empire, Britain was equally reliant on aluminium. And yet, in marked contrast to its European and North American counterparts, the UK aluminium industry has received scant coverage, and, until recently, has been noticeably absent from examinations of business-government relations, and specifically discussions over Britain’s military-industrial complex (MIC).<sup>5</sup> This essay and other related and forthcoming material, alongside that of MacKenzie in this volume, illustrate that this is not for want of ample of archival material upon which to draw.<sup>6</sup> Rather this reflects a number of factors. Firstly, despite being one of Britain’s fifty largest companies by 1948 and a recognized household name as late as 1967, the leading native British producer of primary aluminium (and one of the largest semi-fabricators) for much of the twentieth-century, the British Aluminium Company Ltd. (BACO) became an increasingly peripheral player in the global aluminium market after WWII.<sup>7</sup> This was compounded by the strategic direction adopted after its takeover by US metal producer Reynolds Metals and UK firm Tube Investments in 1959 and subsequently its merger with Alcan Aluminium UK in 1982. Secondly,

3 Ivan Grinberg, *L’aluminium: Un si léger métal* (Paris: Gallimard, 2003) ; Ivan Grinberg and Florence Hachez-Leroy, eds., *Industrialisation et sociétés en Europe occidentale de la fin du XIXe siècle à nos jours* (Paris: A. Colin, 1997) ; Giovanni Federico and James Foreman-Peck, “Industrial Policies in Europe” in *European Industrial Policy: The Twentieth-Century Experience*, eds. James Foreman-Peck and Giovanni Federico (Oxford: Oxford University Press, 1999), 3.

4 Ivan Grinberg, “Introduction: L’aluminium, matériau emblématique de la deuxième industrialisation” in *Industrialisation et sociétés*, 18–19. For observations on the US industry see: George David Smith, *From Monopoly to Competition: The Transformations of Alcoa, 1886–1986* (New York: Cambridge University Press, 1988).

5 *Industrialisation et sociétés*. For recent historical studies of the MIC and military planning and expenditure, see: David Edgerton, *Warfare State: Britain, 1920–1970* (Cambridge: Cambridge University Press, 2006); George Peden, *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs* (Cambridge: Cambridge University Press, 2007).

6 Andrew Perchard, *Aluminiumville: Government, Global Business and the Scottish Highlands* (Lancaster: Crucible Books, 2012); *Idem*, “‘Of the highest Imperial importance’: British strategic priorities and the politics of colonial bauxite, c.1915–1958” in Robin Gendron, Mats Ingulstad and Espen Storli (eds.), *Bauxite, State and Society in the 20<sup>th</sup> Century* (Vancouver: University of British Columbia Press, forthcoming 2013).

7 British Market Research Board, ‘The image of Alcan and aluminium: report of two surveys’, December 1967, GUA, Rio Tinto Alcan collection (RTA), UGD 347 6/5/3. Leslie Hannah, *The Rise of the Corporate Economy* (London: Johns Hopkins University Press, 1976), Table A.6.

analyses of British Aluminium have hitherto paid little attention to the role of the state.<sup>8</sup> This is all the more curious given that two of the ‘crises’ involving the company that have received the most coverage – the 1959 takeover battle (the ‘Aluminium War’ that embroiled the British financial and political establishment) and the Wilson smelter contracts and the closure of BACO’s Invergordon smelter (see MacKenzie’s essay) – also closely involved government, and were at the centre of a political storm and public outcry.<sup>9</sup> The chief reason for this neglect, this essay ventures, may lie in general assumptions made about the historical boundaries of the British state, and a lack of clarity over UK industrial policy and the nature of business-government relations. In the ensuing pages, this essay explores the so-called ‘Anglo-Saxon’ model through the case study of relations between the UK government and the aluminium industry, specifically the leading British producer, British Aluminium, and Alcan.

### **‘Boundaries of the State’: Business, Government and the ‘Anglo-Saxon’ Model**

Oversight of the ties between business and government in the UK point to the ahistorical application of the ‘Anglo-Saxon’ model – under which, ‘markets or relatively short-term pacts are used between firms to coordinate most patterns of economic activity’, and ‘non-market or associational patterns of economic coordination are weak’ – to characterize British business-government relations and industrial policy.<sup>10</sup> This illusion of sharply defined ‘boundaries of the State’ in Britain belies the long history of business-government relations and state intervention, especially across the twentieth century, as well as the movement of senior

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8 Alfred Chandler, *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge: Belknap Press 1990), 321; Ludovic Caillaud, “The British aluminium industry, 1945–80s: Chronicles of a death foretold?” *Accounting, Business & Financial History* 11, (2001), 79–97.

9 For example: David Kynaston, *The City of London, Vol IV: A Club No More* (London: Pimlico, 2002), 111–6; Stephen Hatch and Michael Fores, “The Struggle for British Aluminium,” *The Political Quarterly* 31 (1960): 477–487. For an insider account of Invergordon, see: Ronnie Utiger, *Never Trust An Expert: Nuclear Power, Government and the Tragedy of the Invergordon Aluminium Smelter* (London: London School of Economics, 1995). Perchar, *Aluminiumville*.

10 Ian McLean and Alistair McMillan, *Oxford Concise Dictionary of Politics* (Oxford: Oxford University Press, 2009), 16–17. For examples of the ongoing discussions over the ‘Anglo-Saxon model’, see: Michael Albert, *Capitalism Vs. Capitalism: How America’s Obsession with Personal Achievement and Short-Term Profit Has Led It to the Brink of Collapse* (New York: Four Walls Eight Windows, 1993); Jeremy Jennings, “France and the ‘Anglo-Saxon’ Model: Contemporary and Historical Perspectives,” *European Review* vol.14 no.4 (2006): 537–554.

figures between public and private sectors.<sup>11</sup> It thus flies in the face of a considerable body of evidence, noted in earlier studies – not just, though overwhelmingly, in chronicles of the war economies of 1914–19 and 1939–45 – and especially in the most recent guise of *Warfare State*, David Edgerton’s anatomical study of the Britain’s MIC.<sup>12</sup> Equally prevalent is Michael Porter’s view that the sum total of industrial policy in Britain can be characterized as, ‘inappropriate and rarely sustained’ attempts at intervention, and that post-war governments in the UK, especially Labour administrations, oversaw the irrevocable decline of the economy, the further demise of entrepreneurial spirit and the dismantling of Britain’s ‘great power status’.<sup>13</sup> Concluding that ‘interventions as have taken place have generally been *ad hoc*, sporadic and incoherent’, political scientist Wyn Grant identified two culprits for what he was saw as the short-termism endemic in British industrial policy: ‘a profound uncertainty, which has never been resolved, about what Government’s relationship to industry should be’, and ‘the separation of industrial and bureaucratic careers, and by the character of a civil service in which stability, smoothness of operation and avoiding embarrassment for ministers often seems to be the first priority of government.’<sup>14</sup> Evident in much orthodox Marxist and subaltern literature, in particular, is the tendency to represent an overly conflated set of unified interests of capital and state – epitomized in the notion of ‘gentlemanly capitalism’ – overlooking the inner divisions within government and capital, pursuing divergent interests that periodically converged.<sup>15</sup> An example of

11 For discussions of these points see Mathias Kipping, “Business-Government Relations: Beyond Performance Issues,” in *Business History around the World*, eds. Franco Amatori and Geoffrey Jones (Cambridge, Cambridge University Press, 2003), 391, and 372–393; Simon Green and Richard Whiting, eds., *The Boundaries of the State in Modern Britain* (Cambridge, Cambridge University Press: 1996).

12 *Ibid*; James Foreman-Peck and Leslie Hannah, “Britain: From Economic Liberalism to Socialism – And Back?,” in *European Industrial Policy*, eds. James Foreman-Peck and Giovanni Federico (Oxford: Oxford University Press, 1999), 18–57; Kathleen Burk, ed., *War and the State: The Transformation of British Government, 1914–1919* (London: Allen & Unwin, 1982); John Turner, ed., *Businessmen and Politics. Studies of Business Activity in British Politics 1900–1945* (London: Heinemann, 1984).

13 The standard bearers for this view in the UK were Corelli Barnett and Martin Weiner; Michael Porter, *The Competitive Advantage of Nations* (Basingstoke: Macmillan, 1998), 504–7. For rebuttals of this view: Jim Tomlinson, *The Politics of Decline: Understanding Post-War Britain* (London: Longman, 2001). David Edgerton, “The Prophet Militant and Industrial: The Peculiarities of Corelli Barnett” *Twentieth Century British History* vol.2, no.3 (1991): 360–379.

14 Wyn Grant, “Government and manufacturing industry since 1900,” in *Competitiveness and the State: Government and Business in Twentieth-Century Britain*, eds. Geoffrey Jones and Maurice Kirby (Manchester: Manchester University Press, 1991), 116.

15 Nicos Poulantzas, *Classes in Contemporary Capitalism* (London: NLB, 1975). For discussion of ‘gentlemanly capitalism’, see: Peter Cain and Anthony Hopkins, “Gentlemanly capitalism and

this view of strictly unified capitalist-imperialist interests in relation to aluminium is found in the work of Ronald Graham and Anne Spackman.<sup>16</sup>

The view of an all-enveloping ‘laissez-faire’ approach to business taken by government before the First World War, and of misplaced interventions especially after WWII, has been attributed by Michael Bentley to a false ‘boundary dialect’ about the reach of the state, that schizophrenically resurfaced briefly in Thatcherite rhetoric of the late 1970s and early 1980s only to go ‘down with the Belgrano’.<sup>17</sup> Views on the relationship between capital and the state have also been coloured by a lack of clarity about the nature of business-government relations and industrial policy. Here the more systematic approach adopted by James Foreman-Peck and Giovanni Federico is instructive. Foreman-Peck and Federico start from the premise that industrial policy in twentieth-century Europe has been broadly defined as, ‘every form of state intervention that affects industry as a distinct part of the economy’, while sharpening its definitive characteristics to include a wide range of measures.<sup>18</sup> European states have, they argue, historically invoked three types of policy measures: use of ‘legal and institutional frameworks’, ‘creating a landscape’; encouraging scientific and technical innovation, e.g. through support for research and development, ‘modifying the ecological environment’; and ‘changing the fauna’, the allocation of resources to particular firms or industries – ‘picking winners’.<sup>19</sup> In their review of industrial policy in modern Britain, Foreman-Peck and Hannah conclude that British government responses to industry underwent a paradigm shift post-1916, after which the range of interventionist levers adopted by the state increased, governed by considerations of ‘national security, new technology, and political pressures’, until the ‘general market-orientated’ reforms from the 1980s.<sup>20</sup>

In what follows, the interaction between government departments and the aluminium industry reveal a pluralistic relationship – structured around compe-

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British expansion overseas II: new imperialism, 1850–1945,” *Economic History Review* vol.40 no.1 (1987): 1–26.

16 Ronald Graham, *The Aluminium Industry and the Third World: Multinational Corporations and Underdevelopment* (London: Zed Press, 1982); Anne Spackman, “The Role of Private Companies in the Politics of the Empire: A Case Study of Bauxite and Diamond Companies in Guyana in the Early 1920s,” *Social and Economic Studies* vol.24 no.3 (1975): 341–378. For an alternative explanation, see: Perchard, “Of the highest Imperial importance.”

17 Michael Bentley, “Boundaries’ in theoretical language about the British State” in *The Boundaries of the State in Modern Britain*, eds. Simon Green and Richard Whiting (Cambridge: Cambridge University Press, 1996), 29–56.

18 Federico and Foreman-Peck, ‘Industrial Policies in Europe’, 3.

19 *Ibid*, 4–5.

20 Foreman-Peck and Hannah, “Britain: From Liberalism and Socialism,” 18–57.

ting power relations – in which groups vying for influence and priorities sometimes converged. In some cases, the shared social norms and common values of these players, and experiences, did manifest themselves in networks of interests. However, as relations between the industry and government (and those between Whitehall departments) reveal, these groups cannot simply be assumed to be speaking *solo voce*. The response of British Aluminium to ‘social dramas’ – ‘significant in culture creation and transmission’ within organisations – represented by the two world wars and government control of the industry (between 1915–19 and 1939–53) was to have a profound effect on its subsequent strategic outlook and company culture.<sup>21</sup> It became dependent on government and myopic to the diverging agendas of business and the state. The interaction between the industry and government over industrial relations, and the regulation of health and safety and industrial pollution are explored elsewhere.<sup>22</sup>

## The Prelude to the Affair

Though aluminium production based on chemical processes existed before the formation of British Aluminium in 1894, it was that firm’s adoption of the Héroult electro-metallurgical process that made the native production of aluminium on an industrial scale commercially viable. BACO subsequently dominated native primary production of the metal, and quickly integrated vertically both backwards into bauxite mining and forwards into semi-fabrication. In this, they were distinct from most of their European rivals. By the 1920s, they controlled operations across the UK, France and in British Guiana (Guyana), as well as being the largest foreign direct investor in the Norwegian aluminium industry.<sup>23</sup> Significantly, BACO’s founder, Italian engineer Emmanuel Ristori, was a former head of ammunition at Nordenfeldt Guns (later part of Maxim-Nordenfeldt, and then Vickers). In this role, Ristori had both an intimate knowledge of new developments in armaments

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21 Andrew Pettigrew, “On Studying Organisational Cultures,” *Administrative Science Quarterly* vol.24 no.4 (1979): 570–81; Edgar Schein, *Organizational Culture and Leadership*, third edition (San Francisco: Jossey-Bass, 2004), 254.

22 Perchard, *Aluminiumville*.

23 Colin Russell and Sarah Wilmot, “Metal Extraction and Refining,” in *Chemistry, Society and Environment: A New History of the British Chemical Industry*, ed. Colin Russell (Cambridge: Royal Society of Chemistry, 2000), 308–318; Espen Storli, “The Norwegian Aluminium Industry, 1908–1940: Swing Producers in the Hands of the International Oligopoly?,” *Cahiers d’histoire de l’aluminium* Special Issue 2 (2007): 11–28.

and close contacts with the Royal Gun Factory at Woolwich. As early as 1862, the Woolwich establishment had experimented with the use of aluminium bronzes in artillery pieces, while the Royal Naval Dockyards had started to explore its uses by the 1890s. As Ristori would have been only too aware, more extensive use of aluminium for martial purposes in Britain was stunted, before the development of electrolytic processes in 1886 (the Hall – Héroult process), by its cost and the small quantities available, as well as by the absence of government facilities to test the metal.<sup>24</sup> Like Sir William Armstrong, the Newcastle engineer and his successors at the naval armaments firm, the Armstrong Whitworth Company, through contacts in the government arsenals and knowledge of openings in the market, Ristori was to attempt to use his commercial *savoir-faire* and political links to float a new enterprise.<sup>25</sup> In this, BACO was aided by the favourable reports of the metal's qualities, if limited uses, during the second Anglo-Boer War (1899–1902), as well as of criticisms of the monopoly enjoyed by the military and naval arsenals. The newly formed company was also quick to put pressure on government to increase use of the metal for martial purposes, citing its use by other European military powers. British Aluminium expanded rapidly in its first two decades but was faced with difficulties in finding a domestic market for the metal – leaving it in precarious financial position, and forced to undergo restructuring in 1909–10, and was struggling to maintain the confidence of its shareholders.<sup>26</sup> The company thus sought to capitalize on concerns about the shortcomings of British Army supplies, especially after the Boer War, and general paranoia about the military preparedness of other European powers, notably, after the defeat of Russia in the Russo-Japanese War (1904–5), Germany.<sup>27</sup> In a 1908 sales brochure, BACO proclaimed

24 Register of applicants for membership of the Institution of Civil Engineers, 1888 – Dr Emmanuel Ristori, ICE Library; *Annual accounts of manufacturing establishments under the War Department for year 1862-3*, (c.392), UK Parliamentary Papers (PP), 47; *Return of annual accounts of ordinance factories* (hereafter *Army Ordinance*), 1890-1, (c.129), PP, 98 and 104; *Army Ordinance, 1891-2*, PP, (c.144), p. 92; *Army Ordinance, 1892-3*, (c.61), PP, 94, 114 and 116; *Balance sheets and accounts of shipbuilding and dockyard transactions* (hereafter *Navy dockyard expenses accounts*), 1890-1, (c.147), PP, 194; *Royal Commission on scientific instruction and the advancement of science, Vol.II: Minutes of evidence, 1874*, (c.958), PP, Qs. 414-5: evidence of Lt. Col. Alexander Strange F.R. S; Russell and Wilmot, 'Metal Extraction and Refining', 313–4.

25 Marshall Bastable, *Arms and the State* (Burlington: Ashgate, 2004), 161–265.

26 Chairman's speech to the third Ordinary General Meeting of the British Aluminium Company Ltd., 1898, University of Glasgow Business Records, Glasgow (henceforth GUA), UGD 347, 21/46/2. "Aluminium manufacture" *Cassier's Magazine*, (October 1899): 647–659; Perchard, *Aluminiumville*.

27 *Report of Adjutant-General of Yeomanry on stores for South African campaign, 1902*, (c.803), PP, 121 and 134; *Report of Commissioners appointed to enquire into military preparations and other matters connected with the War in South Africa, Vol.II: Minutes of evidence, 1904*, (c.1791), PP,

'Aluminium: The Soldier's Friend' and sought to link the metal to imperatives of national security and identify themselves in official and business circles, as well as the public, as a patriotic concern:

The advent of aluminium now places a cheaper and a lighter material at the service of the War Office ... It is not surprising, therefore, to learn that Germany has already adopted aluminium for military purposes ... Sooner or later the British War Office will follow the example, and Tommy Atkins will then have cause to thank the light, bright, clean, rustless metal for its share in diminishing the burden (if not the heat) of the day.<sup>28</sup>

In fact by 1908 both the British Army and the Royal Navy were using the metal in reasonable quantities, not least given its success in the South African conflict, and the newly established government run National Physical Laboratory had started conducting more extensive tests into the properties and potential uses of the metal. The National Physical Laboratory had also started to investigate the potentials of aluminium alloys for uses in airships, airframes and aero-engines and aluminium powder as proofing for balloons.<sup>29</sup> This interest in the possibilities presented by aluminium in the nascent development of military aircraft was aided by the discovery by German metallurgist, Alfred Wilm, of the alloy 'duralmin' (combining aluminium with manganese, copper and magnesium). This greatly improved the tensile strength and flexibility of the metal, and would subsequently be used in the manufacture of metal-framed aircraft.<sup>30</sup> BACO's employment of shareholders meetings, the trade press and corporate literature to chivy Britain's armed service departments, as well as defence firms, into using aluminium was

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Evidence of Col. Forbes Macbean, 18 March 1903. Peden, *Arms, Economics and British Strategy*, 17–48. Nicholas Hiley, "Decoding German Spies: British Spy Fiction 1908–18" *Intelligence and National Security* vol.5 no.4 (1990): 55–79.

28 BACO, *Aluminium* (London: The British Aluminium Company, 1908). UGD 347, 21/29/3.

29 *Army Ordnance, 1900-1*, (c.101), PP, 34 and 46; *Army Ordnance, 1902-3*, (c.116), PP, 21 and 172-3; *Army Ordnance, 1904-5*, (c.68), PP, 218; *Army Ordnance, 1906-7*, (c.52), PP, 180; *Departmental Committee on the National Physical Laboratory, minutes of evidence with appendices and index, 1908*, (c.3927), PP, Qs.57-65: Evidence of Dr. R. T. Glazebrook; *Statistical report of the health of the Navy, 1909*, (c.302), PP, 199; *Report of the Advisory Committee on Air for 1909-10* (hereafter *Air Force: Advisory Committee*), (c.5282), PP, 9, 90-94, 121, 165 and 174; *Air Force: Advisory Committee, 1910-11*, (c.5453), PP, 22-6; *Air Force: Advisory Committee, 1912-13*, (c.6858), PP, 16.

30 The discovery of other alloys like alpax (aluminium and silicon) in 1920 and Almemec (aluminium, magnesium and silicon) would also be significant: Margaret Graham, "R & D and Competition in England and the United States: The Case of the Aluminium Dirigible," *Business History Review* vol.62 no.2 (1988): 261–285; Eric Schatzberg, "The Cultural History of Aluminium as an Industrial Material," *Cahiers d'histoire de l'aluminium* 35, (Winter 2005-2006), 74–96.

not isolated. Similarly British armament manufacturers had been engaged in similar nefarious schemes before the outbreak of 1914, using connections within the armed services to stimulate demand for defence expenditure, most famously exposed by the Mulliner Affair of 1908. Though BACO had clearly intended on breaking into military procurement markets from the outset, poor domestic demand for the metal amongst civilian manufacturers in Britain made the martial ‘spin-off’ all the more pressing. As with the continental European powers and North America, it was to be the two global conflicts of 1914–18 and 1939–45 that would transform the relationship between government and the native British, as well as the North American, aluminium industries. Both wars saw a dramatic increase in demand for and diversification of the uses of the metal.<sup>31</sup>

### **The Ties that Bind: Aluminium and the British State, 1914–1953**

British strategy on the outbreak of war in August 1914 assumed ‘business as usual’ for the economy. This was predicated on the belief that Britain could limit itself to committing five divisions of territorials to support the French ‘left wing’ in a short continental military campaign, using its naval supremacy to blockade the Central Powers into submission and bombard Baltic ports. The shortcomings of this policy (predicted well before the outbreak of war) were soon brought sharply into focus with the ‘shells crisis’ of May 1915 and subsequent Allied shortages in manpower, military equipment and raw materials, not least because of reliance on imports. The crisis prompted unprecedented levels of state intervention in the British metropolitan and imperial economy, not least with Britain as the armoury and financier of the British Empire and the Allied powers.<sup>32</sup> As with all essential raw materials, the newly formed Ministry of Munitions introduced controls on the sale of aluminium (and its derivatives) from 18 August 1915. Not until 1 March 1919 were all priority controls on these materials ceased. In addition, the state became actively involved in labour relations, using both legislative tools and negotiation to mediate and enforce production imperatives. After David Lloyd-George’s appointment as Minister of Munitions in 1915, and subsequently Prime

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31 Bastable, *Arms and the State*, 163. For scandal over exposé of Krupp’s lobbying in Germany: Matthew Seligmann, *Naval Intelligence from Germany: The Reports of British Naval Attachés in Berlin, 1906–1914* (Burlington: Ashgate, 2007), xxii. Clive Trebilcock, “Spin-Offs” in British Economic History: Armaments and Industry, 1760–1914” *Economic History Review* vol.22 no.3 (1969): 474–490.

32 Perchard, *Aluminiumville*, 191–244.

Minister in 1917, businessmen and trade union leaders were drafted into government to aid reorganisation of the British war economy. In the longer term, Lloyd-George's direction of this powerful wartime ministry was used as a template by Lord Beaverbrook (newspaper magnate and Churchill's warlord) in 'consciously modelling' the Ministry of Aircraft Production during WWII. Between 1915 and 1953, the domestic aluminium industry spent around ten years subject to direct government controls, many of them under the direction of these two ministries. Culturally the experience of wartime control was to cast a long shadow over those essential industries and raw materials brought under government control. As Chris Wrigley has observed of the legacy of wartime controls:

The experience of the Ministry of Munitions left a lasting impression on people's thinking, and not just on that of politicians and civil servants. After the First World War many industrialists, bankers, politicians and trade unionists became disillusioned with free market competition at home and abroad and favoured co-operation in industry, mergers and large-scale organisation.<sup>33</sup>

However if businessmen and labour leaders alike clung to Lloyd George's pledge that the lessons from the British war economy of 1914–18 of the value of 'state action, state help, state encouragement, and state promotion' would be learnt, the experience was to be somewhat more mixed.<sup>34</sup> As John Turner observed of the general post-war conduct of business-government relations:

Direct consultation between government departments and the business community, which was to be very important during and after the First World War, was confined to a few sectors: there were close links between the armaments and ship-building industries and the defence departments, though this generally meant that industry became the tool of government rather than vice versa.<sup>35</sup>

As the Chairman and General Manager respectively of the largest native concern, British Aluminium, Andrew Wilson Tait and William Murray Morrison served in various capacities within the Ministry of Munitions (and subsequently Reconstruction) during the War.<sup>36</sup> Tait – the saviour of electrical manufacturer Ferranti, who, according to his biographer, had it not been for a financial scandal in 1925 and his

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33 Chris Wrigley, "The Ministry of Munitions: An Innovatory Department" in Burk, *War and Society*, 32 and 52.

34 Richard Tawney, "The Abolition of Economic Controls, 1918–1921," *The Economic History Review* vol. 13 no. 1/2 (1943): 1–30; Raymond Streat, "Government Consultation with Industry," *Public Administration* vol. 37 no. 1 (1959): 1–8; Wrigley 'The Ministry of Munitions', 32–56.

35 John Turner, "The Politics of Business," in *Businessmen and Politics. Studies of Business Activity in British Politics 1900–1945*, ed. John Turner (London: Heinemann, 1984), 1–20.

36 BACO, Directors reports and accounts for years ending 31 December 1914–1917, GUA, UGD 347, 21/6/7–10.

premature death, ‘seemed destined to become one of the country’s leading businessmen’ – was already an important figure in British trade circles, as a prominent supporter of the campaign for a ‘Business Parliament’ in 1916, and subsequently a founder of the Federation of British Industries.<sup>37</sup> Tait ( and in a supporting role, Morrison) used their positions to further BACO’s middle and long-term goals, broadly similar to that of relations between their French counterparts and the French state; One of ‘serving the immediate public interests of national defence, and the medium term post-war interests of private sector business.’<sup>38</sup>

At the outbreak of war in August 1914, native British production of primary aluminium stood at 7,600 metric tons (mts), just over 90 per cent of it from BACO’s smelters in the Scottish Highlands, supplemented by a further 3,050mts from British Aluminium’s Norwegian plants.<sup>39</sup> By 1916 British requirements of aluminium stood at 32,000mts, with 7,000mts of that destined for Russia and Italy, against total domestic and Norwegian supplies of ingot of 10,500 mts.<sup>40</sup> Where the uses of aluminium had been limited at the outset of the conflict, by 1916 aluminium alloy castings were being used in military motor vehicles, submarines and increasingly aeroplanes. Pure aluminium was being used in the manufacture of ammunition and machine guns. An indication of the impact of the war economy on the demand for aluminium is illustrated by the increase in production for those munitions that used the metal: Between 1914 and 1917 alone, the number of shells produced in British munitions factories increased from 500,000 to 76,200,000: manufacture of powder and explosives reached its peak of 190,000 mts in 1917,

37 J. R. Edwards, “Tait, Andrew Wilson (1876-1930),” *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com.ezproxy.webfeat.lib.ed.ac.uk/view/article/47710>, [accessed 4 March 2008]; John Wilson, *Ferranti and the British electrical industry, 1864-1930* (Manchester: Manchester University Press, 1988), 81; Richard Davenport-Hines, *Dudley Docker: The Life and Times of a Trade Warrior* (Cambridge: Cambridge University Press, 1984), 106-8; Derek Matthews, “The Business Doctors: Accountants in British Management from the Nineteenth Century to the Present Day,” *Business History* vol.40 no.3 (1998): 70-103.

38 Ludovic Cailluet, “L’impact de la Première Guerre mondiale et le rôle de l’État dans l’organisation de la branche et des entreprises,” in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L’Âge de l’aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy (Paris: Armand Colin, 1997), 101.

39 For consistency all figures in tons have been converted to metric tonnes and rounded-up: Letter from N. Macpherson, Aluminium Corporation Ltd., to L. V. Chilton, BACO, 27 March 1956; Letter from L. S. F. Charles, BACO, to D. W. F. Hardie, Imperial Chemical Industries, 21 January 1955, RTA, Montréal, 00158-08.

40 Grinberg and Hachez-Leroy’s figures for British consumption of aluminium during WWI underestimate the true scale of the demand: *Industrialisation et sociétés*, Annex 2.1; *Report of the Controller for the development of mineral resources in the United Kingdom, 1918*, (c.9184), PP 23-4; Minute from D. A. Bremner, Ministry of Munitions, to Sir L. Llewelyn, Director of Materials, Ministry of Munitions, 31 August 1916, TNA, MUN 4/2046.

from a figure of 5,080 mts in 1914; and most crucially, aircraft and aero-engine output rose from 2,000 aircraft and 1,000 engines in 1914 to 32,000 and 22,100 respectively in 1918. As a result, Britain became increasingly reliant on costly imports of aluminium ingot from both the United States and Canada, amounting to 70 per cent of their supplies by 1916. Between January and December 1915 alone, prices for imported ingot rose from £81 to £220 per ton. This took place against the wider backdrop of an increase of 68 per cent in the volume of US imports (as well as prices) to Britain between 1913 and 1915, and the depreciation of sterling against the dollar. By November 1916, one ton of imported aluminium ingot was costing £300. Even with Woodrow Wilson's agreement of further advances in July 1917, 'the Treasury continued on a knife edge for the rest of the war.'<sup>41</sup> Moreover with Britain acting as financial intermediary for the Allies to US banking houses and as the Allied and imperial arsenal, their very ability to prosecute the war hung in the balance. Despite the effectiveness of economy measures in reducing aluminium consumption (instituted from 1916), the growth of the aircraft programme in the last two years of the war more than offset this. For example, motor transport that accounted for 3,000 tons in 1916 had been reduced to around 2,100 tons by 1918. However the combined Admiralty and War Office air requirements increased five-fold from 2,000 tons in 1916 to 10,840 tons by 1918.<sup>42</sup>

Quite aside from strategic concerns about the financial ability to sustain the war effort, munitions officials were also anxious about the reliance on supplies of metal monopolized by the Aluminium Company of America (Alcoa), of which the Canadian producer Northern Aluminium (subsequently Alcan) was then a subsidiary. In a minute to Director of Materials Sir Leonard Llewelyn in August 1916, munitions official D. A. Bremner articulated the depth of the Ministry's concerns and proposed remedies. He suggested that the Ministry's priority should be to locate aluminium production within the UK (or, less preferably, the Empire). Similarly the raw materials necessary for producing should be sought in Britain or the Empire. The memo thus established the justification for maintaining native production of primary aluminium, in spite of the comparatively greater expense, on the grounds of strategic importance:

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41 Bremner to Llewelyn, 31 August 1916. Gerd Hardach, *The First World War* (Berkeley: University of California Press, 1977), table 9. Hew Strachan, *Financing the First World War* (New York: Oxford University Press, 2004), 16, 21–22.

42 Bremner to Llewelyn, 31 August 1916; IAMB to Phipps, 1 November 1916; Memo from Inter-Allied Munitions Board (IAMB) to Phipps, 1 November 1916, TNA, MUN 4/1170; Circular from Edmund Phipps, General Secretary, Ministry of Munitions, to all heads of Government Departments, 28 November 1916, MUN 5/207/1830/1; Ministry of Munitions, figures of aluminium released, December 1918, MUN 4/724.

It must be said, however, that in spite of the relatively high cost of hydroelectric power in this country, as compared with Scandinavia, Switzerland, Canada and America, the British Aluminium Co. Ltd, and the Aluminium Corporation Ltd., have been able to justify their existence, and have rendered invaluable service during the war... Although the cost of power is an important factor in the commercial production of aluminium, the results achieved by the British Aluminium Co. Ltd., and the Aluminium Corporation Ltd., show that even in this country, it is not prohibitive, and it would be unwise to assume that the economic possibilities of aluminium manufacture in the United Kingdom have been exhausted.<sup>43</sup>

Significantly for the future domestic development of UK smelting capacity (notably BACO's Lochaber works), Bremner continued by stating that:

In view of the necessity of increasing our home production, not only of aluminium, but of certain essential ferro-alloys for which we are now dependent on America and Scandinavia, it would appear to be highly advisable that the potential sources of hydro-electric power in the United Kingdom should be thoroughly investigated. It may be that vested interests and legal difficulties have hitherto prevented the development of certain water powers, and that these obstacles may have to be swept aside in the national interests.<sup>44</sup>

Bremner duly considered other potential locations for secure aluminium production (and supplies of raw materials) within the Empire, acknowledging that the considerable shortfall had to be met from outside the UK. However it was abundantly clear that the only serious contender was the Canadian aluminium industry, which was to become the major secure supplier of aluminium to Britain for much of the next fifty years. One thing about the Canadian industry vexed Bremner though. In order that it could be counted on as a secure supplier: 'it would be necessary to render the Dominion independent of the United States for her Alumina.' Bremner urged caution, noting that:

At the present time, the whole of the aluminium industry of the United States of America and Canada is practically under the autocratic control of Mr A. V. Davis, who is President of the Aluminium Co. of America, and the Northern Aluminium Co. Ltd. of Canada, the only producer in that country.<sup>45</sup>

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43 Bremner to Llewelyn, 31 August 1916.

44 *Ibid.*

45 *Ibid.*; Perchard, 'Of the highest Imperial importance'.

Bremner's concerns about US control of Britain's major source of ingot stemmed from growing tensions between the Ministry of Munitions and Inter-Allied Munitions Board (IAMB), and Alcoa over the sharp rise in prices of imported ingots. Negotiations with Alcoa over imports conducted through the British government's intermediary, the banking house Morgan Grenfell & Co., worsened during 1916–1917. This culminated in the Ministry authorising the Governor of British Guiana to use his right to halt exports of bauxite to the United States from the colony, where Alcoa had purchased mining leases in 1913. Their ultimatum to Alcoa stated the British government's intent, 'to continue to make use of the export prohibition clause until the Company are prepared to be reasonable' over the 'excessive price of aluminium to be supplied in 1918.'<sup>46</sup> The supply crisis was further exacerbated when it became apparent that the IAMB and Ministry had wrongly assumed that they could include French shares of the output from a Norwegian subsidiary at Tyssedal for joint allied supplies. French representatives on the IAMB confirmed that because of their growing military aircraft programme they could not afford to spare any metal. Within the Ministry, these events served to reinforce Bremner's suggestions that security of supply necessitated support for domestic producers, and imperial supplies if they could be wrestled from foreign (and possibly hostile) control. They also re-affirmed Britain's suspicion of her allies and of neutral powers. In addition, these supply issues also prompted inter-departmental criticisms of the perceived lack of vigilance exercised over the control of imperial minerals reserves and of the absence of a policy on this.<sup>47</sup>

In the midst of the crisis, on the premise of sourcing other supplies of metal, Andrew Tait drew munitions official Captain Walter Broadbridge's attention to the fact that shares were becoming available on the board of fellow aluminium producer, AIAG Neuhausen. He suggested that if the British government could gain financial control of AIAG (which British Aluminium could take over after the war) then they might secure additional supplies of metal from Switzerland. Though a Swiss company, AIAG Neuhausen were largely German owned and until

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46 Memo from Ministry of Munitions to IAMB, 13 July 1917; Memo from R. H. Brand, IAMB, to IAMB Ottawa, 27 October 1916; Memo from Capt. W. Broadbridge to R. H. Brand, 2 January 1917; Brand to Broadbridge, 12 July 1917, TNA, MUN 4/5402.

47 IAMB to Phipps, 1 November 1916; Letter from Adj. Col. J. Ronneaux to Under-Secretary, Ministry of Munitions, 7 December 1916, TNA, MUN 4/1170; Departmental Committee on the Non Ferrous Metals Trades, Minutes of Evidence – Captain Walter Broadbridge, 26 June 1917, TNA, BT 55/46; Simon Ball, "The German Octopus: The British Metal Corporation and the Next War, 1914–1939," *Enterprise & Society* vol.5 no.3 (2004), 451-489; David French, *The strategy of the Lloyd George coalition, 1916-1918* (Oxford: Oxford University Press, 1992).

1916 counted as one of its board, Dr Walter Rathenau (the German industrialist and wartime ‘commissar’ of Kriegsmetall AG). In 1914, the French authorities had sequestered AIAG’s French assets, with the Allies restricting their exports to the Central Powers in 1915. Nevertheless, as late as 1916 AIAG Neuhausen were still providing the Central Powers with a considerable quantity of aluminium, and receiving supplies of bauxite from Hungary and Austria.<sup>48</sup> For good measure, Tait also pointed out that his suggestion would have the effect of denying Germany of a valuable supply of the metal both during and after the war. In effect, Tait sought in this move to aid British Aluminium to gain control of one of the ‘pioneers’ of global aluminium and access their central European markets. It would also allow BACO finally to develop their existing assets in the Martigny-Orsières region, which they had purchased in 1906 (but had been blocked from developing by contractual agreements with AIAG and the Swiss government). Though Tait’s bold move found favour with ministry officials, not least Sir Budd Cecil, the chief adviser on metals, it ultimately foundered on French refusal in the event to supply alumina to the works (on the grounds of diminished capacity to do so), and strategic concerns that with French alumina redirected to Neuhausen and the Norwegian works standing idle, ingot from the latter might be used to supply Germany.<sup>49</sup> Evidently French producers privately could also hardly have welcomed the idea of British Aluminium gaining control of the Swiss industry, and using this to encroach on central and west European markets after the war.

Tait’s choice of allies and his timing were impeccable. He knew that his proposals would find particular favour with Ministry officials, notably Budd (a former leading figure in the London Metals Exchange), as well as Lloyd George’s successor as Minister of Munitions, Christopher Addison. Addison and Budd were concurrently whipping up xenophobic feeling against the Anglo-German Henry R. Merton company infamously pursued through the Non-Ferrous Metal Industry Act 1918 – designed to prevent the ownership of British smelting concerns falling into ‘alien control’ – and were promoting an agenda for an imperial metals policy. This imperial metals policy subsequently took shape in the form of the Imperial Mineral Resources Bureau and a public-private corporation (the British Metal Corporation), which encouraged British capital to invest in and develop

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48 Memo from Broadbridge to Wigglesworth (with attached translation of AIAG Neuhausen annual report for 1916), 16 May 1917, MUN 4/795; Hardach, *The First World War*, 61.

49 Memo by Sir L. W. Llewelyn, 21 June 1917; Sir Cecil L. Budd to W. T. Layton, 31 January 1919, MUN 4/724; Ball, “The German Octopus”, 459; Cailluet, “L’impact de la Première Guerre mondiale” 102–3; Perchard, *Aluminiumville*.

imperial resources and prevent foreign companies taking over control of strategic reserves.<sup>50</sup>

The convergence of Budd's imperial minerals agenda with the strategic interests of native aluminium producers, seen especially through the tactics of Tait (and Morrison), was visible in the conduct of affairs in the Board of Trade's Departmental Committee on the Non-Ferrous Metals Trades (DC-NFMT), appointed by the President of the Board of Trade in October 1916 to consider the immediate post-war position of this group of industries, and the Minister of Reconstruction's own advisory committee on aluminium. Budd served both as a member of the DC-NFMT and chair of the sub-committee on aluminium. He was joined on the committee by Andrew Tait and on the sub-committee by Morrison, who also served, alongside Budd, on the advisory committee to the Minister for Reconstruction. Tait, Morrison and Walter Broadbridge (who was a convert to Budd's agenda) appeared as expert witnesses before the committee.<sup>51</sup> Tait and Morrison used their appearance to appeal on the grounds of patriotism and the industry's wartime service for financial support and protective trade tariffs *post-bellum*, as well as specific support from the government to enable the smooth passage of their proposed private water power bill (the Loch Leven Water Power Bill 1918; for extension of their Highland smelting capacity). Both resurrected the spectre of Arthur Vining Davis and Alcoa, finding a sympathetic audience in Budd. In his subsequent evidence to the committee, on behalf of the Minister of Reconstruction, Walter Broadbridge lamented the cost incurred by the Exchequer from reliance on Alcoa-owned supplies, and urged the expansion of indigenous production notably promoting British Aluminium's forthcoming scheme with vocal support from Andrew Tait who was receiving evidence on the day. The committee's final report recommended that: aluminium be considered a "key industry"; attempts to block water power developments by the industry be overcome with government support; French proposals over control of bauxite mines in France and export taxes on bauxite be carefully monitored by the UK government; that substantial duties

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50 Christopher Addison (later Viscount Addison) (1869–1951) served as Minister of Munitions between December 1916 and July 1917, when he became Minister of Reconstruction until January 1919: Christopher Addison notes for promotion of the Non-Ferrous Metals Bill, 7 December 1917, Bodleian Library, University of Oxford, MS. Addison dep. c. 114, fols. 20-1; Ball, "The German Octopus", 460–1; Harry Cordero and Leslie Tarring, *Babylon to Birmingham. An Historical Survey of the Development of the World's Non-Ferrous Metal and Iron and Steel Industries and the Commerce in Metals since the Earliest Times* (London: Quinn Press, 1960), 163–6.

51 *Statement with regard to advisory bodies appointed by the Minister of Reconstruction, 1918*, (c.9195), PP, 7; *Report of the Departmental Committee on the Non-Ferrous Metal Trades* (London: HMSO, 1917).

be imposed upon cheap foreign imports undercutting native producers; and that support be given to imperial producers. In connection with the last point it raised misgivings about US financial control of Canadian production.<sup>52</sup> These recommendations and briefing were repeated in the Ministry of Reconstruction's sub-committee, which reported to Addison in June 1918, and made almost identical recommendations. The withdrawal of BACO's original Loch Leven Water Power Bill of 1918 in the face of stiff opposition, despite of support from President of the Board of Trade, Minister of Munitions and the Minister of Reconstruction, added further impetus and urgency to these proposals.<sup>53</sup> Budd continued both to pursue the chance of British representation on AIAG's board, and advocate support for the native British industry, lobbying the British Mission to the Versailles peace conference.<sup>54</sup> It was a coup for BACO, and in essence echoed Bremner's memo of August 1916.

As negotiations over bauxite mining rights illustrate, BACO used support within the metropolitan government between 1918 and 1921 for an imperial minerals and metals policy in the event of another war – as advocated by 'social imperialists', such as Leo Amery in the Colonial Office and with the backing of the IMRB – to ensure government support for the development of their domestic industry.<sup>55</sup> BACO's public commitments, and commercial interests, were also pursued through a network of investments and contacts in Budd's British Metals Corporation (BMC) (with Tait a director), and in the subsidiary of another BMC investor, the Consolidated Zinc Company (CZC) later Rio Tinto Zinc), in the Imperial Smelting Company (ISC). Through these activities, they had access to W. S. Robinson, the CZC and ISC chairman, who Oliver Lyttelton – later BMC's General Manager, and subsequently a non-ferrous metals controller during the Second World War, and later Cabinet minister – described as: 'no less than ourselves [BMC]', 'was pursuing the theme of a self-contained British Empire in metals.'<sup>56</sup>

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52 DC NFMT, Evidence of Tait and Morrison, 25 May 1917, and Broadbridge, 29 June 1917, BT 55/46; *Report of the Departmental Committee on the Non-Ferrous Metal Trades*, points 98 and 102.

53 Report of the Sub-Committee appointed by the Minister of Reconstruction to inquire into the post-war position of aluminium, 17 June 1918, MUN 5/207/1830/2.

54 By this time Sir Cecil Budd was also liquidator for non-ferrous metals: Notes from Budd to W. T. Layton, 24 January 1919, Budd to Layton, 31 January 1919, and Budd to F. Woods, 18 February 1919, MUN 4/724.

55 Perchard, "Of the highest Imperial importance."

56 Ball, "German Octopus", 452; Oliver Chandos, *Memoirs* (London: Bodley Head, 1962), 125 and 129; Harry Cordero, *The World's Non-Ferrous Smelters* (London: Quinn Press, 1960), 219–221, and 231.

Tait was also appointed to the Company Law Amendment Committee [the Wrenbury Committee] in 1918, charged by the President of the Board of Trade, with investigating foreign capital investment in British industries, and served on the Board of Trade Advisory Council.<sup>57</sup>

During the course of the conflict, the government had also advanced £200,000 in 4½ per cent loans to British Aluminium to extend their water reserves at Kinlochleven, with the work being carried out in part, by arrangement with government, by German prisoners of war. The recasting of British Aluminium's original water-power bill and government support ensured the passing of the Lochaber Water Power Bill through Parliament in 1921. During the course of his evidence to Parliament, Tait made a point of identifying the company as part of a 'key industry' for national defence. The government also guaranteed a loan of £2.5 million issued under the Trade Facilities Act to BACO's subsidiary the North British Aluminium Co. Ltd for the construction of the scheme. This was justified by the Treasury on the grounds that the BACO scheme was essential to national defence requirements rather than because the industry needed reorganising or to alleviate unemployment.<sup>58</sup> However government support had come at a price. Political endorsement for British Aluminium's Lochaber Bill required them to agree to government demands that BACO could, within a given period of notice, be required to sell their water rights to the state. BACO reluctantly acceded under pressure from the metropolitan British government to purchase bauxite mining rights in Guyana, with the Colonial Office stalling other interested parties to ensure that the capital invested was British. More profoundly, and ominously, was the culture that this had inured within British Aluminium cultivated by close contact with government departments, and compounded by some of the commercial activities that BACO was involved in. It would be further encouraged by the influx between the 1920s and 1950s, of retired senior military and naval personnel, and mandarins, into the company, principally employed for their knowledge of the procurements process.

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57 Robert Wyse, "The Future of London as the World's Money Market," *The Economic Journal* vol.28 nr.112 (1918): 386-397; 'Trade Prospects', Note by the President of the Board of Trade, 12 June 1924, TNA, CAB 24/167.

58 Report of US charge d'affaires of visit by E. G. Lowry to German Prisoners of War at Kinlochleven camp, 15 September 1916, TNA, FO 383/164; Report by Dr Schwyzer and A. L. Fischer, Swiss Legation to Kinlochleven camp, 27 June 1917, FO 383/277; Ministry of Munitions, *Official History*, Vol.7, part III, Ministry of Munitions, *Official History*, Vol.7 (London: HMSO, 1922), 76. Memos for counsel, Lochaber Water Power Bill, 1921; Proof of Andrew Wilson Tait to select committee on private bills on matter of the Lochaber Water Power Bill, 1921, UGD 347, 21/34/5/11; *Trade Facilities Acts, 1921-1924*, 1924, (c.121) PP; North British Aluminium Company (NBACO was BACO's subsidiary), Minute book no.1, 4 March 1925, UGD 347, 21/2/7; W. Murray Morrison to Secretary of the Board of Trade, 7 August 1936, TNA, SUPP 3/82.

‘The Service’, as Morrison referred to the company, became assured of its own importance to government and myopic to shifts in policy direction over the next two decades.<sup>59</sup> Not for the first time, it failed to recognize that the temporary patronage that they had enjoyed from government during a national crisis was waning.

Government support for the native industry had also come in the form of technology transfer. The First World War introduced aluminium and aluminium alloys to a large number of manufacturers who had no prior experience of the metal. The amount of research undertaken at the National Physical Laboratory, Royal Aircraft Factory and countless university laboratories and factories brought very real dividends in improvements to technology, processes and in diversifying product ranges; The Air Force Advisory Committee alone received 360 reports on developments in aircraft design using light alloys between 1917 and 1931, the bulk of them about aluminium alloys. This had greatly extended knowledge of a wide range of aluminium alloys, and with it increased applications for them. Specifically this work had greatly improved the efficiency of aero-engines with the replacement of iron and steel by aluminium alloys, while work on anti-corrosive and coloured aluminium alloys resulted in an explosion in patents as its uses in the civilian consumer markets became apparent.<sup>60</sup> Part of the work was funded by donations from the industry itself, but most came from government. In addition thirty-two scientific and professional societies had been set up – funded by government, and working in conjunction with both military and civil laboratories and the newly established Department of Scientific and Industrial Research (DSIR) – including the British Non-Ferrous Metals Research Association (BNFMRA) formed in December 1919. Work into aluminium alloys continued unabated throughout the 1920s and 1930s, not least given the impetus to replace wood with light alloys in aircraft structures. By the late 1930s, earlier misgivings of engineers and the Air Ministry had been overcome by extensive research into the area and resulting

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59 Minutes of meeting between President of the Board of Trade (Stanley Baldwin), Lord President of the Council (Arthur Balfour) and the Secretary of State for Scotland (R. Munro), 23 April 1921, and of meeting between these parties along with the Minister for Transport (Sir Eric Geddes), Minister without portfolio (Christopher Addison), and Chief Electricity Commissioner (Sir John Snell), 25 April 1921, CAB 27/148; Perchard, *Aluminiumville*.

60 *Air Force: Advisory Committee, 1917-18*, (c.8629), PP, 8; *Air Force: Advisory Committee, 1917-18*, PP, (c.9145), pp.9-20; *Air Force: Advisory Committee, 1918-9*, (c.488), PP, 16-19, and 51-74; *Advisory Committee on Aeronautics, 1919-20*, (c.1120), PP, 12, 35 and 50; *Report on Scientific and Industrial Research* (hereafter *Scientific and Industrial Research*), 1923-24, (c.2223), PP, 30 and 33; *Scientific and Industrial Research, 1926-27*, (c.3002), PP, 4; *Scientific and Industrial Research, 1930-31*, (c.3789), PP, 7.

improvements in alloys. In 1934 senior Air Ministry officials confirmed of the expansion of the RAF's fighter squadrons that had taken place since 1925, at least 23 per cent of the metal used in new planes was aluminium or aluminium alloys. By the late 1930s most of the new military aircraft for the RAF were built of aluminium alloys, with 50 per cent of aluminium produced in the UK being employed in aircraft production by 1938.<sup>61</sup>

Other research conducted for DSIR and BNFMRA at government establishments and laboratories, though initially conducted for military purposes, had beneficial 'spin-offs' for civilian uses. Notable discoveries included solutions to extract nitrogen from reduction furnace to improve the quality of metal and aluminium-brass condenser tubes being used extensively in both merchant and naval vessels. Throughout the 1920s and 1930s British Aluminium chief markets were in civilian and military transport (chiefly aircraft) and maritime and naval vessels, and the electricity industry. In the case of the latter, once again BACO benefited from new market opportunities created by the state. Government establishment of the Central Electricity Board in 1926 and the ensuing development of a National Grid in Britain brought great dividends for the aluminium industry. Between 1929 and 1933, 12,000mts of aluminium were used in the Grid's pylons, much of it derived from BACO's Highland smelters.<sup>62</sup> Naturally, the research and development activities and procurement also brought the industry, the armed services, government

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61 *Scientific and Industrial Research, 1919-20*, (c.905), PP, 28. Harry Melville, *The Department of Scientific and Industrial Research* (London: Allen & Unwin, 1962), 9, 102-3. *Proceedings of the Second Air Conference held on 7<sup>th</sup> and 8<sup>th</sup> of February 1922*, PP, (c.1619), p.55; *Appropriation Accounts for Air Services, 1922*, (c.44), PP, 81; *Scientific and Industrial Research, 1921-22*, PP, (c.1735), p.47; *Scientific and Industrial Research, 1922-23*, (c.1937), PP, 54 and 75; *Scientific and Industrial Research, 1924-25*, (c.2491), PP, 45, 61 and 64; *Scientific and Industrial Research, 1925-26*, (c.2782), PP, 11, 35, 47, 52 and 80; *Scientific and Industrial Research, 1927-28*, (c.3258), PP, 24 and 88; *Scientific and Industrial Research, 1931-32*, (c.3989); *Scientific and Industrial Research, 1932-33*, (c.4254), PP, 38 and 68; *Committee on public accounts with proceedings, 1933-34*, (c.98), PP, Q. 5228 Evidence given by Sir C. Bullock and B. E. Holloway (Holloway later became Director of Contracts at the Air Ministry), 29 May 1934; 'Statement of Secretary of State for Air', *Air Estimates for 1937-38*, (c.5677), PP, 8; Peter Fearon, "The British Airframe Industry and the State, 1918-35," *The Economic History Review* vol.27 no.2 (1974): 236-251; Charles Gibbs-Smith, *Aviation: An historical survey from its origins to the end of the Second World War* (London: Science Museum, 2003), 219 and 231; Sebastian Ritchie, *Industry and air power: the expansion of British aircraft production, 1935-1941* (London: Routledge, 1997), 64-68.

62 *Scientific and Industrial Research, 1933-34*, (c.4483), PP, 12, 58, and 90-1; *Scientific and Industrial Research, 1934-35*, (c.4787), PP, 72 and 102; *Scientific and Industrial Research, 1934-35*, (c.5013), PP, 6 and 59; *Scientific and Industrial Research, 1936-37*, (c.5350), PP, 104; BACO, directors reports and accounts, 1927-1939, UGD 347 21/9/2; Leslie Hannah, *Electricity before Nationalisation: a study of the development of the electricity supply industry in Britain to 1948* (London: Macmillan, 1979), 118-9.

officials and scientists into regular and close contact, further familiarising each with the other. While government support in the fields of procurement and R&D benefited BACO, in the short term at least, market conditions and government policy on trade and tariffs had a less beneficial effect.

In spite of the relatively less volatile trade relations enjoyed by the industry and more binding conditions of the successive aluminium cartels effective until 1935, British Aluminium experienced considerable competition in domestic markets from subsidized imports of German semi-fabricates, and Canadian and Norwegian ingot.<sup>63</sup> The situation was compounded by political tensions over the introduction of import tariffs (and the perceived inadequacy of the belated measures) on aluminium products, and exacerbated by the high value of sterling under the Gold Standard. Before the introduction of the first wave of tariffs in 1931, an estimated 13,200 mts (or 67% of the British market share) of cheap ingot, along with 6,100 tons of semi-fabricated products and £370,000 of finished goods, were being imported into the country. BACO continued to protest forcefully about what they saw as the inadequacy of these measures – even after tariffs were raised from 10 to 15 per cent for rolling mill products and to 20 per cent for foil in 1934 – and expressed concerns about the trade situation until the end of 1936. The situation over ingot was further complicated by the politics of trade. Under the agreement reached at the Imperial Economic Conference tariffs on Canadian imports of aluminium ingot were waived. Despite the loss of market share as a result of this, Norwegian producers still enjoyed a preferential duty of 10 per cent, in comparison to the 30 per cent paid by other foreign importers, under Anglo-Norwegian trade agreements signed between 1932 and 1933.<sup>64</sup> Given the comparative advantage

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63 Donald Wallace, "Aluminium" in *International control in the non-ferrous metals*, ed. William Elliott, Elizabeth May, J. W. F. Roew, Alex Skelton, and Donald Wallace, (New York: Macmillan, 1937), 261, and 272–276; Florence Hachez-Leroy, *L'Aluminium français. L'invention d'un marché 1911–1983* (Paris: CNRS, 1999), 218–220; Marco Bertilorenzi, "The International Aluminium Cartels, 1901–1939: The construction of international corporate business" *Iordanas de historia empresarial: España y Europa* (11–12 December 2008).

64 BACO, Directors Reports and Accounts, 1931–1936, UGD 347 21/19/2; *Import Duties Advisory Committee – additional import duties, 1934*, (c.4582), PP, No.16; *Import Duties (General Orders), 1935–36*, (c.5052), PP, 34; *Ottawa Agreements 1932*, (c.4174), PP, 3; *Agreement between the United Kingdom and the Kingdom of Norway in relation to trade and commerce, 1932–33*, (C.4254), PP, 2 and 22; *Fifty-ninth statistical abstract for British Dominions and Protectorates, 1934–35*, (c.4819), PP, No.105b; *Twenty-seventh report of Commissioners of Customs and Excise for year ending 31 March 1936*, (c.5296), PP, table 83; *Twenty-eighth report of Commissioners of Customs and Excise for year ending 31 March 1937*, (c.5573), PP, table 83; *Twenty-ninth report of Commissioners of Customs and Excise for year ending 31 March 1938*, (c.5876), PP, table 83; Tim Rooth, *British protectionism and the international economy: overseas commercial policy in the 1930s* (Cambridge: Cambridge University Press, 1993), 71–143.

enjoyed by Canadian and Norwegian producers – with power costs nearly one-third of those of BACO – this was a double blow, especially after the company was landed with a substantial increase in local rates on its Highland assets in 1936.<sup>65</sup> In the short-medium term, delivering a cheaper and more plentiful supply of ingot at reduced prices to downstream producers and ultimately consumers, while allowing also for military stockpiling to take place, suited government priorities. However, it was to simply incubate the problem of the balance of payment deficits to be faced by post-war British governments, prompting the Wilson smelter programme of 1967.

More ominous for British producers were discussions that took place between the British and Canadian governments in 1930, involving plans for stockpiling in the event of a future conflict. With Alcan legally independent of Alcoa since 1928 – although the two firms were still closely connected, not least through interlocking directorships – the British government had begun to put aside previous concerns it had with relying on Canadian supplies of aluminium. At a meeting between Canadian and British officials in October 1930 in London, it was agreed in the event of a future conflict that Canada would become the main supplier of aluminium for Britain and the Empire. Moreover until 1937, the re-assertion of Treasury controls over government expenditure – informed by a belief in ‘government being about making choices as to the best use of scarce resources’ – imposed a far greater degree of ‘rigidity’ on departmental expenditure, and a tighter grip on the procurement process.<sup>66</sup> To make matters worse, BACO’s highly effective and politically astute chairman, Andrew Tait, died in 1930.

The combined effect of these changes on BACO placed them in a much weaker bargaining position with government. However their own weak financial structure and reliance on government, as well as their strategic myopia, meant they were not in a position to contest this. Though their new general manager Gerald Steel acted as aluminium advisor to the Committee on Imperial Defence before the outbreak of war – with Morrison and other members of the Board also periodically provi-

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65 BACO, Proceedings of the 26<sup>th</sup> Ordinary General Meeting, 31 March 1936, UGD 347, 21/19/2. Alice Mutton, “Hydro-Electric Power Development in Norway” *Transactions and Papers of the Institute of British Geographers* no.19, (1953): 123–130; Peter Payne, *The Hydro: A Study of the Development of the Major Hydro-Electric Schemes Undertaken by the North of Scotland Hydro-Electric Board* (Aberdeen: Aberdeen University Press, 1988), 29–35.

66 Committee on Imperial Defence, Principal Supply Officers Committee (CID-PSO) 7<sup>th</sup> annual report, 1 August 1930–31 July 1931, and minutes of meeting with Canadian representatives during the Imperial Conference, 31 October 1930, TNA, SUPP 3/73; Robin Higham, “Government, Companies, and National Defense: British Aeronautical Experience, 1918–1945 as the Basis for a Broad Hypothesis,” *Business History Review* vol.39 no.3 (1965): 323–347.

ding advice – and director Geoffrey Cunliffe served as the wartime Aluminium Controller, BACO would never again enjoy the same influence within government circles that it had once, and had inflated sense of its importance.<sup>67</sup> Nevertheless it continued to pursue government contracts and support. This myopia stemmed in no small part from the culture within the company, as a result of continued immersion in service culture compounded by their strategy over the next twenty years of recruiting retired senior military officers to the board. Men with knowledge of procurement procedures and connections within the upper echelons of the armed services – which counted for less in a climate in which the Treasury kept a closer eye on the purse strings – only further sustained the company’s strategic ‘path dependence’, with disastrous consequences for the future.<sup>68</sup> The changed policy environment and BACO’s fixed *modus operandi* are well illustrated by the company’s negotiations with government over loans and procurement in the mid-1930s.

With increases in demand prompted by expansion of the military aircraft production programme, in April 1935, BACO director Lt. Gen. Sir Ronald Charles despatched a note to the supply board of CID-PSO emphasising the company’s commitment to aiding rearmament and stressing its patriotic credentials. Before joining the BACO board in 1934, Sir Ronald Charles had served consecutively as the Commandant of the military arsenal at Woolwich (1924–6), the Director of Military Operations and Intelligence (1926–31) and finally as the Master-General of Ordnance (1931–4), making him second only to the Chief of the Imperial General Staff, and with practically unrivalled access to and knowledge of the arms procurement process and staff involved in it. Unlike other committees in the PSO, this was heavily composed of senior staff officers from all the branches of the armed services.<sup>69</sup> Thus Charles, BACO opined, would carry more weight with this audience. Charles’ memo was followed up by discussions and correspondence between officials at the Board of Trade and the Air Ministry with Morrison during 1936. On the pretext of establishing the supply requirements of the government rearmament programme, they probed officials on the possibilities of another

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67 CID-PSO, Progress report, 11 July 1935, SUPP 3/82; BACO, Directors Reports and Accounts, 1927–1939; Perchard, *Aluminiumville*.

68 Paul David, “Path Dependence: A foundational concept for historical social science,” *Cliometrica* vol.1 no.2 (2007): 91–114.

69 My thanks are due to Dr John Bourne of the Centre for WW1 Studies, University of Birmingham, for additional information about Lt. Gen Sir. Ronald Charles: CID-PSO, Memo from Lt. Gen. Sir Ronald E. Charles, K.C.B., C. M.G., D.S.O., to CID-PSO, 29 April 1935, TNA, SUPP 3/82; Brian Bond, *British Military Policy between the Two World Wars* (Oxford: Clarendon Press, 1980), 51, 156, and 384–5.

government guaranteed loan for £2 million at a 3 per cent interest rate for extending their capacity at Lochaber. With the end of the Trade Facilities Act, this would have required a discrete Parliamentary Order, and was fairly unusual. BACO's changed bargaining position with government was made clear by the response of Treasury officials to their request, in a series of memos in late 1936. Sir Frederick Phillips, the Under-Secretary at the Treasury, opposed the proposal, suggesting that BACO were a financial liability that the government should not shoulder. Edward Bridges, at the time Head of Defence Materials within the Treasury, was more sanguine about British Aluminium's potential and proffered a deal by which a loan would be amortized against all the company's assets and subject to a clause under which the company promised to provide aluminium to the government at 'reasonable prices'. Bridges' advice was supported by Montagu Norman, Governor of the Bank of England, and the Chancellor of the Exchequer eventually sanctioned a guaranteed loan. However, the offer was withdrawn after Alcan and Norwegian suppliers came forward with stockpiles of metal, and BACO was obliged to fund the extension to Lochaber from an appeal to shareholders. The incident illustrated both the company's reliance on government, and the winds of change prevailing within Whitehall.<sup>70</sup> The altered climate would be seen again in the disparity of treatment of BACO and Alcan, during wartime negotiations over loans.

If the First World War indicated the potential of aluminium as a martial material, the global conflict of 1939–45 illustrated the dependency of modern warfare on the metal, not least in the construction of the giant air forces amassed by all sides. As the executive director of the Washington-based Public Affairs Institute, Dewey Anderson, observed in 1951: 'Aluminum has become the most important single bulk material of modern warfare. No fighting is possible, and no war can be carried to a successful conclusion today, without using and destroying vast quantities of aluminium.'<sup>71</sup> Consumption of the metal in Britain alone increased nearly fivefold between 1938 and 1943, from 66,000 to 322,000 mts. Despite the introduction of government controls on the sale, price and production of the metal from August 1939 until 1953, and the expansion of domestic smelting of aluminium

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70 Letter from Murray Morrison to the Secretary, Board of Trade, 7 August 1936; Sir William Palmer, Board of Trade, to E. E. Bridges, Treasury, 11 August 1936; Sir F. Phillips to Sir R. Hopkins and Mr Barlow, Treasury, 12 September 1936; Memo from Bridges to Barlow, 22 October 1936; Memo from Bridges to Mr Wilson Smith along, with minute relating to Treasury Inter Service Committee – Proposed guarantee to British Aluminium Company, 23 October 1936, SUPP 3/82; BACO, directors report and accounts for 1936-1939.

71 Dewey Anderson, *Aluminium for Defense and Prosperity* (Washington: Public Affairs Institute, 1951), 3.

ingot and semi-fabrication by 45 and 75 per cent, respectively, at the cost of £53.5 million to the Exchequer, Britain was forced to rely on the 'Arsenal of Empire', Canada, for never less than 60 per cent of its supplies of the primary metal between 1941 and 1944. The latter at the further cost to Britain of Canadian \$55 million in loans advanced to the Aluminium Company of Canada (Alcan). Underlining aluminium's importance to the British war effort in the precipitous years between 1939 and 1941, one of the key factors holding up military aircraft production was the supply of aluminium, with most new aircraft constructed with alloys of aluminium by the mid-1930s. For wartime Britain, as the official historian of raw materials supply noted: 'Aluminium occupied a unique position. No commodity, with the exception of magnesium, bore comparison with it in its complete or virtually complete diversion to service [military] needs.'<sup>72</sup>

If the wartime Aluminium Control was located initially at BACO's London HQ and was headed by BACO's Geoffrey Cunliffe (who had responsibility for negotiating contracts for Canadian ingot) along with other company managers, this did not afford the company special favours. The problem lay in the fact that BACO was not in a position of strength (financially weakened and under government control). Unlike in 1915, she did not have an Andrew Tait at the helm. The Chairman Robert Cooper, though well connected in the City of London and an able businessman, was not a master of the political arts. The vain and impetuous Cunliffe exhibited little political acumen or strategic vision, and had even less interest in detail. Though a highly accomplished engineer and well respected in official circles, Morrison did not have the necessary political connections in Whitehall to navigate BACO through these turbulent waters. He was also ailing, to die less than a decade later. Most of BACO's officers, able as engineers and high-level administrators though they might have been, were not sufficiently politically savvy. BACO's experience of government control between 1939 and 1953 simply further 'locked-in' the company to a culture of dependency on the state.<sup>73</sup>

A number of incidents illustrate further the changing relationship between the British government and native producers, on the one hand, and Canadian producers

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72 Joel Hurstfield, *The Control of Raw Materials* (London: HM Stationery Office, 1953), 37, 49, 63, 73, 101, 164, 172 and 348–9; Michael Postan, *British War Production* (London: HM Stationery Office, 1952), 38, 89–91; Hector MacKenzie, "'Arsenal of the British Empire'?" British orders for munitions production in Canada, 1936–39," *The Journal of Imperial and Commonwealth History* vol.31 no.3 (2003): 48; Ritchie, *Industry and Air Power*, 65–7, 221, 232, 239, 263.

73 Jonathan Zeitlin, "Productive Alternatives: Flexibility, Governance, and Strategic Choice in Industrial History," in *Business History around the World*, eds. Franco Amatori and Geoffrey Jones (Cambridge: Cambridge University Press, 2003), 62–82.

on the other. BACO's position was neatly summed up by the comment made by a Treasury official in discussions over a loan to British Aluminium negotiated in 1940. In correspondence referring to the investigation a complaint lodged by the company into the unfair discrepancy between the more preferential loan terms offered to Alcan than between 1940 and 1941, Treasury official Burke Trend noted:

I can appreciate the force of Sir Murray Morrison's argument that a British aluminium producer should not be expected to operate on terms less favourable than those accorded to a Canadian aluminium producer. *But let us forget for a moment the aluminium aspect of the question, especially since in dealing with A.C.O.C. [Alcan] we were dealing with a Company not under our own jurisdiction and not, therefore, amenable to the influences that we can frequently bring to bear upon one of our own contractors* [author's emphasis].<sup>74</sup>

The changed terms of the relationship between government and the native industry – as well as divisions between departments – were clearly illustrated by the terms of the loan agreements in question. Between 1940 and 1941 the Ministry of Supply agreed to advance loans to both BACO and Alcan. Yet on Treasury advice the terms advanced to BACO were considerably more unfavourable than those for Alcan. British Aluminium sought a government loan of £450,000 to further develop the water resources at Lochaber so that production could be expanded. The Treasury agreed to the loan at a recommended rate of 5 per cent interest, and suggested that the stipulation be added repayments would still be required irrespective of whether the plant was in production. The Ministry of Supply, with whom the original negotiations were conducted, offered BACO the loan at 4 per cent but with the Treasury's suggested repayment stipulation. In contrast Alcan were loaned \$55 million Canadian dollars for capital projects in Canada at 3 per cent interest, and with the infinitely more favourable condition that repayment be suspended in any year when production fell below 60,000 tons. When British Aluminium discovered this from Geoffrey Cunliffe in 1944, they were incensed and demanded a reduction on the interest paid by them and a review of conditions. In the investigations that followed, it was revealed that the main reason behind the conditions stipulated by the Treasury official involved, Frank Lee, was because he mistakenly believed the two companies were intrinsically connected because of their involvement together in a small wartime smelter. Despite the vocal support of MAP and the Board of Trade for British Aluminium, the Treasury refused to

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74 Letter from Trend to L. T. Little, MAP 12 June 1944, TNA, SUPP 3/82.

reconsider the conditions of the loan, maintaining that BACO should be treated like any other UK defence contractor.<sup>75</sup> In his reply to the Treasury in June 1944, Sir William Palmer at the Board of Trade summed up the situation pointedly: ‘The British Aluminium Co. say it is impossible for them to compete with Canadians who get better terms from the UK Government than they do. As Canada is really the main importer in this market, this is a difficult one to answer.’<sup>76</sup> Treasury official Arthur Fforde responded by saying he felt little sympathy for BACO, and that in his opinion they had been ‘treated very favourably’.<sup>77</sup>

The same laxity evident in the loan conditions afforded to Alcan was also evident in the government’s negotiations with Canada over aluminium prices, as were the vicissitudes in the politics of empire. While claims of profiteering and sensitivities to it were uppermost in officials’ minds when it came to the British industry, despite repeated concerns raised by the UK High Commissioner to Canada, the Sub-Committee on Air Services and the Parliamentary Select Committee of Public Accounts, the fixing of Canadian prices for aluminium were never properly investigated. Under arrangements within the CID-PSO, all negotiations over the price of ingot were to be negotiated between the Canadian government and Alcan, with reference to UK government. In the early years of the war, ironically BACO’s Geoffrey Cunliffe, as Aluminium Controller, represented the UK government. In a report to Winston Churchill in May 1940, the Sub-Committee on Air Services levelled a stinging attack at the way Aluminium Control was being operated. One of the more benevolent comments they made, in an otherwise blistering assault, was to gently criticize the ineffectiveness with which Cunliffe had negotiated with the Canadian government. Concurrently, Cunliffe’s shortcomings were further revealed when the UK High Commissioner to Canada complained that the Aluminium Controller had failed to consult with him before negotiations with the Canadian government about conditions on the ground, notably the waste of aluminium and its continued sales in civil markets.<sup>78</sup> Subsequent

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75 Treasury note – The British Aluminium Co. Ltd., Lochaber Loan, 6 March 1947, TNA, T 228/639; Treasury note – United Kingdom Government loans to the Aluminium Company of Canada (Alcan), 5 September 1958, TNA, T 228/642; Letter from Little to Trend, 6 June 1944; Letter Trend to Little, 12 June 1944; Letter from Sir W. Palmer, Board of Trade, to A. Fforde, Treasury, 21 June 1944; Letter from Fforde to Palmer, 7 July 1944, TNA, SUPP 3/82; Memo from Trend to Blunt, Treasury, 27 July 1944.

76 Letter from Palmer to A. Fforde, 21 June 1944, TNA, SUPP 3/82.

77 Letter from Fforde to Palmer, 7 July 1944, TNA, SUPP 3/82.

78 Memo to the Prime Minister from the Sub-Committee on Air Services, 17 May 1940, TNA, CAB 127/160; Cypher from UK High Commissioner (UKHC) in Canada to MAP, 19 August 1940; Telegram from UKHC in Canada to MAP, 26 September 1940, TNA, AVIA 46/457.

investigations suggested that Alcan was making sizeable returns on its sales to the UK, a matter raised by the Parliamentary Select Committee on Public Accounts and refuted by MAP officials in their evidence.<sup>79</sup> Alcan also enjoyed a privileged relationship with the Canadian government, benefiting from domestic tax breaks, as well as financial advances from the UK, US and Canadian authorities, partly as a result of the close personal contact between their Vice-President R. E. Powell and the Canadian Minister of Munitions, the Hon. Clarence Howe.<sup>80</sup>

The experience of the war economy convinced officials that they could not rely on adequate supplies from the native industry to ensure that strategic priorities were met. While still Aluminium Controller, Cunliffe had stated to the then wartime civil servant (and subsequently leading economist), Alec Cairncross, that BACO had ruled out further sizeable expansion of primary aluminium production in the UK because it would have to rely on coal.<sup>81</sup> Cunliffe's remarks certainly cannot have helped to instil any confidence in government about the future potential of the indigenous primary aluminium industry, although it is questionable whether any major smelter development using water power could have been undertaken in Britain after the war. By 1944, officials within MAP were contemplating whether there was any point in sustaining native primary aluminium production if favourable contracts with Canadian and other non-domestic producers of the virgin metal could be secured to sustain downstream semi-fabrication activities in the UK.<sup>82</sup>

The persistent quandary faced by the UK over aluminium supply immediately after World War Two was articulated in a paper to the Royal Economics Society in late 1948; Siegfried Moos – a highly respected economist who had served alongside Beveridge during the war – asked whether the survival of native primary aluminium production was desirable or should Britain focus its attentions on semi-fabricated production supplied by imports of cheaper ingot from Canada? If the former, would it be best sustained by nationalizing it or offering preferential contracts to 'enterprising' companies? Though aluminium met four of the five criteria for nationalization, set out in an internal Labour Party minute of July 1948,

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79 *Report from the Committee of Public Accounts – Evidence, 1943-44*, (c.108-I), PP, Qs. 4031-4038, 4116-7, 4130-4164: evidence from Sir Harold Scott, Sir W. Lindsay Scott and Mr H. P. Bruckshaw.

80 Campbell, *Global Mission*, vol.I, 255-6. For a more objective view of Howe's relations with Alcan during WWII, see: Robert Bothwell and William Kilbourn, *C. D. Howe: A biography* (Toronto: McClelland and Stewart, 1979), 175-6.

81 Notes from A. Cairncross interview of G. Cunliffe, 25 June 1940, TNA, AVIA 10/375.

82 Letter from T. I. Little, MAP, to A. R. Bull, HM Treasury (HMT), 16 November 1944, TNA, SUPP 3/82.

the Labour government did not identify it as a candidate for public ownership. And yet, like steel, aluminium was a vital material for both post-war reconstruction (notably in the fabrication of temporary housing) and Korean War rearmament. With post-war Britain, facing the strategic realities of an economic ‘Dunkirk’ (and the pressing problem of maintaining the balance of trade and the dollar exchange rate) official opinion on the desirability of maintaining a native industry changed considerably in a situation where 76 per cent of the aluminium used in Britain between 1946 and 1952 Canadian imports under government contracts, much of it financed by the Marshall Aid programme.<sup>83</sup> In addition to national considerations, Britain was Europe’s leading semi-fabricator of aluminium. Thus, adequate upstream supplies of ingot were not simply an isolated problem for the UK. As the Organisation for European Economic Co-operation (OEEC) noted in 1949, the crux of the problem of aluminium supply for Western Europe was, ‘in fact, one of supplying the United Kingdom, to which Canada is the main supplier.’<sup>84</sup> Moreover, as the organization noted eight months later, with prices for most other sought after non-ferrous metals spiked, the use of aluminium amongst member states had to be promoted and thus: ‘for these reasons it has to be recognized that Canada cannot be entirely eliminated as a source of supply to the participating countries concerned.’<sup>85</sup> In addition to meeting Western Europe’s demands, Britain had committed to ‘lend’ the United States around 25,500 mts of the metal over 1951-52. In a further indication of government recognition of the expediency of maintaining a native industry, when the company became the subject of a private case against them by a farmer in the vicinity of their Lochaber smelter – whose cattle had to be culled because of bone deformities resulting from the ingestion of high levels of fluorine from the

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83 ‘United Kingdom aluminium industry: Progress from 1946 to 1953’, Memo from H. E. Thatcher, Assistant Secretary, Light Metals Division, Ministry of Supply, to armed services and supply departments, 1 October 1953, TNA, SUPP 14/217; Siegfried Moos, “The Structure of the British Aluminium Industry,” *The Economic Journal* vol.58 no.232 (1948): 522-537; Martin Chick, “Listing potential candidates for nationalization: Britain, 1948,” *Enterprises et histoire* vol.37 (2003/4):167–171; Manfred Knauer, “ ‘The Golden Years.’ The European Aluminium Industry during the Postwar Economic Boom,” *Cahiers de l’histoire d’aluminium* Special Issue 1, (2003): 11–18; Alec Cairncross, “Economic policy and performance, 1945–1964,” in Roderick Floud and Deidre McCloskey (eds.), *The Economic History of Britain since 1700, vol.3: 1939–1972* (Cambridge: Cambridge University Press, 1994), 36-7; Jim Tomlinson, *Democratic Socialism and Economic Policy: The Attlee Years 1945–1951* (Cambridge: Cambridge University Press, 1997), 31–5, and 38.

84 OEEC, Non-Ferrous Metals Committee, Technical Reports – VI: non-ferrous metals, 10 February 1949, TNA, BT 64/3820.

85 OEEC, Non-Ferrous Metals Committee, Report on possible reductions in 1952–53 of programmed Dollar imports, 9 October 1949.

plant – the Ministry of Supply intervened twice on the company’s behalf, between 1948 and 1950, to prevent the company being forced to install the necessary fume treatment. Given aluminium’s importance to Korean War rearmament and as a raw material for civil post-war reconstruction, not least in the housing programme, as well as Britain’s dollar-exchange problems, it was scarcely surprising that the government position on native producers changed from that during the last year of World War Two.

The continued control of aluminium prices in the UK until 1953, along with Alcan’s natural competitive advantage as well as British, Canadian and US government wartime investment, left British Aluminium in a vulnerable position, something that the the British government was fully aware of Even after the devaluation of sterling and the rise in Canadian ingot prices in 1949, British Aluminium’s capital structure was weakened. Ronnie Utiger, BACO’s former Managing-Director, observed that BACO’s management missed opportunities immediately after the war. This ignored the enfeebled capital state that they found themselves in after aluminium was released from government controls in 1953. Similarly government inducements to engage with Commonwealth projects ignored their own role in weakening BACO’s market position and strengthening their chief competitor in UK markets.<sup>86</sup> Although BACO ended the war as peripheral player in primary aluminium production, they were a large semis producer and had expanded horizontally into magnesium production (logically given their involvement with the aircraft industry) with a 70 per cent share in the Imperial Magnesium Company. Yet the culture within the company and its long-term interaction with government locked it in to a managerial ‘path dependence’ evident in many companies involved in defence procurement in Britain between the 1920s and 1950s. This was seen in their continued selection of Board members from amongst senior retired service personnel and Whitehall mandarins: Viscount Portal, the former Head of the wartime Air Staff and the first post-war Controller of the UK Atomic Energy Authority (UKAEA); Lord Plowden, chief executive of the government’s Aircraft Supply Council between 1945 and 1946, subsequently chief planning officer and chairman of the Economic Planning Board (1953–4) and as chairman of UKAEA

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86 *Agreements between the Governments of the United Kingdom of Great Britain and Northern Ireland and the United States of America on Mutual Assistance in the supply of Steel, Aluminium and Tin*, (Cmd. 8464), PP, 18 January 1952; Thatcher to Workman, Ministry of Supply, 21 July 1949, T228/640; Discussion between Minister of Supply and Lord Privy Seal and Aluminium Industry Council, 1 June 1951, BT 172/5; R. E. Utiger, ‘The British Aluminium Company Ltd.’; Note on the Volta River Aluminium Scheme and the British Aluminium Company, 6 January 1956, BT 258/128.

(1954–9). Crucially Plowden also served as chairman of committees on public expenditure and on the aircraft and electricity industries, as well as on NATO's temporary council committee (1951–2), and Commodore Robert Gordon Hood Linzee, a former Naval Staff Officer, who had been one of the organizers of the evacuation of Allied forces from Dunkirk in 1940 and had run the Royal Navy's staff training establishment.<sup>87</sup> British Aluminium, reliant as it was on government contracts between 1915 and the 1950s, required those skills to service a core part of their business. Yet this created an organisational culture that mimicked, to a certain extent, the organisations from which these men were drawn, as well as their *social milieu*.

### **Legacies and new Beginnings, 1953–2000**

British Aluminium's debilitating, and increasingly humiliating, relationship with government was indicated glaringly in negotiations over the Volta River Project (1951–6) in the then British colony of the Gold Coast (Ghana) where they had held bauxite reserves since 1928. With the then Conservative government keen to use BACO, and other British firms, to aid their priorities in colonial policy, while offsetting the financial risk to the Exchequer and the potential political fallout from the commitment of public finances to the project, British Aluminium became a political pawn. Moreover, it exposed the company's weak financial structure to waiting predators in the shape of Reynolds Metals and Tube Investments (TI). In the bitter battle for British Aluminium, the myopia of the BACO board was further exhibited when they fully anticipated the government intervening on their behalf against the raiders. In reality, Harold Macmillan's beleaguered Conservative government – still reeling from the resignation of Macmillan's successor Anthony Eden after the Suez Crisis, and the subject of the Labour opposition's derision for their handling of the economy – was neither politically amenable to shoring up the existing board, nor did they consider it desirable and felt that the takeover could improve the efficiency of the firm. BACO's Chairman Lord Portal and his poor *consigliere* Geoffrey Cunliffe were left stunned and resigned their positions on the

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87 Peden, 'Arms, Government and Businessmen, 1935–1945' in *Businessmen and Politics*, 130–145; D. Richards, "Charles Frederick Algernon Portal," *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com> [accessed 23 March 2007]; Kenneth Harris, *Attlee* (London: Weidenfeld and Nicolson, 1995), 289; R. G. H. Linzee, Naval service record, TNA, ADM 196/123/0/256; Edwin Plowden, *An Industrialist in the Treasury: The Post-War Years* (London: Deutsch, 1989); Robert Armstrong, "Obituaries: Lord Plowden" *The Independent*, 19 February 2001.

board. Their swansong said much about the company's ethos: 'We are both deeply conscious of the "B.A. Spirit" which has pervaded the whole Company and it is this spirit of good will and unselfish devotion.'<sup>88</sup>

Despite a restructuring of management under Reynolds and TI and a paradigm shift in corporate culture, the closeness of TI to government and the retention of a number of retired senior mandarins on the board of both companies and the continued naiveté in their dealings with government were glaringly exposed once again in negotiations over the Invergordon smelter. This was further highlighted by the different tone of negotiations between the British government and Alcan – as an outsider, despite Alcan's military and political connections with UK elites – over the smelter programme, and the degree of autonomy that the Canadian multinational enjoyed in negotiating its power contracts. Ultimately the case of the Invergordon smelter contract is indicative of Foreman-Peck and Hannah's observation of the shortcomings in business-government relations arising from 'establishment values ... transmitted through elites', as well as by the subsequent abrogation of responsibility for the ensuing debacle by the principal architects of the deal. In contrast to the explicitly interventionist industrial policies of the Wilson administration, the Heath government's reluctance to sully their hands with what they saw as the failings of their political opponents, and their sensitivity to public opinion over corporate mergers, meant that discussions over the flaws in the smelter power contracts were protracted while Alcan's initial interests in BACO as a takeover target were discouraged.<sup>89</sup>

The response of Conservative government of Margaret Thatcher to the aluminium industry after 1979 essentially captured that administration's mixture of an industrial policy derived of political pragmatism, especially before the victory in the 1983 general election, and an instinctive (as opposed to ideologically informed) desire for market-focused solutions. This was illustrated both by the response to the closure of the Invergordon smelter, located in the Scottish Highlands, in 1981 – with the Conservatives a minority party in Scotland, and Scotland having voted by a majority, just two months before the general election of 1979, for a devolved Scottish Parliament – and the takeover of BACO by Alcan Aluminium UK. Privately even the Prime Minister sought to find a way for officials within the Scottish Office to enable government subsidy of the power contracts

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88 *The B.A. News* 12, 1, (January–February 1959), GUA, UGD 347 21/33/8.

89 Foreman-Peck and Hannah, 'Britain: From Liberalism to Socialism', 46–7; For views of some of the key players: Utiger, *Never Trust an Expert*; Edmund Dell, *Political Responsibility and Industry* (London: Allen & Unwin, 1973); *Idem.*, *A Strange Eventful History: Democratic Socialism in Britain* (London: Harper Collins, 2000).

to continue without it appearing publicly as if they had reneged on their commitment to ending support of so-called ‘lame duck’ industries.<sup>90</sup> Although Conservative ministers were cautious about the management of the news of the merger of BACO with Alcan, an offshore multinational, they privately thoroughly endorsed the moves and sought in the years following the takeover to offer financial and political support ‘as a means of strengthening the UK aluminium industry against competition primarily from Europe’, and because they were keen to see British Alcan held up as a shining example of market solutions bringing greater corporate efficiency.<sup>91</sup> Culturally, the merged concern maintained Alcan’s arms-length relationship with the state and sought on the whole to lobby government through industry bodies – such as the Aluminium Federation – though on odd occasions personal entreaties were made to Ministers, not always successfully, through John Peyton, the Conservative MP and former minister who served on the company’s board. British Alcan continued well into the last decades of the twentieth century to collaborate closely with the state on military R & D, notably with the Royal Aircraft Establishment, as well as the European Armaments’ Agency, and was caught up in a last public controversy over the ‘Arms to Iraq’ inquiry in the mid-1990s.<sup>92</sup>

## Conclusion

Aluminium’s importance as a raw material of strategic importance – initially for military, and then also civil purposes – made state intervention in the industry inevitable. Though not a first rung armaments manufacturer – part of the so-called ‘ring’ of approved contractors – British Aluminium’s relationship with government exhibited many of the same features. For example, Barnstable’s observations of the effects on the naval armaments manufacturer Armstrong Whitworth of their prolonged and close relationship with government bears more than a passing resemblance to BACO’s experience. Similarly Clive Trebilcock and Robin

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90 Jim Tomlinson, “Mrs Thatcher’s Macroeconomic Adventurism, 1979-1981, and its Political Consequences,” *British Politics* vol.2 nr.1 (2007):3–19; James Mitchell, *Conservatives and the Union: A Study of Conservative Attitudes Towards Scotland* (Edinburgh: Edinburgh University Press, 1990), 98–9; Catriona Macdonald, *Whaur Extremes Meet: Scotland’s Twentieth Century* (Edinburgh: John Donald, 2009), 216–263.

91 Memo from Allen to Caines, DTI, 21 December 1983, National Archives of Scotland, SEP 4/4052/1.

92 Perchard, *Aluminiumville*.

Higham's characterization of business-government relations as an unequal one in which the state dominated, 'forcing companies to tailor themselves to its demands and the whims of its servants', was abundantly clear in BACO's case.<sup>93</sup> BACO's variable experience was mirrored in those of a number of British armament companies between the 1920s and 1950s. British Aluminium's 'spin-off' into state procurement arose from a number of factors: Ristori's own background in the arms trade; the poor civil domestic market for aluminium; and then ultimately two world wars during which the metal became a metal of 'national independence'. BACO's experiences between 1915 and 1953 bound it to the state and cultivated strategic 'path dependence' within the company, nurtured by its 'service' culture and the background of its board. The consequences of this contributed to a large degree to the company's eventual takeover in 1959. Even after this, their legacy – as well as TI's close relationship with the state and the recruitment of senior Whitehall mandarins to both boards – bred an institutional dependency culture, sharply exposed in the unfolding debacle over the Invergordon smelter.

Personalities became critical to navigating the complexities of the relationship between government and the industry. It was a role in which Andrew Tait, as a seasoned 'trade warrior' and player of the boards of political theatre, excelled. Those who succeeded him were less successful, admittedly in less favourable conditions. Notwithstanding his standing in the City, Cooper's role was one of steady stewardship, while Steel performed as the able administrator that he was. Neither showed particular vision nor entrepreneurial verve, but as with their contemporaries and successors within the company, this owed much to the organizational culture of BACO. In some cases, such as in that of Charles, Portal and even Plowden, this resulted in part from their 'establishment values' and in the cases of the former their commercial inexperience. In William Murray Morrison's case, though a bold and highly proficient engineer, with an entrepreneurial spirit, his own patrician norms and values combined with a lack of political connections in the metropolis meant that he was unable to fill Tait's shoes. Moreover, as a modest and retiring engineer and scientist, albeit with a steely determination, Morrison does not appear to have been particularly comfortable with high politics, although he was an effective political player at a regional level. The epitome of the patrician values and shortcomings of BACO was to be found in Geoffrey Cunliffe; His inadequacies in the commercial field were matched by his shortcomings in matters political. State support (through political brokering, investment and R & D) and

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93 Bastable, *Arms and the State*, 166 and 168; Higham, "Government, Companies and National Defense," 323–340; Trebilcock, "'Spin-off' in British Economic History," 474–490.

contracts helped sustain a company that was struggling, partly as a result of their own strategic decisions and, in part, the conservatism of potential British industrial consumers of the metal. More broadly aluminium represents one of a number of second rung essential raw material industries whose links to empire, defence and the state is worthy of further study, to cast light on business-government relations in Britain and to explore the applicability of the 'Anglo-Saxon model'. As Foreman-Peck and Hannah observed, industrial policy in the UK embraced a variety of levers, 'creating the landscape' and 'modifying the environment and fauna'. While endemic short-termism was a characteristic of many UK government policies towards industry in the twentieth century, this cannot simply be attributed to a lack of clarity or a 'separation of industrial bureaucratic careers'. If state intervention was not always beneficial then observers' criticisms make the mistake both of assuming unified government priorities and of converging, as opposed to competing interests, with business. Instead the reality was of the occasional convergence of priorities of some of the parties, some of the time.<sup>94</sup>

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94 Grant, "Government and manufacturing industry," 116; Peden, "Arms, Government and Businessmen," 130–145; Edgerton, *Warfare State*; Grinberg, 'Introduction: L'aluminium', 18–19; Foreman Peck and Hannah, "Britain: From Liberalism to Socialism," 46–7.



# **Be careful what you wish for: Comparative Advantage and the Wilson Smelters Project, 1967–1982**

Niall G. MacKenzie

The 1967 announcement of the Wilson Government of its intention to commission the construction of two new aluminium smelters marks an important juncture in the British aluminium industry's lifetime. Before Wilson's announcement, UK annual domestic aluminium production was 38,200 tonnes compared to yearly consumption of 360,500 tonnes.<sup>1</sup> The two new smelters were to be financed by governmental loans and grants with planned production of 200,000 tonnes annually between them and powered by two newly constructed AGR nuclear power stations – a first for aluminium production globally. British Aluminium Company (BACO) and a consortium headed by Rio Tinto Zinc (RTZ), both multinational aluminium companies, tendered for and won the right to operate the smelters locating them at Invergordon in Scotland and Anglesey in Wales, respectively.

This analysis charts the genesis of the smelters and details the divergent experiences of both companies in their dealings with the UK government during the construction and operation of each smelter. The chapter mostly focuses on the experiences of the BACO and the Invergordon smelter due to availability of archival sources as much of the records for the Anglesey smelter are closed due to commercial sensitivity – the original agreements put in place have only very recently expired with the closure of the smelter in 2010 and are still closed for access due to commercial sensitivity. It relies partly on archival material and partly on the historical accounts by two of the main actors in the smelters project – Ronnie Utiger, former Chairman of BACO, and Sir Edmund Dell, former Labour President of the Board of Trade and Paymaster General in the UK government. Both provide detailed accounts regarding their roles in the smelters and the positions of the company and government respectively during the episode, representing both sides. These accounts have been checked for accuracy with the archival mate-

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1 OECD, *Problems and Prospects of the Primary Aluminium Industry* (Paris: OECD, 1973), 7.

rial present in public holdings to ensure the veracity of their claims. Consistent within the discussion is an analysis of the failure of the Invergordon smelter and reasons for its closure in 1982 in comparison to the continued operation of the Anglesey smelter. The complex motivations on the parts of both companies and government for the creation and operation of the smelters are also explored. For the companies, profit motivation, market accessibility and comparative advantage through new technology were key in their decision to tender for the smelters. For the government regional economic development, neo-protectionism, the balance of payments and the political benefits from technological modernity were primary motivations behind pursuing what was a massive increase in capacity in domestic aluminium production. Consequently the paper is divided into two parts focusing firstly on BACO and RTZ's experiences of the smelters project and secondly on the role the UK government played in their creation and subsequent operation.

This chapter brings forward Perchard's analysis of the development of the UK industry within this collection and builds upon Cailluet's short assessment and Perchard's ongoing research into the UK aluminium industry and British Aluminium Company in particular. It also taps into work by Coopey and Edgerton in assessing the UK Labour Government of 1964-70 and its role in encouraging the growth of innovative, high technology industry.<sup>2</sup> Wilson's announcement of the smelters project was a part of a raft of measures implemented by the 1964-70 Labour Government aimed at modernising British industrial production, improving the economic situation of the country and projecting the image of commitment to modernising industry through technological advancement. British advances in nuclear power technology were viewed as the ideal opportunity to offset its comparative disadvantage in aluminium smelting – the UK aluminium industry before the announcement of the Wilson smelters was reliant on relatively small-scale hydroelectricity generation in the Highlands of Scotland. Both companies entered into extensive discussions with the UK government to agree finance for construction of the smelters and the price of electricity provision for the operation of the smelters. The disparity in the final agreed contracts between the govern-

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2 Richard Coopey, "Industrial Policy in the White Heat of the Technological Revolution" in *The Wilson Governments 1964–1970*, eds. Richard Coopey, Steven Fielding and Nick Tiratsoo (London: Pinter, 1995); David Edgerton, "The White Heat Revisited: The British Government and Technology in the 1960s," *Twentieth Century British History*, vol.7 no.1 (1996): 53–82; *Idem.*, *The Warfare State*, (Cambridge: Cambridge University Press, 2006); Ludovic Cailluet, "The British Aluminium Industry, 1945–80s: Chronicles of a Death Foretold?," *Accounting, Business & Financial History* vol.11 no.1 (2001): 79–97.

ment and each company and the subsequent experience of each sheds light not only on the UK government's industrial location policy during the 1960s and its effect on business at both domestic and international levels, but also the attitudes of two multinational primary industrial producers on locating operations in the UK. Further, the discussion in this chapter also brings into focus the importance of institutional structures – in this instance particularly the electricity generating boards – on business development during the period. It is, in short, an analysis of the two very different experiences of BACO and RTZ in doing business with the UK government between 1967 and 1982.

## **White Heat and the Smelters**

“The Britain that is going to be forged in the white heat of this revolution will be no place for restrictive practices or for outdated methods on either side of industry.”

Harold Wilson, Labour Party Conference, October 1963.<sup>3</sup>

Wilson's famous speech encapsulated the Labour Party's commitment to the modernisation of British industry in the 1960s. The aluminium smelters project was part of this modernisation, though it was not implemented as a policy until four years later when Labour were in government. RTZ, in partnership with the United Kingdom Atomic Energy Authority (UKAEA), made an application to the government for the Capenhurst Project (also known as the UNCLE Project), a combined aluminium smelter and nuclear diffusion plant. The proposal required 40% of the cost of the project to be supported by development grants from government, while retaining the right to sell surplus power to the National Grid. The government rejected this proposal, at no point stating publicly its reasons why. One possible reason for the proposal's rejection is that had the development gone ahead, it would have constituted a potential threat to the Central Electricity Generating Board's (CEGB) monopoly on power production. The CEGB was not eligible for development grants, meaning that had RTZ and UKAEA's proposal been accepted, a precedent would be set for the possibility of large industrial users grouping together and becoming the lowest cost producers of power, made viable by government development grants – in effect government could end up

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3 Quoted in Elizabeth Knowles, ed. *The Oxford Dictionary of Modern Quotations* (Oxford: Oxford University Press, 2002), 227.

subsidising power generation for private industry. This was not an appealing prospect.<sup>4</sup>

Nevertheless, the idea of an aluminium smelter powered by nuclear energy was an innovative one and not without merit. Discussions took place detailing the benefits and difficulties of the project, resulting in the production of the Final Report of the Official Group on Capenhurst, published in November 1966. This report detailed the possibility of the contribution of aluminium smelting to the country's economy in protectionist terminology, stating:

“The object of the exercise is to give domestic production of aluminium a degree of protection, which it does not now enjoy, and so to make possible a reduction of 25% (15m a year) or more in the expected United Kingdom imports of aluminium.”<sup>5</sup>

Although the government rejected the proposal, it presaged the announcement of the plan to build the new smelters by only a year and directly informed the idea that Britain could produce more of its own aluminium, alleviating its balance of payments problem and affording the country some protection against the possibility of aluminium price escalation. This idea was critical to the initial success in establishing the smelters, but proved to be a double-edged sword.

In October 1967 at the Labour Party conference in Scarborough, Harold Wilson announced the government's intention to build two aluminium smelters, putting the sites for these new smelters out to tender. The government's announcement was a result of a number of factors, the first of which was the country's balance of payments problem. There was a clear desire on the part of government to reduce its reliance on imports of aluminium and it was believed that the new smelters could help the balance of payments problem by £50m and £60m per year.<sup>6</sup> Second, the advent of new generating techniques based on industrial applications of nuclear power beget the belief that the new smelters could harness a cheap supply of the required enormous amounts of electricity for smelting aluminium and provide the country with a clear comparative advantage over its main competitors/suppliers

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4 Ronnie Utiger, *Never Trust An Expert: Nuclear Power, Government and the Tragedy of the Invergordon Aluminium Smelter* (London: London School of Economics, London, 1995), 1. Utiger was the former Chairman of British Aluminium Co. and intimately involved in many of the discussions regarding the Invergordon smelter.

5 Final Report of the Official Group on Capenhurst November 1966, Then National Archives, London (henceforth TNA), CAB 164/157, p. 18. It is not made clear in the report what the figure of 15m is in reference to, although it is most likely pounds.

6 Cailluet, “The British aluminium industry”, 89.

(Norway and Canada) who were mainly reliant on hydro power. This goes some way to explaining its decision to build the smelters since the country was bereft of any natural advantage in aluminium smelting. At this stage in aluminium smelting, electricity accounted for 15% of the final cost of producing primary aluminium<sup>7</sup> meaning it was of the utmost importance that an economical means of producing power was found. Third was the government's commitment to pursuing a policy of regional development of deprived areas. In order for the smelters to be built a number of criteria had to be satisfied. The smelters had to be situated in a development area (a part of the government's manifesto commitment), within close proximity to the National Grid (to reduce transmission costs) and with at least 100 acres of flat building land adjacent to a deep bay harbour for bulk supplies of alumina to be delivered by sea transport.

Resultantly, the companies invited to tender bids had to propose to locate in an area that was not only designated as a development area, but also satisfied the aforementioned logistical requirements for operating a smelter. Invergordon in the Scottish Highlands and Holyhead on the island of Anglesey off the coast of Wales satisfied all of these requirements and were the first choices for the three companies that tendered bids – RTZ, Alcan and BACO. Invergordon's position as a potential growth point for the Highlands of Scotland<sup>8</sup> was of particular interest to the Scottish Office arm of the UK government due to the recommendations of the Toothill Report that areas should be identified for growth and regional policy tailored to this effect. With Anglesey, regional policy in the UK was focused primarily on the alleviation of unemployment<sup>9</sup>, meaning the area's unemployment rates, combined with its position as a development area and geographical characteristics placed it as one of the preferred sites.

The balance of payments problem was a critical factor in the government's decision to increase the production capacity of the aluminium industry in Britain. Until its announcement of its intention to build the smelters, Britain produced around one-tenth of what the new smelters were to produce in primary metal. British annual consumption of aluminium at this time was 360,500 tonnes, but production (at Kinlochleven and Foyers) was 38,200 tonnes per year, although capacity was only 39,000 tonnes per year, meaning the two smelters were running at 97.95%

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7 *The Times*, June 25, 1968, 23.

8 Memorandum, author unknown, Regional Development Division, Scottish Development Department, 18 December 1967, National Archives of Scotland (henceforth NAS), SEP 4/177.

9 Jim Tomlinson, *The Labour Governments, 1964-70, vol.3: Economic Policy* (Manchester: Manchester University Press, 2004), 86.

capacity, leaving very little room for improved efficiency.<sup>10</sup> The new smelters were planned in order to reduce the reliance on imports of aluminium by up to two-thirds, helping the balance of payments problem. However, there were two problems associated with this. Britain's membership of the European Free Trade Association (EFTA) meant that any element of subsidy on the part of government for the new smelters would see it breach the association's rules.<sup>11</sup> With the coming of the Common Market it was clear that Britain would be obliged to join a customs union, meaning that it would then have to impose an import duty of 9% on North American ingots, its largest supplier of aluminium at the time, further exacerbating its balance of payments problem.<sup>12</sup> Thus, the government was faced with a choice – increase its domestic aluminium production, possibly breaching the EFTA agreement, or not, and risk worsening their balance of payments problem with increased tariffs on aluminium imports. In order for the former to happen, a way of providing cheap power for the new smelters was needed that did not breach Britain's agreement with EFTA. Nuclear power had been identified as the source and companies were invited to tender bids for the operation of the smelters, with the intention that a solution to the problems posed by Britain's membership of EFTA would be found.

The aluminium smelter project was attractive to the government not only because it could reduce reliance on import of aluminium and help the balance of payments, but for more straightforward political reasons also. Edmund Dell, a member of the Labour government, wrote 'Politically it had the further advantage of corresponding to the bright technological image which the Labour Government wished to create.'<sup>13</sup> The Wilson government's industrial policy during this period is described by Coopey as a 'directly interventionist, technologically oriented strategy'.<sup>14</sup> Dell described the government rather more simply as having 'interventionist inclinations'.<sup>15</sup> Labour and the Conservatives at this point were tussling over images of modernity – each wanted to show to the nation that it would bring about

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10 OECD, *Problems and Prospects*, 7.

11 Final Report of the Official Group on Capenhurst November 1966, TNA, CAB 164/157.

12 Cailluet, "The British aluminium industry," 89.

13 Edmund Dell, *Political Responsibility and Industry* (Edinburgh: Allen & Unwin, 1973), 106. Edmund Dell was the former Chairman of the Board of Trade and responsible for much of the government's position in negotiating agreements with the aluminium companies. The book *Political Responsibility and Industry* was his memoirs from his political career.

14 Richard Coopey, "Industrial Policy in the White Heat of the Technological Revolution," in *The Wilson Governments 1964–1970*, eds. Richard Coopey, Steven Fielding and Nick Tiratsoo (London: Pinter, 1995), 109.

15 Dell, *Political Responsibility and Industry*, 103.

the modernisation of British industry and technological change. The belief was that investing in cutting edge, high-technology projects such as aluminium smelting powered by nuclear energy (developed in the UK no less) would prove to the nation that the party was forward looking, committed to modernising industry and was capable of delivering on its promises. Moreover, helping the balance of payments problem and avoiding a further devaluation of the pound would curry favour with the electorate and strengthen the government's credentials for running the country. The global aluminium industry at this point in time was 'a highly integrated producer-to-consumer field'<sup>16</sup>, meaning that having a producer on your doorstep was an attractive proposition to any national consumer of aluminium, especially if you were providing them with development grants and a cheap source of power for production. However, before any of this could be achieved, companies needed to be chosen to operate the smelters and contracts agreed for the provision of power for the developments.<sup>17</sup>

## **Tendering for the Smelters**

Alcan, BACO and an RTZ-led consortium named Anglesey Aluminium Metal Ltd. (AAM) all tendered bids to operate the two new smelters at the request of the Board of Trade in October 1967, before submitting revised bids in mid-December that year after the devaluation of sterling. All three companies identified Invergordon as a potential site, although only Alcan and BACO identified it as their preferred site, with the RTZ consortium identifying Holyhead in Anglesey as its preferred location. RTZ and BACO each put forward a proposal to build a smelter capable of producing 120,000 tonnes of aluminium per year, providing an estimated balance of payments saving to the government of £22.75m per annum per smelter.<sup>18</sup> Government identified BACO and RTZ's proposals as the most attractive tendered on the basis that it provided the greatest benefit to the balance of payments problem, resulted in the lowest cost of production and also that the

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16 Robert Gibson-Jarvie, *The London Metal Exchange: A Commodity Market* (Cambridge: Woodhead-Faulkner Ltd, 1976), 154.

17 The government rejected the opportunity to supply the new smelters with electricity supplied by gas-powered stations sited on the East coast and taking advantage of North Sea gas. For more on this see Peter Odell "The British Gas Industry: Review," *The Geographical Journal* vol.134 no.1 (1968): 81–86.

18 Aluminium Smelting in the UK – summary report of the Industrial Reorganisation Corporation, submitted to the Board of Trade 4<sup>th</sup> January 1968, TNA, BT 258/2659.

company's terms for the contract arrangement were the most favourable.<sup>19</sup> BACO and the RTZ consortium were chosen to operate the smelters in part due to their bids and also on the basis of political reasoning. BACO was effectively British-controlled – its parent company Reynolds Metal Company/Tube Investments had won a takeover battle the previous decade, but under the Treasury's insistence Reynolds Metal Company had to retain a minority shareholding, with Tube Investments holding a 51% stake, to ensure the nationality of BACO stayed British.

Tube Investments also held some influence in government – its former employee Fred Catherwood was the former Director General of the National Economic Development Council (NEDC) before becoming Chief Industrial Advisor to the Labour government in the Department of Economic Affairs<sup>20</sup>, illustrating Perchar'd's point about the closeness of the company to government. Another factor was the company's history of Highland production of aluminium with its smelters in Kinlochleven and Foyers, operated since 1896 and 1924 respectively<sup>21</sup>, constituting the UK's only domestic aluminium production, and the number of Scottish employees employed in these smelters meant the company had previous experience of dealing with Scottish workers as well as cultural experience of operating in the Highlands. The latter is interesting as it was something that the company was keen to stress in its dealings with the public during the planning and construction process, believing that stressing this point would please the locals and smooth over its expansion of heavy industrial operations in an otherwise picturesque area.

BACO was keen to operate the new smelter at Invergordon for a number of reasons. The company wanted to escape from its 54% holding in Canadian BACO (CBA), which obligated it to take the full 90,000 tonne output from the company's only smelter in Baie Comeau, Quebec (hydro-powered), which between the period 1961 and 1968 provided over half of BACO's profits. However, there was a considerable drawback to this agreement that directly influenced the company's decision to tender a bid to operate one of the smelters. As a result of Canadian withholding tax, all dividends paid to the UK were liable for a 59% tax-rate, which prevented the company from making use of the capital generated by its Canadian operations. This arrangement was scheduled to remain in place until 1977.<sup>22</sup>

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19 Aluminium Smelting in the UK – summary report of the Industrial Reorganisation Corporation, submitted to the Board of Trade 4<sup>th</sup> January 1968, TNA, BT 258/2659.

20 Glen O'Hara, "Dynamic, Exciting, Thrilling Change: The Wilson Government's Economic Policies, 1964–70," *Contemporary British History* vol.20 no.3, (2006): 395.

21 BACO, *Aluminium in the Highlands*: promotional brochure (London: Raithby, Lawrence & Co. 1978), 4.

22 Analysis of BACO Company Smelter by SD Wilks, Board of Trade, 6 December 1967, TNA, BT 258/2659.

The company reached an agreement that if it acquired a British smelter then Reynolds would purchase BACO's share in CBA, releasing the company from its Canadian operations. BACO's chairman Ronnie Utiger described the arrangement as the company taking 'all the commercial risk for only 54% of the profits (which were then excessively taxed) and had no access to the cash-flow.'<sup>23</sup> Utiger does not explain how the company got into such a peculiar arrangement, but the answer would most likely be found in its management as Perchard detailed in his chapter. Alcan, examining the possibility of a merger with BACO in 1969, stated in a confidential report that 'BACO has an uninspiring record of management ... management and market attitudes are generally considered archaic ... it is thought that their approach to labour relations is considerably behind ours.'<sup>24</sup> BACO had become increasingly uncompetitive in the aluminium semi-manufactures field in the three years previous to the government's announcement (losing £2m per year), making the idea of operating a smelter in the UK attractive to the company in helping improve its position relative to the other main producers – Alcan and RTZ, both of whom were planning smelters at Anglesey and Lynemouth.<sup>25</sup>

The AAM consortium comprised several companies including RTZ, British Insulated Callender's Cable Aluminium Holdings and James Booth Aluminium Ltd., which were eventually replaced by Kaiser Aluminium. This is important due to the commercial considerations of the project. James Booth was 50% owned by Kaiser and 50% owned by Delta Metal, before Delta sold its share to Alcan.<sup>26</sup> As a result of this, the British government became somewhat concerned by Alcan becoming privy to the commercial considerations of the smelter's operations as a member of its board was appointed by the Norwegian government as part of an agreement that allowed Alcan to operate a smelter in Norway. The British government was already deflecting accusations by the Norwegian government of subsidising the smelters (a contravention of the EFTA agreement) and did not want the Norwegians to have further access to any of the arrangements for the Anglesey smelter lest their accusations become more solidly founded. Consequently, Kaiser agreed to take James Booth's place in the consortium and then provide the aluminium, the latter originally agreed to absorb from the smelter to James Booth, thus

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23 Utiger, *Never Trust An Expert*, 4–5.

24 Letter from DA Pin to PJ Elton, January 1969, BACO Company Records (British Alcan), University of Glasgow Business Records Archives, Glasgow (henceforth GUA), UGD 347/10/3/1.

25 Note by the Board of Trade for Chancellor's visit to Invergordon, 27 June 1969, TNA, BT 321/40.

26 Supplementary Brief for President's Dinner with Sir Val Duncan (RTZ), Industries 2 Division, 9 October 1968, TNA, BT 346/21

avoiding alerting the Norwegian government to the commercial arrangements of the smelter.

Operating a smelter in Britain was attractive for aluminium companies for several reasons. Soft loans and development grants for building the smelters in development areas were readily available and the prospect of locating in a politically stable country close to main markets and crucially using a power source that was to, ostensibly, supply cheap power were appealing. This was based primarily on the advice proffered by UKAEA who were charged with providing consultancy on the construction of the Hunterston B and Wylfa nuclear AGR power stations, having operated and built several other stations around the country. UKAEA made it clear that nuclear power was to be the new hope for industry, providing cheap electricity that would be 'too cheap to meter'. For its part, government told BACO that any escalation of energy costs was unlikely to adversely affect any arrangements made between the company and the boards for provision of electricity supply for the smelter, persuading the company to agree to the contract.<sup>27</sup>

The announcement of construction of five new AGR nuclear power stations was taken with the intention of utilising two of them, Wylfa in Holyhead and Hunterston on the Scottish South West coast, for supplying the two new smelters at Anglesey and Invergordon. However the AGR stations suffered from severe delays in construction due to design problems resulting in massive deficits being run up by the Invergordon smelter. The severe delays resulted in not just huge losses for Invergordon, but considerable embarrassment for the government. Edgerton has described the decision to adopt the British AGR technology over American light water reactors (LWR) as having 'subsequently been regarded as a disastrous choice, but was wildly applauded at the time.'<sup>28</sup> It is probable that had the Wilson government adopted the existing and proven LWR technology, then the severe delays experienced by the AGR stations would not have occurred which would in turn have certainly helped the Invergordon smelter's operation. Without the promise of cheap electricity powered by the new AGR stations and the government's firm commitment to the establishment of the smelters it is unlikely that either smelters would have been built however. Britain had no natural cheap supply of electricity and no means of funding an expansion on the proposed scale without significant subsidy. Put simply, there was no economically viable way of running

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27 Note from RE Utiger, Managing Director of BACO to Department of Trade and Industry, 25 July 1973, TNA, FV 54/56.

28 David Edgerton, *The Warfare State: Britain, 1920–1970* (Cambridge: Cambridge University Press, 2006), 256.

an aluminium smelter the size of either that would have been acceptable to business or government alike without the promise of cheap nuclear-backed electricity. Coal power was too expensive without subsidy and the hydro power present in the Scottish Highlands was neither big enough nor available at competitive rates to industry.

During the initial planning stages of the smelter project it was agreed that both smelters would produce an output of 120,000 tonnes per year each. However, after considerable opposition from Canada and Norway it was agreed to reduce the output to 100,000 tonnes per year. BACO was upset by this reduction as it raised the cost of production by £4 per tonne, approximately 2.5% of the total cost per tonne.<sup>29</sup> Norway, fearing for its aluminium exports to Britain, opposed the initial output figure, believing, correctly, that the British government was contravening the EFTA rules by effectively subsidising the creation of the new smelters through its loans to the companies involved. Canada too was concerned that Britain, as one of its main export markets, would considerably reduce its imports of aluminium with the new smelters. A telegram sent by the Canadian High Commissioner to Sir Anthony Part, Permanent Secretary at the Board of Trade (the highest ranking civil service position in the Ministry), regarding the new smelters and aluminium production stated 'British regional incentives in this case will adversely affect one of the most important items of Canadian exports to Britain'. Canada, only six years previously, was responsible for 55% of Britain's imports at this point.<sup>30</sup> Sir Anthony Part's terse response was to point out that Britain's projected output of 360,000 metric tons was insufficient to cause disruption to the projected world output of 12.2m tons for the year (1969), ignoring the Canadians' concerns.<sup>31</sup> The increase in production to 360,000 tonnes per year output was a result of Alcan's decision to go ahead and build and operate its own, coal-powered, aluminium smelter capable of producing 120,000 tonnes of aluminium per year at Lynemouth<sup>32</sup>, for which it negotiated directly with the National Coal Board.<sup>33</sup>

Although the government strenuously denied the accusations of subsidy from the Norwegians, the risk of being seen to contravene EFTA rules was enough to

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29 Utiger, *Never Trust An Expert*, 8.

30 From Addendum to the Brief for the British Delegation to the EEC, from NWP Wallace, Board of Trade, 19 April 1962, NAS, SEP 4/2.

31 Telegram from Canadian High Commissioner to Sir Anthony Part, 27 November 1969, NAS, DD 12/3180.

32 *Hansard*, vol.765, House of Commons Debate, 29 May 1968, col. 1798.

33 Alcan's Lynemouth smelter is the only one of the three smelters built in the 1960s that is still fully operational.

persuade the government to seek and ensure a reduction in projected output capacity from the companies involved. BACO issued a briefing in 1968 detailing the history of the smelter which briefly touched upon this issue, and which attempted to defuse the situation by stating that ‘The BACO scheme will not reduce imports of metal from Norway and other EFTA countries. In fact, the company’s present limited imports from Norway will be increased.’<sup>34</sup> However, the President of the Board of Trade, Anthony Crosland, speaking in the House of Commons, stated 19 days before the publication of the BACO briefing that ‘in agreement with the companies, we reduced the capacity in stage one to reassure our EFTA partners that we would examine any possible adverse effect on Norwegian exports to us.’<sup>35</sup> Of course, examining adverse effects is different from rectifying them, but not as different as making it clear that they wouldn’t exist at all. Irrespective, the government was not about to halt its plan to increase domestic aluminium production on the basis of Norwegian complaints. It was already clear in its belief that the projects were safe from claims of contravening EFTA rules, if not in the spirit of the agreement itself. Thus, a reduction in production to pacify the Norwegians allowed the project to go ahead unhindered.

### **Statutes, Boards and the Contracts**

Before the decision to locate the smelters in Invergordon and Anglesey could be announced by either government or the companies, power contracts had to be agreed. BACO had to negotiate a contract with the North of Scotland Hydro Electricity Board (NSHEB) for the initial provision of electricity for Invergordon, although it was actually the South Scotland Electricity Board (SSEB) that was to provide the power from Hunterston B upon its completion. This would later prove to be an important distinction. The RTZ consortium had only to agree to a power contract with the massive CEGB as the sole supplier of electricity in England and Wales. The convoluted process faced by BACO hindered the negotiations on several occasions and caused considerable friction between the company and the generating boards concerned, as well as government. The negotiations were complex by virtue of necessity in respect of both smelters, although RTZ’s contract was agreed more quickly than the contract agreed by BACO.<sup>36</sup> The agreed power

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34 BACO Aluminium Briefing, UK Press Gazette, 12 August 1968, NAS, DD 12/3180.

35 *Hansard*, vol.769, House of Commons Debate, 24 July 1968, col. 586.

36 Note on Aluminium Smelters by SD Wilks, Board of Trade, 2 October 1968, TNA, BT 346/21.

contracts had to be framed in such a way that they did not contain any element of subsidy on the part of government *per se*. Relative to the Invergordon smelter, this involved three parties – BACO, SSEB and NSHEB – due to the aforementioned power arrangements. Negotiations took place between the company and the boards with regular recourse to the government in London and the Scottish Office in Edinburgh to solve disputes and impasses during their course. The Anglesey smelter negotiations on the other hand were relatively straightforward, likely as it was an agreement only between the RTZ consortium and the CEGB, both of whom were willing participants in the arrangements. Further, the CEGB did not have the same statutes regarding its customers as the NSHEB did – there was no obligation to provide cheap power only to domestic users and it was happy to agree contracts with reduced prices with industrial users where it felt appropriate. It should be noted however that all the electricity boards were subordinate to the will of the British government – had it decided on a particular course of action then the boards were obliged to follow, be it a result of a parliamentary act or ministerial directive. This is an important point.

BACO wanted guarantees on the price of power before agreeing to build the smelter arguing, rightly, that it was absolutely crucial to the viability of its Invergordon project. The enormous amounts of electricity required for aluminium smelting meant a competitive price for supply to the smelter needed to be agreed. The price of the power supply in aluminium smelting at this time accounted for 40% of total conversion cost from alumina to aluminium ingot.<sup>37</sup> Therefore, any increase in the cost of power would automatically affect the conversion cost for the company with potentially disastrous results. BACO wished to safeguard itself against any such occurrence, and sought assurances in order to avoid as much uncertainty as possible. In the initial stages of the smelter's operation, power to the smelter was to be supplied by NSHEB-run coal-powered stations with the supply being switched to nuclear power after the construction of Hunterston B nuclear power plant was completed, planned for 1974. The effect of this agreement was that BACO agreed to pay a higher sum for the power provided in the initial stages, as the power generated by coal was to be more expensive than that generated by nuclear power. BACO agreed to this under the proviso, gained after extensive negotiations and a personal intervention by the President of the Board of Trade, Edmund Dell, that in the event of any aspect of change in the design of the

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37 From a Memorandum left by BACO for the Minister of State for the Board of Trade Edmund Dell (no date) attached to a letter from JB Beaumont of SDD to KR Vernon NSHEB, 31 January 1973, NAS, SEP 14/1473.

new nuclear power station that may affect the price BACO had agreed to pay, the government would agree to alter the agreement accordingly so that the company would not be wholly responsible for the extra costs. Crucially, this was *not* written into the contract itself but took the form of a letter written by Dell to Sir William Strath, the then chairman of BACO, known as the ‘fair clause’. This would prove to be a monumental mistake on BACO’s part.

After much discussion and consideration of other smelter operations in foreign countries and the prices paid there, the company and electricity boards came to an agreement. The breakdown of the price agreement was as follows:

**Table 6.1 Price agreement for electricity supply to Invergordon smelter<sup>38</sup>**

	p/KWH	mils
Capital charge on annuity basis	0.141	3.38
Operating costs and fuel	0.117	2.81
Rates and royalty, net of plutonium credit	0.005	0.12
Total	0.263	6.31

BACO had mooted a price of 0.25p/KWH as the required level for competitiveness, which would have provided a total cost of 6 mils per unit<sup>39</sup>, 1.5 mils above its target level of 4.5 mils, but offset by the 40% investment grant on the smelter. Other companies operating in foreign fields experienced prices ranging from 2.5 mils (Canada, Norway and the West Coast of the USA) to 4/4.5 mils (Tennessee in the USA and France). The final agreed price was set at 0.263 p/KWH that gave a total of 6.31 mils, 5% over the company’s target power cost. The smelter at Invergordon would therefore be operating on a more expensive power price – nearly 2 mils per unit more than its nearest rivals in Tennessee and France. BACO agreed to this as over half was from the capital charge incurred for the construction of Hunterston B, which would not vary after construction.<sup>40</sup>

Herein lies the crux of the Invergordon power contract, and by extension the entire Wilson smelters project. From the beginning, aluminium smelting in the UK was uneconomic without governmental subsidy. The price agreed for Invergordon was above the required level for competitiveness. Dell says: ‘No nuclear reactor could supply electricity at prices comparable with hydroelectricity in Norway. The electricity therefore would not have been cheap enough to make had it not been

<sup>38</sup> Utiger, *Never Trust An Expert*, 13.

<sup>39</sup> Power prices for aluminium are measured in mils: 1 mil = 0.1 US cents.

<sup>40</sup> Utiger, *Never Trust An Expert*, 13.

for the subsidy on the plant represented by the 40% investment grant.<sup>41</sup> Smelter operations can operate profitably as long as their power prices remain competitive and the price of aluminium remains at a profitable level. So, even though the power price agreed was above the required level for competitiveness, the investment grant was designed to offset this. As a result, the company accepted the proposed price.

The siting of the smelter in the Highlands of Scotland area under NSHEB auspices gave rise to frustrations during the negotiations for BACO because when figures changed the company sought explanations only to find that they had to go to both boards for them. The company also found that there was apparent collusion between the Scottish boards and the CEGB, and that they were unlikely to get any special concessions in the negotiations. The NSHEB could not provide industry with more favourable pricing arrangements for electricity supply than domestic customers by virtue of its statute.<sup>42</sup> Thus, even though NSHEB was negotiating on a short-term basis for supply to Invergordon, there was almost certainly the mindset that the NSHEB could not provide any concessions to BACO that would see the company receive a better rate for electricity provision than domestic consumers. The board was very keen to safeguard the price their domestic customers were paying and unprepared to give any concessions to BACO that would result in their other customers subsidising the company's price. A further irritation to the company was the fact that the NSHEB insisted on negotiating the contract by itself, even though many key aspects of the contract necessitated the SSEB's consent for later provision of electricity from the as yet unbuilt Hunterston plant:

“There was an animated exchange on the subject of electricity supply, on which BACO said that they were nearing the end of their discussions with NSHEB but felt that they were being required to deal with a blinkered small middle man who was not the real supplier (which was SSEB), with the result that they were getting an unimaginative response *not in the best interests of the UK economy* [my emphasis]; in particular their broad assessment was that electricity costs of their competitors in Canada and the US was 20% less than here and this was an unfair handicap.”<sup>43</sup>

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41 Dell, *Political Responsibility and Industry*, 106.

42 Gavin McCrone, “The Role of Government,” in *The Economic Development of Modern Scotland 1950–80*, ed. Richard Saville (Edinburgh: John Donald Publishers Ltd, 1985), 200.

43 Letter from TRH Godden to AG Manzie, Scottish Economic Planning Dept. detailing a meeting between BACO and representatives of Industrial Development Board concerning possible expansion to Invergordon, 12 January 1977, NAS, SEP 4/4053.

It is clear that BACO were negotiating on the basis that the smelter was a national interest project with Highland concerns secondary to the arrangements. BACO and the UK government viewed the NSHEB's social statute preventing it from providing industry with favourable pricing for electricity provision as a hindrance rather than an integral part of the whole function of the board. Regional concerns were subordinate to the national interest of getting an aluminium industry up and running as soon as possible and contributing to the UK economy. In spite of the difficulties that transpired in these negotiations, however, they were completed on time and mostly to the satisfaction of all parties.

The contract provided that the company would determine the amount of power Invergordon would use in respect of its actual operating experience. This would be in the range of 189 MW +/-10%, which represents the figure against which all prices were agreed. The company and the electricity boards agreed that the figures dependent on the actual operating experience of the smelter would be determined by 31<sup>st</sup> March 1973.<sup>44</sup> Further, NSHEB asked for a provision of £1.5m in case of escalation in the power price.<sup>45</sup> There needed to be agreement on both sides over pricing, but there also needed to be transparency in the arrangements so as to avoid any criticisms of subsidy and denial of cheaper energy for ordinary consumers.

With the Anglesey smelter, the RTZ consortium agreed contracts with the Board of Trade and the CEBG whereby they agreed to receive and pay back a loan totalling not more than £33m for the construction costs of the Anglesey smelter and their capital contribution towards the construction of the Dungeness B nuclear power station. The loan would be available on an interest rate of 5% or 1% above the Bank of England's available official discount rate, whichever of the two was higher.<sup>46</sup> The consortium would be able to draw on the loan from November 1968 until 31<sup>st</sup> December 1974. The government's loan was to cover the capital cost of constructing the new nuclear power station and help it avoid accusations of subsidising the new smelter. The negotiations for the RTZ contract were less difficult than the BACO one by virtue of the fact that it was dealing with one generating board with no constricting obligations to ensure parity in cost for domestic and industrial users. Furthermore, the size of the CEBG and the amounts of electricity

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44 Details of power contract taken from a Memorandum left by BACO for the Minister of State for the Board of Trade Edmund Dell 12 January 1973 attached to a letter from JB Beaumont of SDD to KR Vernon NSHEB, 31 January 1973, NAS, SEP 14/1473.

45 Aluminium smelters: state of play on negotiations with BACO and AAM, 2 October 1968, TNA, BT 346/21.

46 Details of power contract between AAM and the Board of Trade, 26 November 1968, TNA, BT 346/21.

it was to supply the Anglesey smelter were, relative to the Invergordon smelter and NSHEB, much smaller. That is, the CEGB were able to absorb the new smelter into its network of electricity supply far easier than NSHEB given that it was the only supplier for the whole of England and Wales.

For the government, the contracts were a well-designed solution to the claims of subsidy and the subsequent claims of ordinary consumers being deprived of cheap energy. By having both companies contribute towards the capital cost of building the new nuclear power plants through the loan provided by the government, it was effectively giving each company part-ownership of the respective power plant, tying the company and operation of the smelter to the plant for twenty eight years:

“The capital contribution from BACO was not to create a physical asset within their control. If BACO were to fail and default on the loan, the Government would be left in no worse position than if it had paid the whole cost of the power station directly. It would lose a customer if the smelter was not sold as a going concern, but then demand for electricity has tended to outstrip supply.”<sup>47</sup>

This was equally true of the Anglesey agreement. Thus, the government was able to avoid the potential pitfall of contravening the EFTA agreement and the criticisms of denying ordinary consumers cheaper energy by having both companies pay substantially towards the new plants. The only potential complaint was that the government was still paying for the start-up of the new smelters at the outset through the loans it was making to the companies. These complaints were minor however as they were loans and not grants, at least ostensibly.

The details of the contracts agreed by the aluminium companies and the electricity boards were deemed confidential and were unavailable for scrutiny by anyone other than those involved in their formulation and agreement<sup>48</sup>, much to the chagrin of the Expenditure Committee in Parliament who noted in their report ‘Public Money in the Private Sector’ that

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47 From Financial Appraisal of BACO in a Governmental Discussion paper used as a briefing for Industrial Development Board, 24 January 1974. Circulated by CB Benjamin, Secretary of IDB, NAS, SEP 4/4053.

48 At the time of writing much of the original documentation for the Anglesey smelter was still considered confidential due to the continued operation of the smelter.

“... the inability of Parliament to discover either the very large amount paid out in investment grants or the unit cost of electricity supplied to the smelters must greatly weaken any serious attempt to judge whether the public expenditure was justified.”<sup>49</sup>

The committee noted further that the basic motive was export saving although they did acknowledge that there were elements of regional development policy in the siting of the smelters. This led to calls in the House of Commons for disclosure over the details to ensure that the consumers of the nation’s energy at large, the general populace, did not incur any of the financial burden created by the construction of the new smelters<sup>50</sup>; a call that was largely ignored.

## Construction and Operation

After the successful conclusion of the negotiations for the contract to operate the smelter, plans for the construction and operation phases were implemented. Edmund Dell presented a draft of the Aluminium Industry (Invergordon Project) Scheme 1968 and the Aluminium Industry (Anglesey Project) Scheme 1968 to the House of Commons on 6<sup>th</sup> November 1968 preceding its approval by Parliament on 20<sup>th</sup> November. During the debate for its approval on the 29<sup>th</sup>, Nicholas Ridley, Conservative MP for Cirencester<sup>51</sup>, said of the plan:

“The motive is said to be import saving ... This is a policy of protectionism designed to slow down world trade. If it does not pay us – as I believe it does not – to make aluminium here, we are distorting the whole mechanism of trade to save a few paltry pounds.”<sup>52</sup>

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49 Background Note ‘Aluminium Smelters’ by Miss MM Deyers, Treasury, 27 June 1973, TNA, T 319/2431.

50 Lack of transparency in smelter power contracts, according to an OECD study in 1983, was a feature of many aluminium smelters in Europe during the period. For more information on this consult OECD, *Aluminium Industry: Energy Aspects of Structural Change*, (Paris: OECD, 1983), 88–91.

51 Ridley later served in Thatcher’s government and was a staunch advocate of monetarist policies and the insistence on pursuing a market economy – one of the reasons given for Invergordon’s eventual closure.

52 *Hansard*, vol.773, House of Commons Debate, 20 November 1968, col. 1455.

Ridley's analysis of the project as a means towards protecting British interests further illustrates the true intentions of the smelters. He was correct in asserting that it did not 'pay' the UK to make its own aluminium, but with the promise of cheap electricity from nuclear power it would. Or so the government and companies thought.

The promise of cheap electricity from nuclear power stemmed from the technological strides being made by the Fast Reactor facility at Dounreay and the commitment to the new AGR projects across the country stemming from the UK's position at the forefront of the post-war nuclear race. The government was looking to exercise what it believed would be its comparative advantage in aluminium smelting. That it was trying to distort the mechanism of trade is not in argument. Tariffs, the traditional form of protection, were not an option under EFTA rules meaning an alternative method of safeguarding British interests through increased production of necessary goods was sought. If nuclear power could provide cheap electricity and alumina could be bought in relatively cheaply, the belief was that nothing should stop Britain exercising its right to produce aluminium cheaply. Ridley and another MP, Peter Emery the Conservative member for Honiton, further accused, quite rightly as it transpired, the government of subsidising the Anglesey smelter contract.<sup>53</sup> In spite of their protestations, as well as several other concerns over the power contract, loan arrangements, grant provision and potential escalation of costs and the effects on domestic consumers voiced by other MPs, the House passed the bills.<sup>54</sup>

By the time the construction of the smelters was completed in 1969, the government's balance of payments problem had improved. The balance of payments had moved into the positive posting results of £180m to the good, an improvement on the previous year's result of negative £380m. In 1971, it posted results of £770m to the good, a considerable improvement.<sup>55</sup> This had the effect of diluting the UK government's interest in the smelters' operation and their contribution to the balance of payments concerns. This was no problem for the Anglesey smelter and its agreement with the CEGB. However, when Invergordon ran into trouble the government became somewhat distant, and even more so when power changed hands between Labour (the catalyst behind the smelter project), and the Conser-

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53 *Hansard*, vol.773, House of Commons Debate, 20 November 1968, col. 1477.

54 For the full text of the Parliamentary discussions with each concern raised by individual MP's, *Hansard*, vol.773, House of Commons Debate 'Aluminium Smelters', 20 November 1968, should be consulted.

55 Alex Scott and Margaret Cuthbert, *Reviewing Industrial Aid Programmes: (I) The Invergordon Smelter Case* (Edinburgh: David Hume Institute, 1985), 21.

vatives who were ideologically committed to a less interventionist approach. As Utiger argues

“When it suited them, government exercised considerable pressure on the generating boards, particularly in 1967/8 [the year of the negotiations for the power contract] ... When it did not suit them ... government maintained that the power arrangement was entirely a commercial matter between NSHEB and BACO.”<sup>56</sup>

This chimes with both Perchard’s analysis of the historic relationship between BACO and the government as well as various authors’ work on the short-termism of post-war British industrial policy.<sup>57</sup> When the balance of payments was a live issue and of pressing concern during the smelters’ construction, the government was firmly involved in negotiations and pushing both sides to come to an agreement, which fits with the central thesis of Perchard’s essay in this collection regarding the short-termism of British industrial policy. However, once the balance of

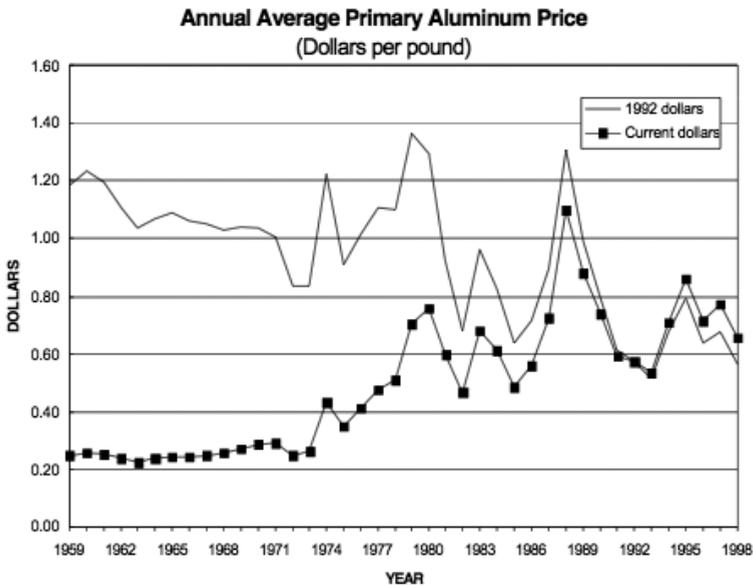


Figure 6.2 Annual average aluminium price, 1959–1998 (1998 prices).<sup>58</sup>

<sup>56</sup> *Ibid.*

<sup>57</sup> See Perchard’s work in this collection for more on this.

<sup>58</sup> United States Geological Survey, *Aluminium*.

<http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/050798.pdf>[Accessed: 20 August 2011]

payments issue had faded, the government retreated its involvement leaving the companies and generating boards to argue the toss.

Any price change in supplies of alumina for example would directly affect the companies' profit as the agreements with the government were set up on the basis of a total cost approach, covering as many variable and capital costs as possible as well as allowing for profit. If any of the variable or capital costs increased, predicted or not, it would be the company's profit that would be squeezed. This was a feature of the aluminium industry worldwide under the producer pricing system until the introduction of new producers into the market (mostly additional non-OECD producers) and the introduction of aluminium onto the London Metal Exchange, significantly enlarging the previously small 'free market' in aluminium in the 1970s.<sup>59</sup> The start-up of the smelters coincided with a world slump in aluminium prices that began in 1970 and lasted until the oil shocks in 1974 resulting in high prices for aluminium on the basis of higher energy costs.<sup>60</sup> This can be more clearly seen in the graph in Figure 6.2. As a result of the slump, the Invergordon smelter was only able to operate at 50% of its intended capacity. This was an expensive and frustrating episode for the company, but it accepted due to its belief that the cyclical nature of the industry meant the hitch was temporary. This belief, coupled with the growth rate of 8% per annum in demand over the previous twenty years in the industry, led the company to take the decision to operate at less capacity without any great concern.<sup>61</sup> The success of the planning and construction phase had buoyed the company and they were confident about their new operation. Morale was high, the start-up had gone well and capital costs were low. The positivity of timely completion was short-lived however. The world price slump in aluminium during the period 1970–72 placed the smelter project on the back foot from the outset. The inability of the smelter to operate at full capacity effectively meant that BACO was playing catch-up from the beginning. This was further exacerbated by the labour shortages caused by the discovery of oil in the North Sea and the subsequent rush to create the new industry in order to take full advantage of the newfound source of wealth in the region.

As problematic as the world price of aluminium and the labour shortages were to the smelter, they paled in comparison to the major problem beginning to arise in the delay in construction of Hunterston B and Dungeness B. Any delay in the construction of the AGR plants meant that the Invergordon smelter would

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59 OECD, *Energy Aspects*, 84.

60 Scott and Cuthbert, *Invergordon Smelter Case*, 23.

61 Utiger, *Never Trust An Expert*, 20.

have to continue to use the more expensive coal-fuelled electricity. This was particularly disastrous for BACO which had factored costs on using the coal-powered electricity only until 1974, the delay in construction resulted in a significantly higher energy cost to the company which would seriously threaten the economic viability of the operation. The obvious downside of this was that using more expensive energy in the meantime meant that the company was making less of a profit on the aluminium it was producing and would have to continue with the more expensive coal-fuelled electricity. Further compounding this rise in costs was the increase in the price of coal in 1972 to 5.5 d/therm; whereas the agreed price for BACO was 4.7 d/therm. The effect of this were yet further increases in the costs of energy for the smelter. As a result, the company found itself on the receiving end of price escalations that it had no control over.

Details of the power contract with BACO become central to the story here and mark the point at which the experiences of BACO and RTZ consortium diverge. The conditions of the side letter (which was *not* a part of the contract) ostensibly agreed to safeguard BACO against any such escalations. However, these were inadequate when the company sought recourse to the assurances contained within them during this time. The letter from Edmund Dell was the only safeguard that the company had, but not legally binding as part of the contract. Since the reassurances written in letter were never inserted into the contract they were useless in the company's representations to the new Conservative government and the electricity boards who stuck rigidly to the legal interpretation of the contract:

“It is clear ... that there are likely to be very substantial extra costs in supplying the smelter because of the forecast delays of Hunterston ‘B’. These extra costs, and in particular the interest charges on them, are such that the Smelter Account is unlikely to recover when Hunterston ‘B’ comes into full operation. The Board considered this review at their January Meeting and I was asked to raise the whole matter with the Department in the context of understandings previously given to the Board that the interests of their ordinary consumers be safeguarded.”<sup>62</sup>

The delay in completion of Hunterston B meant that the capital cost escalation exceeded the original estimate provided by the SSEB (who were in charge of the construction of Hunterston B), and was double what the company had provided

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62 Letter from KR Vernon of NSHEB to JB Beaumont, SDD, 2 February 1973, NAS, SEP 14/1868.

for. By October 1972, it became clear that the capital cost escalation was going to exceed £30m; the limit of the loan agreed by BACO and the Government, without taking into account that Hunterston B would be operating potentially at only 80% of the design rating due to corrosion caused by seawater getting into the reactor. The company invoked the Edmund Dell letter in January 1973, believing that this protected it from any such escalations. The company argued that the possible reduction in operating capacity and coal and nuclear fuel price escalation were reason enough that they would, in the terms of the letter, ‘substantially modify the assessments which at present underlie the project.’<sup>63</sup>

However, there was no response from the Government concerning the escalation in costs until October later that year, when the Department of Trade and Industry (DTI) (previously the Board of Trade) indicated that it was prepared to enter discussions regarding the situation. It should be noted however that there was correspondence between the two sides, at the behest of government, concerning the value of the aluminium smelters’ production to the balance of payments with the company providing an analysis of projected savings on imports provided by the new smelters. This can be seen in the table below:

**Table 6.3 Projected UK import savings from new aluminium smelters<sup>64</sup>**

Year	1972	1973	1974
1. UK Primary Production (000m.T)	171.0	252.0	355.0
2. Less Lochaber & Kinlochleven (000m.T)	(32)	(36)	(36)
3. New smelters production (000m.T)	139.0	216.0	319.0
4. Price per tonne of imports (£)(a)	221.0	233.0	256.0
5. Equivalent import value (£m)	30.7	50.0	81.7
6. Alumina required (b)(000m.T)	271.0	533.0	622.0
7. Price per tonne (c)(£)	34.0	34.0	40.0
8. Cost of alumina (£m)	9.2	17.8	24.9
9. Other material costs (d)	2.0	3.2	4.0
Import savings £m = (5-(8+9))	19.5	30.0	52.8

(000m.T) = 1000 metric tonnes.

<sup>63</sup> Letter from Edmund Dell Minister of State, Board of Trade, to Sir William Strath, KCB, BACO, 23 July 1968, NAS, SEP 14/1473.

<sup>64</sup> Letter from John Wall, Chief Economist BACO, to FC Carter, Department of Trade and Industry, 29 June 1973. TNA, FV 54/56. There is a counting mistake in the table. The figures for 1973 do not add up. The import savings should read as being £29.0m and not £30m. It is not clear from the archival sources how this mistake arose.

- a) Actual average price for imports of pure primary aluminium in 1972 adjusted in proportion to actual or expected change in Alcan world price.
- b) Assumed 1.95 tonnes of alumina per tonne of aluminium.
- c) Actual for 1972, adjusted in proportion to rise in aluminium price.
- d) Petroleum coke, cryolite and fluoride.

It is clear from the table above that the benefit of the smelters project to the balance of payments problem, if the above figures were realized, was to be quite substantial. More to the point, the timing of the correspondence reveals that the government was perhaps more interested in what benefits the smelters were bringing to the country's economic situation than rectifying the concerns expressed by BACO over the escalation of the energy deficit, unsurprising given that the country had lapsed back into deficit in its balance of payments again by this stage.

In March 1973, a letter from AM Cochran, writing on behalf of the Chief Engineer for the NSHEB to HFG Kelly of the Scottish Development Department stated:

“There is really very little that can be said about fuel or capital escalation assumptions made in 1968. At that time escalation was not uppermost in people's minds, as it is today, and the provisions in the agreement were the normal ones to be expected in a long-term agreement. The BACO are well aware that the price of fuel is outwith the control of the Electricity Boards and that any forecast of trends could be no more than speculative. Similarly, the effect of inflation and design changes on Hunterston 'B' could hardly have been anticipated. No doubt the BACO took the best possible advice from all sources before opting for a 100% nuclear supply tranche from 1974/75 onwards.”<sup>65</sup>

However, the company *had* predicted the possibility of inflation and design changes in Hunterston B and had sought guarantees covering it against any such occurrences. Further, the board itself requested £1.5m be included in the agreement to cover escalation. The company also entered the agreement on the basis of estimates and suggestions concerning the unlikelihood of escalation costs posing a threat to the viability of the smelter and the power arrangements made by the electricity boards (and UKAEA). When these estimates and suggestions turned out to be inaccurate, as was the case now, the electricity boards, as apparent in the letter quoted, neglected to acknowledge their own input into negotiations. The Government during the course of negotiations declined to get involved and offered

65 From a letter from AM Cochran for Chief Engineer of NSHEB to HFG Kelly of the Scottish Development Dept re Supplies to BACO, Invergordon, 19 March 1973, NAS, SEP 14/1868.

no guarantees as part of the contract, preferring to leave the issue of negotiations to the company and board. Instead of dealing with one centralized agency charged with negotiating on the Government and electricity boards' behalf, the company had to deal with the NSHEB who were inexperienced in such matters and who had no real knowledge of what would be required of them, as well as being the middle man between the SSEB and the company. Moreover, NSHEB's statute concerning the primacy of domestic consumers in its provision of electricity in the region meant it was unwilling and to a degree unable to offer any real succour to BACO's concerns. The problems inherent in such an arrangement are obvious, although that negotiations and construction were completed within the timeframe set can be considered a success. Of course, as successful as the completion of the negotiations on time was, had more time and a more understanding approach to BACO's concerns been undertaken, then the problem of nuclear power cost escalation needn't have been as significant problem as it was turning out to be for Invergordon.

The change of the government as a result of Labour's narrow win in the February 1974 election signalled a change in policy towards discussions over the power price escalation. Edmund Dell became the Paymaster General in the new government and as any agreement to cover the costs of the price escalation would have to go through the Treasury, this was deemed to be a good sign for the Invergordon smelter. However, it wasn't until August that BACO were able to obtain a meeting with the new Paymaster General in which he agreed that his letter was significant and January the following year before any decision was taken. During this period, discussions were ongoing between the Treasury, Department of Energy, the Scottish Economic Planning Department, the Department of Industry, the Scottish Office and NSHEB about how best to deal with the situation. This resulted in a Treasury recommendation to the Secretary of State for Industry that the company be offered assistance on the basis that NSHEB shouldn't pass on to BACO the cost of the company's contracted share of any derating of Hunterston B and the NSHEB be given guarantees by Government to make good on the deficit run up by the smelter. Further, the Treasury recommended that the company be offered a Government loan of the amount necessary to cover the company's share of the increased capital cost of Hunterston B, also stating that those involved in negotiations should be prepared to concede to an extension of the current loan arrangements at 7%.<sup>66</sup> Willie Ross, reinstated as Secretary of State for Scotland under the new government, gave an undertaking to NSHEB that:

66 Treasury Recommendation regarding Invergordon Smelter to the Secretary of State for Industry by DJ Gerhard, 12 December 1974, TNA, FV 54/60.

“In present circumstances it is not possible to reach a firm view on the eventual outturn of the BACO smelter account. But to the extent that the eventual payments from the Smelter Company fall short of the costs of the NSHEB, the Government accept that the deficit should not fall on the Board’s other consumers, and will take an appropriate opportunity to seek statutory powers to make payments to the Board meeting the deficit.”<sup>67</sup>

This was only after the company had detailed the consequences of the price escalation without governmental help however.

The consequences of price escalation were that for BACO to continue its operations without governmental help, it would need to borrow £16m on top of its existing borrowings of £35m. This would mean that the company would have to pay an additional £3m interest per annum on these further loans, which would add nearly 0.2p/KWH to the power price. The company could not justify borrowing such an amount as it would be prejudicial to its other operations and the board of the parent company (Reynolds and Tube Investments) would not agree to it. As a result, the only option for the company would be to reduce the operating capacity of Invergordon to between half and two thirds, which is what could be supported by the original £30m capital contribution. This in itself would be uneconomic and as a result BACO would be forced to close the plant.<sup>68</sup> Further, reducing its operations to this level would mean its contribution to the import/export balance would also be affected. The DTI then made a decision in March to offer BACO a loan of £7m at an interest rate of 14.5%, more than double the rate of interest for the original loan and 4.5% more than the Bank of England minimum lending rate of 10% at the time.<sup>69</sup> However, the company would be protected against further de-rating on the operating capacity of the delayed Hunterston B power station, but not further costs.

The consequences of the new agreement were that the annual capital charge for Hunterston B rose, resulting in an increase of 71% of an element of the power price, which it was claimed in 1968 would be stable.<sup>70</sup> Had it not been for the personal intervention of Dell, it is likely that BACO would have been left to deal with the problems it was facing alone. As a result of Dell’s intervention, a payment of £113m in 1976, approved by Parliament, was made to the NSHEB to cover the energy deficit in the Smelter Account, subsequently known as the Smelter

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67 Note by Department of Energy Officials (Electricity Division) concerning Aluminium Smelter Contracts, 27 January 1975, TNA, TS 49/220.

68 Utiger, *Never Trust An Expert*, 26.

69 Bank of England, *Quarterly Bulletin 16* (London: HMSO, 1976), Table 26.

70 Utiger, *Never Trust An Expert*, 26.

Deficit Account. In order for this to happen the government passed the Electricity (Financial provisions) (Scotland) Act of 1976.<sup>71</sup> This was followed by a further payment of £57m in March 1977.<sup>72</sup> Sir Edmund was proving to be a good friend to the project, but the Invergordon was becoming an increasingly expensive venture for all concerned, not least the government. In formulating these agreements there were questions raised at the Department of Energy over whether or not the CEGB should receive parity of treatment with the Scottish boards. The government decides against this as the highest figure for exposure to losses caused by the Anglesey smelter was 1.4% of its total sales (£25.8m) for the period 1973/74, compared to NSHEB's exposure of 26.5% of total sales (£14.6m) for the same year.<sup>73</sup> This illustrates both the difference in size of the CEGB and the NSHEB and how the former was able to sustain and cover more substantial losses in its smelter provision than the latter. It also shows that the Invergordon smelter was performing better than the Anglesey smelter in financial terms.

Hunterston B eventually became operational in 1976, two years after its projected start date.<sup>74</sup> As a result of the delay in completion of the AGR power stations, the cost of the fuel rose accordingly. As a result of the delay, BACO refused to pay £24.5m in running costs and a further £3.9m in ongoing capital charges, but made provisions for them in the accounting balance sheets as a matter of financial prudence. The company believed that the increases were not solely attributable to inflation, but were in fact a result of massive under-estimation of costs in the 1968 agreement on the part of the generating boards.<sup>75</sup> It is here that BACO's poor decision making is arguably most apparent. Entering into an agreement with open-ended escalation clauses and non-specific clauses relating to design changes in an unproven technology was taking an enormous risk. The contract relied, at least on BACO's part, too much on good faith in the projections of UKAEA and SSEB, neither of who had any experience of constructing an AGR nuclear power station *on time*.<sup>76</sup> Perhaps the most damning part of the

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71 Internal Audit Report – June 1979. Audit of Payments to Aluminium Smelter Companies by PA Merker, Chief Internal Auditor, TNA, TS 49/220.

72 Scott and Cuthbert, *Invergordon Smelter Case*, 26.

73 Note by Department of Energy Officials (Electricity Division) concerning Aluminium Smelter Contracts, 27 January 1975, TNA, TS 49/220.

74 For more on this and the problems with the construction of the AGR stations in the 1960s, as well as a general history of nuclear power in Britain, Walt Patterson's *Going Critical* (London: Paladin Books, 1985) should be consulted.

75 Utiger, *Never Trust An Expert*, 57.

76 Hunterston A was delayed in its construction by 2 years, just as Hunterston B was delayed by 2 years.

story here is the price BACO were paying for its nuclear-based power in its last year of operation in 1981 was 29mils/KWH – almost five times the agreed price of 6.31mils/KWH in 1968.<sup>77</sup>

Excluding the problems with the energy deficit it was running, the Invergordon smelter was profitably run for most of the late 1970s. According to a briefing for the Industrial Development Board, it was in fact the most efficiently run smelter in the country, with the brief stating that

“The smelter has given no major technical problems, and the delays in commissioning have been from causes largely outside the company’s control. The company is, in fact, regarded as the most efficient producer of aluminium in the UK. In 1973 average earnings per employee were £2050 per employee per annum and output per employee was almost £9000.”<sup>78</sup>

Regarding Invergordon as the most well run smelter in the country was effectively damning it with by faint praise. By 1973 the smelter projects commissioned by government were all running at a loss. The smelters at Anglesey and Lynemouth operated by the RTZ consortium and Alcan respectively, were operating at annual losses of more than £4m, with each company taking responsibility for approximately £0.5m and the CEGB and National Coal Board (NCB) exposed to the remaining £3.5m.<sup>79</sup> The total gross trading profit from 1971 to 1975 for Invergordon (when the smelter finally reached its intended capacity of 100,000 tonnes), excluding the disputed power charges was £4.65m. From 1975 to 1981 when the plant closed its doors, the total trading profit was £14.482m, a considerable improvement in operating performance from the previous year. This was helped by a recovery of the price of aluminium when it rose from £371 per tonne in 1975 to £780 per tonne in 1980.<sup>80</sup> The profit disappears when the power supply escalation cost is taken into account however, since the company had been in dispute with the NSHEB over the power escalation costs since 1976, but showed that, given a competitive rate for power price, the company was capable of performing to expectation.

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77 OECD, *Energy Aspects*, 37.

78 Financial Appraisal of BACO in a Governmental Discussion paper used as a briefing for Industrial Development Board, 24 January 1974. Circulated by CB Benjamin, Secretary of the Industrial Development Board. NAS, SEP 4/4053.

79 Letter from CJ Carey, Treasury, to Mr Mountfield, Treasury, 2 August 1973, TNA, T 319/2090.

80 Utiger, *Never Trust An Expert*, Table 1, pg 38. Figures are before tax and interest.

The power price combined with a falling price in aluminium conspired to push the smelters' operations into the red. For Invergordon, from operating at trading profit from 1976 to 1981, the company posted losses of £19.131m in 1981/82. These losses, the burgeoning energy deficit and government's refusal to address it and the fall in world prices began to threaten the viability of BACO and its parent company Tube Investments (the majority shareholder), making the position of the Invergordon plant increasingly untenable. A fall of 5% in consumption in the aluminium market, the exchange rate of \$2.80/£ and a general depression in world aluminium prices meant that the company's good operating performance in the previous 5 years counted for nothing with losses of almost £2m per month mounting for the smelter.<sup>81</sup> This led the company to conclude that continuation of the situation as it was would result in one of three things; default on its loan repayments to the government, attempt to negotiate a further subsidy from the government or close the smelter. After the company made this clear to the government, the Scottish Economic Planning Department was tasked by the new Conservative government with calculating the cost of further subsidy of the smelter compared to closure. They produced the following calculations:

**Table 6.4 Smelter figures: closure costs<sup>82</sup>**

Closure	£m (1981/82 prices)			
	1981/82 (Jan/March)	1982/83	1983/84	1984/85
Net Cash to BACO.	30*	N/A	N/A	N/A
Loss of Revenue to NCB by coal displaced by Hunterston B	2**	8	5	2
Loss of Capital Repayments on loan by BACO.	0	2	2	2
Extra Expenditure by HIDB*	1	5	5	5
Unemployment Pay	1	3	2	1
Loss of Tax Revenue		2	1	1
Total:	34* or 4	20	15	11
Grand Total:		£80m* or £50m		

\* Opposed by Treasury.

\*\* Assuming that NCB cannot find alternative markets or rundown production in late years.

81 *Ibid.*

82 Letter from George Younger, Secretary of State for Scotland to the PM Margaret Thatcher, 14 December 1981, NAS, SEP 4/4055.

**Table 6.5 Smelter figures: continuation cost<sup>83</sup>**

Continuation	£m (1981/82 prices)			
	1981/82	1982/83	1983/84	1984/85
NSHEB loss on supply to BACO	4	14	14	13
Grand Total for 3 years:	45			

- i. In addition to other costs it will be necessary to place an Order before Parliament in 1982 to reimburse the disputed charges to NSHEB. These would amount to a total of approximately £59m. In exchange for this write-off the Government will take a charge on the tranche of Hunterston B previously held by BACO.
- ii. Financial support for the deficit payments would be necessary until the end of the contract.

The calculations apparently show that it would have been cheaper for the government to continue the operations of the smelter than to close it down. However, the figures for continuing the smelter only account for the first three years following 1981/82. The Scottish Office's Chief Economist Gavin McCrone wrote a letter to the Scottish Secretary of State George Younger advising:

We have shown ... the cost of continuation over the next three years is less than closure ... but the essential point is that continuation is likely to involve an obligation beyond three years ... I remain of the view therefore that on economic grounds alone this scale of support cannot be justified.<sup>84</sup>

McCrone felt that the Government would be taking an unacceptable risk of potentially having to subsidize the smelter for a period much longer than the three years envisaged if it decided on continuing it. McCrone also indicated that he felt the cost of subsidising the smelter for the three years alone to the tune of £14m per year plus writing off the disputed charges was 'an excessive amount to pay for 900 jobs (or even 1500 if the indirect effects are included).' The government was thus to close down a plant that was indirectly responsible for 1500 jobs in an area historically beset by problems of high unemployment, low wages and high outward migration,

<sup>83</sup> *Ibid.*

<sup>84</sup> Letter from Dr RGL McCrone, Scottish Economic Planning Dept, to Secretary of State, 15 December 1981, NAS, SEP 4/4055.

resulting in an increase in unemployment in the area up to 25%<sup>85</sup>, undoing all that had been done to remedy these very problems. Faced with an underperforming money-pit and elected on the platform of no longer supporting ‘lame ducks’, the new Conservative government proved to be less friendly than Dell and the Labour government and elected to close Invergordon leaving Anglesey, despite its larger losses, open.

## **The Differing Approaches to the Smelters**

George Younger, acting as Secretary of State for Scotland understood full well the implications of closing the smelter and initially sought to ensure its continuing operation. Writing in a letter to the Prime Minister the day before receiving McCrone’s advice, Younger states: ‘As ... seen from the table the costs of closure exceed those of continuation over the first three years. I therefore recommend strongly that we offer arrangements to the company which will enable the plant to continue.’<sup>86</sup> Younger’s advice appears to be founded on an optimistic reading of the calculations made and on the assumption that the government would not have to continue subsidising the smelter after the period. McCrone of course was not so optimistic. Younger was also looking at the situation from a political as well as economic perspective – closure would mean increased and high unemployment amidst much public outcry. The operation of the Anglesey smelter was likely also in Younger’s mind. The Anglesey smelter was to operate on the same premise as Invergordon, taking its power from the new Dungeness B AGR nuclear power plant. However, Dungeness B, like Hunterston B, was not completed on time. Moreover, Dungeness B was still not completed by the time Hunterston B was opened (it wasn’t completed until 1983 in fact) and as a result the Anglesey smelter continued to draw its power from the larger, state-owned CEGB at a subsidized rate much lower than Invergordon had drawn its power from the NSHEB and Hunterston B, allowing it to operate profitably. This is indicated in the same letter with Younger pointing out:

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85 Letter from George Younger, Secretary of State for Scotland, to the PM Margaret Thatcher, 14 December 1981, NAS, SEP 4/4055.

86 Letter from George Younger, Secretary of State for Scotland, to the PM Margaret Thatcher, 14 December 1981, NAS, SEP 4/4055.

“If closure is decided on, an aspect which is particularly difficult for me is the continuation of much larger subsidies from CEGB to the Anglesey smelter. Because Dungeness B is still not in operation this smelter gets its electricity at about a third of the cost at Invergordon with CEGB meeting the deficit. Invergordon would of course be viable at this price also.”<sup>87</sup>

The agreement between the Anglesey smelter and the CEGB was not made public, just as the agreement between Invergordon and the Scottish boards wasn't. The Conservative government took the decision to close Invergordon on purely economic grounds, advised at length by the Scottish Economic Planning Department and BACO itself: ‘The company’s attitude provides further information that there is no good economic case for keeping the smelter open.’<sup>88</sup> However, the company was not aware of the Anglesey arrangement at this point. Indeed BACO’s chairman during the whole episode Ronnie Utiger only discovered the arrangements for the Anglesey smelter after the closure of Invergordon and was particularly dismayed at discovering that AAM had apparently enjoyed a cheaper power source than Invergordon.

Writing in his 1995 book on the subject, Utiger asserts:

“What was outrageous from BA’s standpoint was that another state-owned organisation was supporting the Anglesey smelter by a comparable, if not larger amount ... If this was so, then it clearly amounted to blatant discrimination between competing companies, despite the verbal assurances given in 1968.”<sup>89</sup>

Utiger was of course correct in his assertion, as evidenced by Younger’s letter to the Prime Minister – Anglesey did have a more favourable pricing arrangement than Invergordon for power supply from the CEGB. Clearly the government did not wholly reciprocate the good faith shown by the company in agreeing to two different power contracts in 1968 for the new smelters. It would seem that there was an element of duplicity about the government’s part in the negotiations throughout the smelters’ lifetime. The UK government was the purse holder for the generating boards and would certainly have been fully aware and had undoubted influence over the negotiations that took place between the aluminium companies and gene-

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87 Letter from George Younger, Secretary of State for Scotland, to the PM Margaret Thatcher, 14 December 1981, NAS, SEP 4/4055.

88 Letter from JR Ibbs to Mr Scholar (departments not specified), 17 December 1981, NAS, SEP 4/4055.

89 Utiger, *Never Trust An Expert*, 59.

rating boards where it saw fit. Where and when it chose to wield this influence was largely dictated by political and economic expediency however.

By the end of the Invergordon project the government, BACO and the generating boards had all exhausted each other's patience. The Conservatives were not interested in paying for what they viewed as a Labour error and BACO and NSHEB were threatening each other with legal action in an attempt to settle the Smelter Deficit Account. The idea of closing the smelter became the only real option left when it was made clear that there would be no further intervention on the government's part to keep it running, in spite of its continued support for the Anglesey smelter. The final cost however would amount to considerably more than the £37m originally envisaged by the Labour government in 1967. The overall cost of the project can be seen in the table below:

**Table 6.6 Final cost of closure of the Invergordon aluminium smelter<sup>90</sup>**

Category	1981 Prices in £m
Grant 1969	55.6
Loans 1971-81 (net of interests and repayments)	76.3
Electricity Deficit Repayments:	
1977	122.5
1979	23.8
1980	18.2
1981	9.2
Electricity Capital Addition 1976	20.9
Regional Employment Premium	1.0
Recycling Costs 1981	47.0
Payment to BACO 1981	20.0
Value of NSHEB Surplus Supply	-13.4
Grand Total:	381.1

As the table above shows, the government's initial estimate of a £37m outlay for Invergordon proved to be considerably short of the actual final cost of the smelter. Indeed, McCrone's estimate of £80m as the cost of closure was not inclusive of the money already spent on keeping the smelter in operation. The final cost of the Invergordon smelter project of £381.1m was basically the result of various

<sup>90</sup> Scott and Cuthbert, *Invergordon Smelter Case*, 10. The figures are estimates as they are compiled from BA's accounts and NSHEB's accounts, as well as governmental accounts. There has been no official release of the actual financial cost of the smelter project.

governments throwing good money after bad, paying large chunks of the deficit off instead of amending the contract to give the smelter the chance of survival. The delay in the construction and operation of the Hunterston B plant, the intransigence of the electricity generating boards, the ineptitude of BACO and the apparent disinterest of government combined to put the Invergordon smelter into a precarious position it ultimately couldn't survive.

The Invergordon aluminium smelter closed its doors for the final time on the 31<sup>st</sup> December, 1981. By the time of its closure the smelter had been taking almost a quarter of all electricity sold in NSHEB's region. Younger argued that for the smelter to remain open it would have required 60% of the board's full hydro capacity to meet its power needs on a continuous basis.<sup>91</sup> (It's not clear what he thought Hunterston B's contribution to Invergordon's supply would be in this case.) Central to the story are the mistakes made in the planning stage. First of all, the promise of nuclear power supplying cheap electricity was an empty one. Had a bespoke (non-nuclear) power station supplying electricity for the smelter been constructed, as the Alcan smelter at Lynemouth (which is still in operation today) operates on, then there is every possibility that the Invergordon smelter would still be in operation today. This wouldn't have fitted in with Labour's modernity drive of the 1960s though. Alternatively, had an arrangement been found to supply Invergordon with electricity at a competitive price, as Anglesey received, then there would have been a greater likelihood of success. As successful as the planning and implementation stage was in constructing and running the smelter on time and within budget, it was a false success. The hurried nature of the negotiations of the power contract meant that the company effectively signed a blank cheque to the generating boards for its power supply. The government was eager to begin production to offset its balance of payments problem and prove its status as the party of modernity; the company was eager to start operations at Invergordon to start making money. However, the increases in the power price coupled with the drop in the world price for aluminium led to the company incurring unsustainable losses. This inevitably led to its closure.

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91 Alf Young, "Industry," in *Highlands and Islands: A Generation of Progress*, ed. Alastair Hetherington (Aberdeen: Aberdeen University Press, 1990), 103.

## Conclusion

The story of the Wilson smelters project is one of divergent experiences of both BACO and the RTZ consortium AAM. At the heart of the story are the issues of location and the importance of publicly provided utilities. Where the Invergordon smelter was at the mercy of the small NSHEB for its electricity supply, Anglesey drew down its power from the behemoth CEGB, meaning that the costs arising from the delays in the construction of the AGR power stations were more easily absorbed by the latter. The unfulfilled promise of comparative advantage from nuclear power for aluminium smelting in the UK resulted in badly formed contracts which on the one hand resulted in the demise of a British multinational company in BACO and Invergordon, and on the other substantial public subsidy for the continuation of operations at Anglesey. The government's shifting priorities and unwillingness to get involved ultimately cost BACO its independence and led to its takeover by Alcan in 1982 and the companies being renamed British Alcan Ltd. In this instance Perchard's analysis of the prior experience of BACO and the British government is a salutary tale. Further, the failure of AGR technology to come online and provide cheaper electricity than what was already available through more prosaic means meant aluminium smelting in the UK never actually enjoyed the comparative advantage it was expected to. The various governments' unwillingness to resolve disputes between BACO and the electricity boards and offer parity of prices to both operators of the smelters meant that the smelters project, although innovative in its conception, suffered an all too familiar fate in common with various other examples of failure in post-war British economic history.

The story of the smelter projects is a valuable illustration of the failure of the British government in the 1960s and 70s to plan long term and effectively for the British economy. The cost to the government of the Invergordon smelter project alone outstripped the planned cost for both smelters combined. The differing size of the generating boards is crucial to understanding the divergent experiences of the two smelters. The NSHEB, SSEB and CEGB all played critical roles in the eventual outcome for the Invergordon and Anglesey smelters. Invergordon closed its doors in 1981, but Anglesey lasted until 2008 enjoying both power from Wylfa B nuclear power station and subsidies from the CEGB and its successors until the end. The other smelter at Lynemouth is instructive of the failure of AGR technology to provide a cheap and workable power source for aluminium smelting in the UK – it is still in operation and powered by coal-fired electricity through an agreement with the old National Coal Board at a discount for the smelter. The failure of nuclear power and the differing approaches to interacting with indu-

stry by the generating boards combined to offer up two very different outcomes for the Wilson smelters. Invergordon operated for less than 10 years and closed amidst much outcry, bitter recriminations and the eventual takeover of BACO by Alcan whereas Anglesey operated for over 30 years with subsidies from the CEGB until its privatisation in the 1990s through British Nuclear Fuels, then the Nuclear Decommissioning Authority. Anglesey was heavily subsidized from the start, but no explanation has ever been forthcoming about why it survived so long and Invergordon didn't, although it is obvious the sheer size of the CEGB and its ability to absorb Anglesey's losses more easily than the Scottish electricity boards was a determining factor. AAM has recently closed the smelter although there are discussions about building a new nuclear power station on the site of Wylfa B. The Invergordon smelter on the other hand has been replaced by a business park. As Edmund Dell writes:

“The aluminium smelters are the most original product of the Labour Government's industrial policies. But originality has not in this case tempted imitation.”<sup>92</sup>

It is, perhaps, little wonder.

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92 Dell, *Political Responsibility and Industry*, 121.

# **Global Market and National Tasks: Norwegian State-Owned Aluminium Companies since 1946**

Jan Thomas Kobberrød

In this chapter, we want to illuminate the dilemma inherent in the governance of state-owned companies competing on the global market. The dilemma inherent, to be sure, is that the world market is governed by business merit, while state-owned companies need not be. Rather, state-owned companies may be governed according to what the proper authorities at any given time identify as a public good, a national task or whatever term chosen to define a politically decided rationale.

The case under scrutiny is the aluminium industry of Norway. In 1946, state-ownership of aluminium smelters was a novelty in a well-established business in Norway. The first aluminium smelter in Norway came on stream in 1908, and the industry grew to become one of Norway's bigger export industries by 1940. All the six smelters established during this period were run as private enterprises. All the smelters but one were fully owned and operated by foreign multinational companies – the last one was 50% owned by Norwegian investors. The main asset attracting foreign investment was Norway's abundant supply of hydro power in proximity of good harbour facilities.

The easily accessible hydro power is one fundamental fact of which one needs to be aware when analysing aluminium industry in Norway. Another is that any large-scale smelting industry needs to be export oriented. Domestic consumption of aluminium will never match the potential for smelting. Aluminium may be exported either as primary metal in ingots, in semi-fabricated goods as e.g. rolled products, or in the shape of finished goods. Further processing from the stage of primary metal obviously will offer employment opportunities and create value added. Thus one should think Norwegian politicians always would favour fabricating and further processing in Norway. This has not been the case, for reasons we shall discuss in this chapter.

While Norway enjoys a comparative advantage in smelting, the opposite is the case in fabricating, when comparing fabricating within the large markets on the

European continent. Firstly, while smelting is energy intensive, fabricating is not. Secondly, fabricators within the large consumer markets will have easy access to secondary metal, i.e. scrap metal which may be reprocessed, thus lowering costs substantially. The smaller market of Norway will leave fabricators dependant solely on more expensive virgin metal. Thirdly, there is a problem of speed and cost of delivery. Goods produced within the markets may be delivered by road or rail, whereas export from Norway will require sea transport. Sea transport is slower and more expensive to begin with, and with more packaging being necessary to avoid damage to fabricated goods, one can speak about compound disadvantage. In addition to these structural obstacles, which are virtually impossible to eliminate, we have the question of tariffs. This, of course, is a political more than a structural problem. Thus, we shall encounter debates on this during our analysis. These structural and political problems make the relative position of fabricating and primary production very illustrative of changing political attitudes towards aluminium in Norway.

Norwegian politicians have actively exploited the aluminium industry in order to achieve certain political and economic goals since 1945. Nowhere is this more clearly demonstrated than with the state-owned smelters. Here, political signals could be conveyed as orders, if need be and the incumbent minister chose to do so. On the other hand, instructing company management seldom was a thing done light at heart, with the 1970s serving as an exception to prove the point. Thus, this chapter especially focus on the development of Årdal og Sunndal Verk (ÅSV), from the outset a wholly state-owned company and for a long time the major Norwegian aluminium company. We will trace the strategies adopted by this company in interplay especially with the Ministry of Industry.

An overview of the period since 1945, and the argument of the chapter, runs like this. During the first few years, a cautious policy of modest expansion, insisting on securing domestic vertically integrated chains of production prevailed. Ideas of Norwegian alumina as well as Norwegian fabricating had a heyday. It was believed aluminium was primarily a military metal which would not face much civilian demand, thus possibilities of export would be scant. Within a few years, this worry was blown away and Norway set out to become a major supplier of ingots. This was a political decision designed to generate export revenue. Indeed, generating export revenue was considered a national task. This logic dominated until the 1970s, albeit the question of fabricating had a brief spell of interest when Norway seemed to be heading for membership in a large European common market in the early 1960s. The fundamental reason for the change of policy in the 1970s was a new perception of the value of energy. There would be allocated only very little

new energy to smelting. This gave rise to the period of consolidation in Norwegian aluminium industry, lasting to the present day.

Consolidation was given an initial twist of domestic fabricating and attempts at securing domestically integrated chains of production for reasons of domestic politics. It was perceived that Norway had an unprecedented room of manoeuvre for controlled restructuring in traditional industry in anticipation of large revenues from petroleum activities in the North Sea. As the strategy of domestic fabrication proved to be no commercial success, the strategy was changed during the first half of the 1980s. The remedy now came to be integrating into fabricating abroad. During the latter process of reorienting, Norwegian politicians dismantled ÅSV, a tool which had served well during the period of ingot's primacy. Now the chosen tool became Norsk Hydro, another company where the Kingdom of Norway was the majority share owner. Today, Hydro's position represents a potential political problem, as there are signs of the company becoming primarily a global actor, whose decisions chiefly depend on business merit. Utilising Norwegian resources may thus become a question of lesser importance, but utilising such resources in a matter consonant with Norwegian national interests is precisely the rationale for heavy state involvement in the company.

### **The Initial Period of Caution**

During the German occupation, Norway was assigned the role as the aluminium smelter for the German Grossraumwirtschaft. Grandiose plans were laid, but failed. For all the time and effort, only one smelting plant at Årdal came near to be complete by 1945. As all German assets were confiscated by the state as enemy property, the Labour government was presented with an opportunity to establish a state owned aluminium company. Now, actually completing what the Germans had left was no obvious thing. It was only the facts on the ground that made aluminium an option; it was considered a pity not to make the most of the capital already invested. Even this failed to convince some key politicians. Minister of Finances, Erik Brofoss, dissented when the bill establishing a state aluminium company was sent to Parliament in June 1946.<sup>1</sup> Aluminium would have to be an export commodity, and he saw no way of Norway competing with the aluminium industry of North America, which had been greatly expanded during the war. He was not the only

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1 Stortingsproposisjon (St.prp) [Parliamentary bill] nr. 69 (1945-46) in series *Stortingsforhandlingene* (henceforth SF) [Official report of the proceedings of Parliament].

member of government hesitant on aluminium in this period. After Parliament had decided on completing Årdal, an international joint venture expressed interest in developing a large scale smelter in Glomfjord in the north of Norway. Minister of Industry, Lars Evensen, told Parliament one should take care not to establish more capacity in industries where there already was sufficient coverage of the domestic demand.<sup>2</sup> Thus, there was no enthusiasm for large-scale exploitation of the comparative advantage for producing aluminium for export. The national task invoked in the Årdal case was of a compensatory nature: No private capital was willing to exploit the capital already sunk in the project.

When the bill establishing Årdal Verk passed Parliament, the sub-committee for industry was rather enthusiastic. However, the majority encouraging the undertaking spoke strongly in favour of establishing a vertically integrated aluminium industry in Norway, comprising both alumina refining, smelting and fabricating under state auspices. Thus, the parliamentarians of Labour had an idea that the state-owned company would remedy what some considered being a national industrial embarrassment. The existent private aluminium industry was predominantly a smelting industry, dependant on importing alumina and exporting primary produce. This was no real skilled industry, producing value added, the argument was.<sup>3</sup> The actual bill passed, however, did nothing more than establish a state-owned company for utilising the German leftovers. This left the new company and the Ministry of Industry with a large room for manoeuvre.

There were signs of aluminium moving up in priority within the Norwegian political apparatus during 1947. In Norway's first national budget, submitted to Parliament in February 1947, one strongly underlined that Norway faced a fundamental problem in the balance of payment. Currency pouring out of the country in order to pay for means of production needed for restructuring the economy, dug deep in the currency reserves amassed by the merchant fleet during the war. This now warranted prioritising export industries in years to come.<sup>4</sup> Aluminium was mentioned as one of several suitable products benefiting from Norway's abundant supply of hydro power.<sup>5</sup> On the other hand, it was still a priority to increase export of products yielding high value added.<sup>6</sup> Thus, it would be better to export primary aluminium than to export power, yet better still to export fabricated products.

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2 Stortingstidende (St.tid) [Verbatim parliamentary proceedings, in SF] (1946), 2062.

3 The committee's view: Inst. S. [Report on ways and means by a select committee, in SF] nr. 142 (1946), the debate: St.tid 1946, 1387–1412, in SF.

4 Stortingsmelding (St.meld.) [White paper, in SF] 10 (1947), 16.

5 St.meld. 10 (1947), 31.

6 St.meld. 10 (1947), 21.

Regarding aluminium, Norwegian politicians in this period feared competition from North America, but the North Americans themselves were rather enthusiastic about the future potential of this metal. In the early days of 1948, Deputy Minister of Industry, Arne Drogseth, was approached by the Canadian giant Alcan.<sup>7</sup> The Canadians wanted to expand in large scale smelting in Norway. Alcan at the time already was firmly established in the aluminium industry of Norway, as it owned substantial shares in the Norwegian companies Det Norske Nitridaktieselskap (DNN) and Norsk Aluminium Company (NACO). Alcan now had its eyes on the site Sunndalsøra, and was willing to involve the Norwegian state in the project. Drogseth dragged his feet. Rather than discussing large scale smelting, he was interested in making alumina and getting into fabricating in conjunction with Alcan. This was of no interest to Alcan, who wanted to expand smelting in Norway to feed its fabricating works in Great Britain and elsewhere in Europe. Drogseth, on the other hand, found this part of the plan to be contrary to Norwegian interests. The value added would be little in relation to the vast amount of energy one would have to allocate to smelting. When Drogseth informed his superior, the sole redeeming aspect of the plan was the possibility of creating a currency-earning plant with the help of foreign capital. The Minister of Industry still cared little for aluminium. On one of Drogseth's notes, he commented that he was more interested in getting the state owned iron works in Mo i Rana and the iron mines of Syd-Varanger going.<sup>8</sup>

Despite this lukewarm reception, Drogseth was allowed to continue his talks with Alcan. During the negotiations of 1948, Norwegian fabricating was a recurrent theme. Alcan had no interest at all in participating in such a scheme, and was solely interested in smelting. The interesting point of this obviously is the Norwegian hesitation in expanding large scale smelting, combined with the insistence on securing domestic vertically integrated chains of production. But, during 1948 this position changed. In working out the Norwegian Long Term Programme for OEEC, submitted to Parliament in the closing stages of the Alcan-negotiations, Norway again was assigned the role as a major aluminium producer for Europe; this time by Norwegian planners. A swift expansion in hydro power, paving the way for an equally expanded aluminium industry would be a contribution

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7 For sake of convenience, I have referred to Alcan throughout this article, although this name was not adopted until the 1960s.

8 For this paragraph: Arne Drogseth's notes "Konferanse 7/1 1948 vedr. Aluminium Union Ltd", 14.1.48; "Konferanse 23. februar 1948 med Mr. Bartholemew om eventuell utvidelse av Aluminium Union's produksjon i Norge", 26.2.48 and "Om spørsmålet om et nytt aluminiumverk i samarbeid med Aluminium Ltd", 9.4.48, all in, Riksarkivet (RA) [The National Archives], Oslo, Arkiv 1411, series Ea, Minister of Industry Lars Evensen's archive (LEA), box 15.

to curbing the European dollar-gap. The programme envisioned an increase in Norwegian production of primary aluminium from 30 000 tons in 1948 to 95 000 tons by 1952–53.<sup>9</sup> There was no mentioning of Norwegian fabricating in the programme, and the cautious approach to aluminium now was about to be thrown overboard. On the other hand, expanding in primary aluminium was not to be left to foreigners; neither alone nor in conjunction with private Norwegian capital. Thus, claims that the Labour-government at this stage was utterly pragmatic and actively sought all forms of financing aluminium industry, be it Norwegian or foreign, need to be modified.<sup>10</sup>

The proposed joint Norwegian-Alcan smelter at Sunndalsøra with government involvement of 1948 never materialized. In the spring of 1949, a proposed Alcan-Norwegian private enterprise setting up a smelter was labelled indigestible to the Labour-government, who favoured an expansion of the state company now entering business at Årdal. At this point, the board of Årdal Verk hesitated, and wanted to await the market situation for six months before committing to building another smelter, which in a few years' time would quadruple the amount of metal the company produced. Drogseth was impatient; a few months more or less would not produce certainty on future market conditions. Alcan was eager to get into the proposed smelter, this should be sufficient proof of the market, Drogseth thought. At this point Drogseth too had abandoned the insistence on fabricating and spoke only of Europe's demand for ingots.<sup>11</sup> Norwegian fabricating now simply was not an issue for the key politicians.

This change of heart probably can be attributed to a combination of external pressure and rethinking among Norwegian politicians. The initial optimism regarding Norway's ability to choose her own path of reconstruction was shattered in 1947, when one suddenly realized that Norway had a major currency problem. The more the politicians came to face this fundamental problem, the less hesitant they became on large scale aluminium industry in Norway, which obviously would be a major currency-earner as long as there was a global demand for aluminium. Furthermore, as aluminium was given the task of a currency-earner, the question of fabricating would have to be less pressing. The only reason aluminium was an option in Norway was the hydro power. Thus, the logic solution was first to expand

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9 Memorandum om et norsk langtidsprogram, Annex to St. meld. 54 (1948), 20–24, in SF.

10 Such a claim can be found explicitly e.g. in Dag Ove Skjold, *Statens kraft 1947–1965* (Oslo: Universitetsforlaget, 2006), 40. A similar position is adopted in Tore Grønlie, *Staten som industrieier i Norge 1945–1963* (Oslo: TANO, 1989), although in less clear form.

11 Arne Drogseth's note "Aluminiumverk på Sunndalsøra", 12.5.49, RA, arkiv 1411, series Ec, Deputy Minister of Industry Arne Drogseth's archive (ADA), box 19.

smelting, where Norway had a comparative advantage. In due course, one might hope for further processing.

As to the external pressure; as Norway accepted participation in the European Recovery Programme and joined the OEEC, she had to honour the logic of making the most of comparative advantages. Producing aluminium for export was in line with this thinking, establishing an iron works for the domestic market was not. Iron could be produced more efficiently elsewhere in Europe. This argument failed to convince Norwegian politicians and public opinion, as making Norwegian iron was considered a very important national task. In the spring of 1949 Drogseth was faced with growing opposition against the iron works from the USA, who favoured switching from iron to aluminium at Mo i Rana. Thus he explicitly suggested to his superiors that committing to aluminium at Sunndalsøra would take the sting out of the US' pressure on the iron works.<sup>12</sup> The government duly committed.

Committing to aluminium at Sunndalsøra was one thing. Actually setting up the smelter was another matter. The government was loath to let Alcan share in the spoils, but failed to raise sufficient capital in negotiations within the OEEC. Ideas of establishing a private enterprise constructing the smelter involving Alcan as well as Swedish and Danish fabricators were dismissed by Drogseth as late as December 1949<sup>13</sup>, as the government obviously was bent on making the state company established at Årdal the tool of exploiting Norwegian hydro power. This insistence could have backfired. Only activism on the part of the Economic Cooperation Administration (ECA) in the wake of the outbreak of the Korean War finally catered for a bilateral agreement between the USA and Norway financing the smelter at Sunndalsøra.<sup>14</sup> As a consequence, the original Årdal Verk was transformed to Årdal og Sunndal Verk. When the deal had passed the Norwegian Parliament, Nathanael Davis, President of Alcan, wrote disapprovingly to a Norwegian confidant that it was “disappointing to see both the Norwegian and the United States Governments proceeding with the project, using the taxpayer’s money, when private capital was prepared to do the job.”<sup>15</sup> Thus USA came to finance a state-

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12 Arne Drogseth's note “Amerikansk interesse for anlegg av aluminiumverk istedenfor jernverk i Mo i Rana”, 11.5.49, RA, ADA, box 19.

13 Arne Drogseth's note, “Konferanse i Paris 8/12 1949 med generaldirektor Mürer”, 16.12.49, RA, ADA, box 19.

14 Mats Ingulstad, “Cold War and Hot Metal: American Strategic Materials Policy, the Marshall Plan and the Loan to the Sunndal Smelter,” *Cahiers d'histoire de l'aluminium* Special Issue 2 (2007), 125–144.

15 Letter, Nathanael Davis to Johan Mürer, 11 July 1951, Norsk Hydros historiske arkiver (NHHA) [Norsk Hydro's historical archives], Notodden, NACOs arkiv (NA) [NACO's archive], box 36, file 1187-142.

owned smelter, a fact that never seemed to bother ECA. On the other hand, it would have been a hopeless task to convince ECA to help develop fabricating in Norway, as ECA adhered to the logic of utilising comparative advantages.

### **The Period of Ingot's Primacy: ÅSV Exporting Ingots for Foreign Currency**

From what is said thus far, we can conclude that becoming a major supplier of aluminium ingots was no Grand Design on the part of Norwegian decision-makers at the close of World War II. Establishing this position was just as much a consequence of Norwegian politicians responding to outside impulses and reacting to Norwegian economic problems. During the 1950s and 1960s however, exporting ingots clearly became the primary role of ÅSV, eagerly supported by Norwegian politicians.

ÅSV never targeted the domestic market. Initially this could be explained by a wish not to compete with the private enterprise NACO, which traditionally catered for the domestic market through its fabricating subsidiary Nordisk Aluminiumindustri (NAI). Within few years, it became obvious that ÅSV would not sell in Norway even if the fabricator needed metal. The sales policy of ÅSV clearly was informed by priorities within the political apparatus.

Before the war, NAI could absorb only parts of the NACO output of primary aluminium. When normal operations were resumed in 1945, the capacity of NAI was expanded. Within a few years, NAI was looking to ÅSV for ingot. In dominant political organs there no longer was any idea of expanding Norwegian fabricating. In 1951, the NAI production programme was under very close scrutiny by The Agency of supplies and its Office of iron, steel and metals. The problem was that the fabricated products of NAI predominantly would be consumed domestically. As aluminium was one of Norway's chief export commodities, it was important to restrain domestic consumption, even if this meant curbing fabricating.<sup>16</sup> The political signals found their way to the board of ÅSV, as the minutes of one of the meetings state "the authorities" had asked ÅSV to minimize its domestic sales.<sup>17</sup> The state's aluminium company heeded the political signals. The Ministry of Trade

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16 Note from the Agency of Supplies to the Minister of Trade, "Forsyning og forbruk av aluminium", 14.2.51; Note from the Office of Iron, Steel and Metals to the Agency of Supplies, "Forsyningssituasjonen med hensyn til aluminium", 8.2.51, RA, ADA, box 20.

17 Minutes from the board of Årdal Verk 30.7.51, item 2, NHHA, ÅSV's Topplederarkiv (ÅSVTLA) [Archives of ÅSV's Top Management], box 2256.

was frequently mentioned in the board-meetings of ÅSV in this period, expressing strong wishes for as large sales as possible to the US.<sup>18</sup> In complying with this request, ÅSV faced a relative loss, as exports to the US fetched Canadian export prices, whereas sales to Europe could have attracted better prices, albeit not in US Dollars.<sup>19</sup> Foreign currency was better than squandering aluminium in domestic consumption, and US Dollars was better than any other currency. The primacy of exporting ingots was amply demonstrated in 1952. NACO/NAI approached ÅSV asking for a long-term agreement supplying the fabricator. ÅSV turned it down out of hand, much to NACO's irritation.<sup>20</sup> Furnishing fabricators in Norway certainly was not ÅSV's task.

Ingot's primacy was equally obvious when ÅSV's capacity at the original site at Årdal was expanded by 36 000 tpy in 1955.<sup>21</sup> There was an opportunity for growth as global demand was increasing, and global capacity did not keep up. Fabricating was no issue. In a paragraph discussing market conditions, ÅSV stated that the rather high tariffs on primary metal of the Federal Republic of Germany (FRG), Italy, France and Switzerland would be of no consequence. In most cases, one would be able to achieve duty free import for metal which would be re-exported after fabricating. Obviously, Norway would produce the metal; the further processing would be located elsewhere.

The expansion at Årdal in 1955 had another attraction as well, seen from the Ministry of Trade. This would be a source of foreign currency, even precious US Dollars. The plan for financing the new plant was deliberately designed for this matter. ÅSV had managed to secure a loan from giant US aluminium company Alcoa. Actually, the loan by far exceeded the rather limited need for foreign currency in building the works. Now, ÅSV would be willing to hand these precious dollars over to the treasury, in exchange for counterpart funds in whatever softer currency it needed. The loan from Alcoa for expanding at Årdal would be payable in aluminium, in the same manner as the loan funding building at Sunndalsøra in 1951. Thus, a fairly large part of Årdal's production would be at the disposal of Alcoa, either as down payments on the loan, or as barter-metal. Integrated in the deal, Alcoa was to supply ÅSV with alumina, payable by primary metal. This was an agreement parallel to an agreement with Alcan from 1947, where setting up an alumina plant in Norway was substituted for a barter-agreement. Barter-

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18 See e.g. minutes from the Board of Årdal Verk, 24.10.50, item 4, NHHA, ÅSVTLA, box 2256.

19 Minutes from the Board of Årdal Verk 15.5.50, item 2, NHHA, ÅSVTLA, box 2256.

20 Letter from ÅSV to NACO 21.2.1952, and NACO to ÅSV 7.3.52, both in NHHA, NA, box 36, file 1187-141

21 On the 1955 expansion: St.meld. 93, (1955), in SF.

agreements and loans payable in aluminium gave ÅSV little incentive for focusing on fabricating. A substantial amount of the production was sold even before it was transformed to metal. The remainder found an easy outlet on the European market, hungry for aluminium. ÅSV fulfilled its task brilliantly; it brought foreign currency to Norway, without putting strains on the domestic supply of capital. The Ministry of Industry made approving remarks to the ÅSV-plans, and Parliament never debated the fundamentals of the strategy.

Mr. Aage Owe, CEO of ÅSV never wavered on strategy. In 1960 he was summoned to the Minister of Industry for discussing problems of the state-owned munitions producer Raufoss Ammunisjonsfabrikk facing less military demand.<sup>22</sup> A possible solution for Raufoss was to expand its small activity in aluminium fabricating, targeting civilian demand. Fabricating in this case obviously was conceived primarily as a means of securing employment at Raufoss, something which could easily be labelled a national task. For this to be viable, Raufoss needed to buy aluminium below world prices. Owe was very unwilling to commit ÅSV to such a policy though, stating that selling below world prices would be frowned upon within the industry, signalling that there existed some sort of informal agreements among primary producers. If a situation arose where every fabricator was backed by a primary producer, one would effectively undermine real ingot-prices, Owe stated. This would least of all be to the benefit of Norway, being a major producer of primary metal, now aiming to expand even further. The cautious Owe thus was very much entrenched in ingot's primacy. In this he actually was in line with the fundamentals of Norwegian official policy, although politicians sometimes could be tempted to stray away from the straight and narrow, as they did in the Raufoss case.

### **Ingot's Primacy: Targeting Independent Fabricators, Expansion Scheme and Problems Inherent**

The success of ÅSV in this period to some degree was dependant on a peculiarity of the aluminium industry.<sup>23</sup> The large aluminium companies of North America

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22 Aage Owe's note "Produksjon av aluminium og halvfabrikata/Møte hos statsråd Holler 16.11.60", 17.11.60, NHHA, ÅSVTLA, box 2278, file GD ekspansjonsplaner 1960.

23 This outline of the development of the aluminium industry draws heavily on Jan Reimers: "Undersøkelse av norsk aluminiumvalsverk", dated 8.5.1963: 34–41, Commissioned study, RA, arkiv 3797, Industridepartementens arkiv (IA) [Archives of the Department of Industry], series Dda-VI, Box 23.

and Europe had always been vertically integrated, controlling the chain of value from bauxite to semi-fabricated products. However, in Europe there traditionally had existed a large independent fabricating sector as well, comprising a number of small and medium sized rolling mills. We will use the development in rolling to illustrate the general point of vertical integration in the aluminium industry.

In the late 1950s, independent fabricators still accounted for a large proportion of rolled aluminium products. Compared to the USA, it was easier for independent fabricators to compete because the European aluminium market was still based on narrow widths and small unit weights. In such a market independent companies could build suitable plants with their limited financial means. These independent fabricators were the customer basis targeted by ÅSV. This strategy was another reason for ÅSV to refrain from going into fabricating. If it aimed for fabricating, it would be competing with its own customer base. The fact that ÅSV exclusively was a producer of primary metal was one of the reasons ÅSV had succeeded in targeting the independents.

In the second half of the 1950s, however, the strategy of targeting independents faced a danger. In the US, the first high capacity aluminium hot mill was established before World War II. During the war several such mills were established, and after 1945 all major American aluminium companies had acquired such mills. In Europe two such mills were built after 1945; one by Alcan in Rogerstone, Great Britain, one by the French state in Issoire, France. At the time of construction, the European aluminium market had not yet grown to a size justifying these mills. Therefore, these mills operated far below capacity in the 1950s, and the smaller independent mills continued for some time to be competitive.

1957 proved to be a turning point for the aluminium industry in the Western world. Production now exceeded demand, and the Treaty of Rome establishing the EEC was signed.<sup>24</sup> Though unrelated in their origin, these two facts posed a threat to ÅSV. Larger units of production now became economically attractive due to the growth in European consumption and the future possibilities of a European common market. Labour shortage and increasing labour costs made costly high capacity equipment attractive. Demand lagged capacity especially in North America, so European exporters faced tougher competition. American companies now wished to control European rolling mills to find outlets for American surplus metal, and to participate in the growth possibilities of the EEC. Faced with the aggressive policy of the North American companies, the European aluminium

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24 I refer to the EEC in the period preceding the 1965 Merger Treaty, which came into effect in 1967. From then on, I refer to the EC until the term EU was adopted in 1993.

industry took measures to defend their independence and improve their competitive position by mergers. In the face of these trends, it would become increasingly difficult for ÅSV to market large tonnages of primary aluminium in Europe. This seems to have worried ÅSV to a far greater extent than it worried Norwegian politicians.

Norwegian politicians only gradually came to embrace the strategy of expanding in aluminium in the late 1940s. By 1960 all caution was long gone, and Norway embarked on an ambitious expansion programme. Anybody doubting the future of aluminium could consult Erik Brofoss, an aluminium infidel now very much reformed. Speaking from his position at the helm of the central bank of Norway he saw no problem. Any preferential trade agreement in Europe would be of no consequence, as there simply was no possibility of the states in question becoming self-supplied in aluminium. The limiting factor facing Norway was access to capital, not access to markets, Brofoss stated.<sup>25</sup> The Ministry of Industry followed suit. By the summer of 1960 the permanent Secretary of Industry proposed a scheme for expanding Norwegian primary capacity by some 5–600 000 tpy to 7–800 000 tpy within 10 years.<sup>26</sup> Kjell Holler, the Minister of Industry, commented that attracting foreign capital for developing Norway's economy was a high priority. Projects in aluminium would be among the easier to implement, thus one should begin in this sector.<sup>27</sup>

The appetite for expansion was greater among the politicians and bureaucrats than with Mr. Owe. He cautioned that presently there was a large excess capacity as the North Americans penetrated the European market, giving momentum to the persistent tendency of vertical integration, undermining ÅSV's strategy of targeting independents. Thus there was a considerable risk in establishing several new communities of some 8 – 10 000 people around new smelters, and the prudent approach would be a slower expansion, preferably under the auspices of ÅSV. The politicians would have none of it. The Minister of Trade said it was important to join the expansion while there still was time. The Minister of Industry seconded, expressing fears that nuclear energy in a not too distant future would diminish the value of Norwegian hydro power. Mr. Trygve Lie, member of Cabinet assigned to

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25 Erik Brofoss, *Planene for økonomisk integrasjon i Europa. Fire forelesninger ved Norges Tekniske Høgskole, Januar 1958* (Trondheim: Arbeidernes Opplysningsforbund, 1958), 72, 80.

26 Permanent Secretary Skjerdal's note, "Langtidsprogram for utbygging av vår aluminiumindustri", [13.6.60], NHHA, ÅSVTLA, box 2278, file GD ekspansjonsplaner 1960.

27 Note, "Den videre utbygging av vår aluminiumindustri. Referat fra et diskusjonsmøte på Hotell Viking 2. september 1960", 10.9.60, NHHA, ÅSVTLA, box 2278, file Ekspansjonsplaner Harvey Aluminium 1961.

attract foreign investments, warned that in a few years all turmoil in Africa might be over, thus making this continent a competitor for Norway.<sup>28</sup> There would be no halting of this expansion plan, which did nothing to end the period of ingot's primacy.

Owe's cautious approach seems to have annoyed expansionist Kjell Holler. Mr. Holler asked Owe to name his chosen venue for setting up a third plant, and the Minister should set it aside immediately.<sup>29</sup> With Owe dragging his feet, Mr. Holler told him to stop worrying about the market and get on with it. Owe on the other hand was loath to install capacity which might face periods of standstill. In Norway one could hardly imagine firing a large proportion of the workforce the moment market considerations suggested it. This was even less likely for the state-owned ÅSV, the pride of the Labour government. Mr. Holler wanted expansion and foreign currency for Norway. ÅSV was a tool in achieving this. Mr. Owe, being the custodian of the tool, always saw defending the integrity of the tool as his chief mission. Owe won this battle as well. The Minister of Industry never exploited his powers of ownership to instruct Owe to set up the third smelter.

### **Joining up with Harvey in Fabricating for Europe?**

The problem of the vanishing independent fabricators was a recurrent theme in Owe's discussions with Holler. How was ÅSV to respond? The choice seemed to be between forming an alliance with existing fabricators and taking up fabricating for itself. Categorically Owe stated that until now the latter had been impossible due to prohibitive tariff walls against Norwegian fabricated goods.<sup>30</sup> This suggests that even if ÅSV had been asked to embark on fabricating during the 1950s, access to markets would have been a major obstacle. If Norway became a member of a common European market, Owe now said, one might start to think about fabricating in Norway.

Indeed, fabricating in Norway was a topic of interest for politicians, although exploiting the benefits of cheap hydro power while there still was time always remained the primary interest. A government white paper on the expansion of energy intensive industry in 1962 discussed the issue of fabricating. The Ministry

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28 Ibid..

29 Aage Owe's note "Produksjon av aluminium og halvfabrikata/Møte hos statsråd Holler 16.11.60", 17.11.60, NHHA, ÅSVTLA, box 2278, file GD ekspansjonsplaner 1960.

30 Aage Owe's note "Verkets ekspansjonsplaner/Konferanse hos statsråd Holler 25. august 1961", 1.9.61, NHHA, ÅSVTLA, box 2278, file GD ekspansjonsplaner 1961.

of Industry was very much aware of the fact that Norway faced no comparative advantage in fabricating. If Norway was to succeed in fabricating, one would have to depend on cooperating with foreign companies already being in the business. As there were companies, obviously American, wanting to get into the market of Western Europe, the Ministry saw an opportunity.<sup>31</sup> Negotiations along these lines actually were proceeding as the white paper was being written.

In January 1961 US aluminium company Harvey Aluminium had contacted Mr. Trygve Lie asking to buy ÅSV. While this was impossible, Mr. Lie encouraged a partnership of the two companies.<sup>32</sup> Harvey at the time already had been in contact with ÅSV for some years, and now a year and a half of intense negotiations followed. Harvey had ambitions of getting into the European market, and was interested in smelting as well as in fabricating in Norway. Referring to the process of integration within the aluminium industry, Mr. Lawrence Harvey found integration into fabricating a necessity for success. The fabricating scheme was what made Harvey's plans especially interesting to Norwegian politicians.<sup>33</sup> A project dated January 1962 comprised a wire and cable mill, an extrusion plant and a continuous sheet mill with a combined capacity of some 51 000 tpy. The Norwegian state, or ÅSV, was invited to participate with a 51% share in the undertaking.

At this stage, the project was known under the apt name ALAS. Alas, Mr. Owe of ÅSV in April 1962 found the whole scheme unacceptable, as it gave ALAS too strong position towards ÅSV. In the Ministry of Industry someone now made comments in the margins of Owe's letter, suggesting that these problems should not be allowed to derail the process.<sup>34</sup> During the summer of 1962, Harvey returned to Norway with a project called Haralco, which ÅSV was supposed to furnish with molten primary aluminium metal, quantities reaching 45 000 tpy by five years. Mr. Trygve Lie sent the draft to Mr. Brofoss, stating that it was an interesting scheme, if only Owe could prove to be more amenable than before. Brofoss looked at the draft, and returned it with a hope that it would become reality.<sup>35</sup> The politicians and bureaucrats hoped, but there was no talk of instructing Owe to accept Harvey's invitations.

In dealing with Norwegian politicians Harvey expressed ideas of even further expansion in fabricating, reaching 100 000 tpy by 1971. This tonnage was first

31 St. meld. nr. 6 (1962–63), 61–65, in SF.

32 Note, "Møte hos generaldirektør Rolf Østbye, Norsk Hydro, den 10. juni 1963", 11.6.63, RA, ID, Series Dda – VI, box 233.

33 Note, "Møte med Mr. Lawrence A. Harvey og representanter for Olsen & Ugelstad den 23. august 1961", 26.8.61, RA, ID, Series Dcb-V-2, box 19.

34 Letter, Owe to the Ministry of Industry, 24.4.62 RA, ID, Series Dda – VI, box 233.

35 Agreement, Draft No.3. 8/7/62, RA, ID, Series Dcb-V-2, box 19.

and foremost thought to be marketed in Europe. Harvey stressed the urgency, as Alcoa, Reynolds, Kaiser and Alcan all had been active in acquiring independent fabricators in Europe. Harvey's aim was to take on this competition in the European market, and needed to move swiftly. Owe wanted more time, especially for completing ÅSV's studies of setting up fabricating itself. The negotiations ended with Harvey and Mr. Lie being disappointed in Mr. Owe, although Owe and ÅSV never said formally no to Harvey's projects.<sup>36</sup>

Mr. Lie soon found someone willing to do what Owe was loath to. In conversations with representatives for the Norwegian company Norsk Hydro, Mr. Lie in a supposed slip of the tongue mentioned that Harvey was interested in moving into Norway.<sup>37</sup> Under the government expansion scheme of 1960 Hydro, much to Mr. Owe's irritation had been invited to move into aluminium. In the aftermath of World War II the German shares in Norsk Hydro had been confiscated by the Norwegian state, making the state the largest owner. Mr. Owe never saw the need for this state-owned company to take up the competition with his own state-owned aluminium company. In the period of rapid expansion, Norwegian politicians obviously thought differently. By August 1962 Hydro's negotiations with French aluminium company Pechiney and Swiss AIAG had run aground, and Mr. Lie's remarks set Hydro on a new course. Parallel with the ÅSV-negotiations, Harvey now negotiated with Hydro, countersigning an agreement by 14<sup>th</sup> December 1962. The resultant joint venture termed Alnor comprised a smelter with capacity of some 90 000 tpy, and fabricating facilities along the lines of ALAS. By 1972 Alnor had reached a capacity of 120 000 tpy in primary metal and 48 000 tpy of semi-fabricated products.<sup>38</sup> The result thus was far off the 100 000 tpy Harvey had indicated in 1962, but of course, the expected Norwegian membership in a European common market never materialized. Establishing EFTA catered for a market for Alnor's semi-fabricated products in the UK, but this was not sufficient for marketing really large tonnages.

Really large scale fabricating in Norway always depended on Norway entering the EEC. Let us illustrate. The Ministry of Industry in 1962 commissioned a study on the possibility of setting up a large rolling mill in Norway, with a capacity of at least 80 000 and maximum 200 000 tpy.<sup>39</sup> This was quite another scale than the

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36 Note, "Drøftinger med representanter for Harvey Aluminium i tiden 10. til 21. august 1962", 30.8.62, RA, ID, Series Dcb-V-2, box 19.

37 Note, "Alnor/Konferanse med direktør Holte, 2.9.63", NHHA, ÅSVTLA, box 2278, file Ekspansjonsplaner Harvey Aluminium 1963.

38 Appendix to special annex no 2, St. prp. 126 (1972–73), in SF.

39 Reimers *op. cit*

existent rolling mill of NAI, now about to be expanded to 24 000 tpy. The latter served the domestic demand and exported a minor part of the production, mainly to the Scandinavian neighbours where Norway faced no tariffs. The idea of the possible new mill was to target European export-markets. The report explicitly stated that such a mill had little to recommend for itself if viewed isolated from the larger context of securing the capital invested in Norwegian aluminium industry. Especially, it was hoped to secure ÅSV's position, as all other aluminium industry in Norway already was tied to large foreign companies, securing sales of metal produced. An absolute condition for this project was Norwegian membership in the EEC, as the expected EEC external tariff on rolled products was a prohibitive 15%. Of course, neither Norwegian membership nor the large rolling mill materialized. As Mr. Owe's condition for embarking on large scale fabricating was not met, ÅSV turned its attention towards alternative strategies.

### **Joining up with Alcan for a Balanced Expansion**

The attitude towards foreign involvement in Norwegian aluminium industry obviously had changed since Alcan was found to be indigestible in 1949. Signs suggest the change occurred only a few years after 1949. By 1953 the Norwegian company Elkem was allowed, indeed invited, to establish a joint venture with Swiss company AIAG for setting up a smelter in Mosjøen in the north of Norway.<sup>40</sup> To reigning Labour, the dual point of this undertaking was to develop Northern Norway and create export revenue. Initially Elkem as well as the politicians imagined establishing a ferro-alloy plant. Only gradually did Elkem decide on aluminium, and to Labour one metal was as good as the next, as long it would fetch export revenue. Although very familiar with important parts of technology for making aluminium, Elkem preferred a joint venture with a foreign, experienced partner. By the early 1950s this no longer was frowned upon by the government. In the documents of the 1960s, joining up with foreign partners is rather seen as an advantage, even a prerequisite.

In light of this, new possibilities opened up for ÅSV. Early in the summer of 1963 Mr. Owe travelled through USA and Canada, meeting with all major aluminium companies.<sup>41</sup> Particularly interesting is his talks with Alcan. Before this,

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40 On Elkem's decision to move into aluminium: Knut Sogner, *Skaperkraft. Elkem gjennom 100 år* (Oslo: Messel Forlag, 2003), 142–146.

41 Aage Owe's note "Reise til Canada og USA mai/juni 1963", NHHA, ÅSVTLA, box 2278, file Ekspansjonsplaner Harvey Aluminium 1961.

Alcan's representatives in Europe had aired ideas of cooperation, which now again were considered. Alcan preferred a complete merger of the two companies in some form, but was open to other possibilities as well. Owe commented that even three years earlier such a scheme would have been unthinkable, but now the official stand on foreign involvement had changed radically. The notion could not be dismissed out of hand, but would certainly need much work before one could reach an agreement. At the time this was only one of a substantial number of partners and solutions considered by ÅSV, but this was the one that finally came about.

Although ÅSV hesitated in setting up the third smelter, it was interested in expanding its capacity for primary metal. After all, this was what the Ministry of industry wanted from ÅSV. In March 1965 ÅSV informed the Ministry of its plans to expand the works at Sunndalsøra by 45 000 tpy, reaching 100 000 tpy.<sup>42</sup> Alumina would be supplied on barter, and the company said that, thanks to its established relations with independent fabricators and its competitiveness, it was not worried for marketing the increased tonnages for sale. The ministry commented by pointing to the increased revenue in foreign currency from the expansion, and noted that the expansion did not require allocating funds in government budgets. Neither party thus referred to the structural problems of the industry, of which both parties obviously were very much aware. Probably both parties saw no advantage in communicating this to Parliament, thus falling back on the entrenched logic of ingot's primacy. Members of Parliament certainly were taken aback when the idea of letting Alcan buy 50% of the shares of ÅSV was sprung on them in 1966, as there had been no mentioning of problems a year earlier. The main point of the deal was making ÅSV Alcan's main supplier of ingots in Europe.<sup>43</sup> Structurally the deal was very sound. ÅSV would be guaranteed sales of its ingots without having to invest heavily in fabricating with marginal profits; Alcan liberated primary capacity in Canada from supplying its fabricators in Europe.

It would be wrong to look at the ÅSV-Alcan deal as any serious readjusting of strategies. The deal was made after Mr. Jean Michelet had become CEO of ÅSV, but Mr. Owe, now a consultant for the company, publicly defended the deal and gave its approval.<sup>44</sup> The deal was the making of ÅSV with the Ministry primarily responding to company action. But, as mentioned above, the deal did not materialize from thin air in 1966. Furthermore, the logic of the deal conformed to the policy underlying ÅSV's strategies since the very beginning and to the policies of

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42 On the expansion of 1965: St. prp. nr. 116 (1964–65), in SF.

43 On the deal of 1966: St. prp. nr. 45 (1966–67), in SF.

44 *Verdens Gang*, 23.12.1966.

Labour since the readjustment of the late 1940s. Labour giving way to a centre-right coalition in 1965 should not be attributed much explanatory power in this respect. In Parliament only three votes were cast against the deal, with Labour accepting the logic of it.

One easily gets the impression that ÅSV by joining up with Alcan abandoned any aspiration of becoming a fabricator in its own right. Actually the opposite was the case. The question of fabricating now had occupied ÅSV for quite some years, but there were always major obstacles for embarking on this. ÅSV had no experience in fabricating, which in itself was a problem. Domestic demand was already met by NAI. Large scale fabricating in Norway targeting export was unthinkable as Norway was not an EEC-member. Commercially, a better solution would be to take up fabricating within the markets. However, diverting capital from domestic investment to investment abroad was hardly a strategy a currency-earner as ÅSV should adopt.

By the Alcan-deal ÅSV found an entry to fabricating, as Alcan's subsidiary NACO/NAI was thrown into the bargain. NACO's modest smelter at Høyanger with a capacity of 24 000 tpy was hardly what attracted ÅSV, but NAI's fabricating activities did. By acquiring NAI, ÅSV got hold of competence, the lion's share of the domestic market and a market share in Scandinavia. From this, it was hoped to develop fabricating activities in Norway when business merit warranted it, targeting domestic as well as foreign markets. Communicating ÅSV's long-term plan to the Ministry of industry in 1967, ÅSV pointed out that this would be a gradual process.<sup>45</sup> It seems as if the ÅSV-idea indeed was to develop fabricating, but not to make itself *dependent* on this. With Alcan owning 50% of the shares, ÅSV was secured alumina and market, thus moving cautiously into fabricating and substantially expanding in melting posed no major risk. In closing the letter to the Ministry, ÅSV asked for more energy. Unfortunately for ÅSV, energy now was about to be ascribed a new value. The days of frantic expansion for exploiting Norwegian hydro power while there was still time, were ending.

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45 Letter from ÅSV to the Ministry of Industry 15.9.67, reproduced by Sverre Nafstad: *Årdal og Sunndal verk a.s i årene 1965–1979*: 101ff (Upublisert manuskript [unpublished manuscript], NHHA, ÅSVTLA, box 2250)

## The Period of Consolidation: Energy Becoming a Scarcity

The 1970s saw a complete reversal of ÅSV strategies. This reversal was hardly justified by business merit, and must predominantly be attributed to changes in the political climate in Norway. It was a change due to the realisation of the fact that energy was a scarce resource, an upsurge in nationalism and a revival in the faith of government planning and control of industry.

The perception of energy, its value and the wisdom of using it for making primary aluminium changed gradually. In the government's Long Term Programme for the period 1970–73, one maintained that Norway still possessed a considerable undeveloped potential for hydro power. This should be the basis for further expansion in aluminium.<sup>46</sup> When discussing Norway's energy supply situation two years later, the Minister of Industry commented on a new situation.<sup>47</sup> Referring to the 1950s, he said that at the time Norway faced no option. The primacy of ingot outlined above was indeed the only alternative, and a sound approach. Today, he continued, Norway faced a situation where three questions were pressing. How much of the remaining potential should be developed? What was the right speed of development? How should the increase in supply be used, and to what extent should energy intensive industry be expanded? The industry had signalled plans demanding a 100% increase in energy supply by 1980. There was no way of finding room for this, and the minister was rather worried. Nevertheless, he urged a balanced development, allocating some new power to aluminium, although not fulfilling all wishes. He stated that strengthening primary production would also provide the best basis for expanding in fabricating.

Still two years later, the Long Term Programme for the period 1974–77 signalled yet another step away from the policies of the past.<sup>48</sup> There seemed to be very little opening for allocating more power to aluminium in years to come. The natural and sensible approach was said to be aloof in expanding primary capacity. Capacity should only be increased by making existent plants more efficient. On the other hand, one would continue to work for further fabricating in Norway. From one perspective, this makes sense. Fabricating did not demand much energy. Fabricating created value added. Fabricating was labour intensive, thus creating alternative jobs for jobs lost in rationalising melting. One problem remained though; who would buy fabricated products from Norway?

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46 St. meld. nr. 55 (1968–69), 162f, in SF.

47 St. tid (1970–71), 2892f, in SF.

48 St. meld. nr. 71 (1972–73), 98, in SF.

## Fabricating for the EC Market?

Norwegian aluminium industry always favoured Norwegian membership in the EC. The major problem was not really exporting primary metal to the EC. To a certain extent Brofoss was right in stating that the EC would retain a structural deficit. Although capacity within EC probably grew more than he anticipated, demand grew more as well. The tariff wall of EC was not prohibitive for primary metal. In addition, EC operated a duty free quota securing the fabricating industry especially in FRG sufficient supplies. ÅSV was one of the chief beneficiaries from these quotas.

Fabricating was quite another matter, with excess capacity within EC. Thus the EC operated a 12% tariff which indeed proved prohibitive for Norwegian export. Comparing Norwegian exports of semi-fabricated aluminium from 1960 to 1971 proves the point.

**Table 71 Norwegian production and exports of aluminium semi-fabricated products in 000 tons<sup>49</sup>**

	1960	1965	1968	1969	1970	1971
EC (the 6)	0,3	0,4	0,5	0,7	1,3	2,0
United Kingdom	-	0,5	2,9	9,2	16,6	18,8
Denmark	1,8	1,4	1,7	3,3	3,3	3,3
Ireland	-	-	-	-	-	0,1
Sweden	1,4	1,4	3,2	8,1	7,4	7,2
Other countries	1,6	1,0	3,8	4,1	5,1	5,2
Norwegian production in total	18,5	24,0	43,9	60,4	73,9	75,2

The significance of EFTA is rather obvious, as Norway's export to the UK increased dramatically in the latter part of the 1960s. The UK had operated a prohibitive tariff on fabricated products. Actually, creating a market in the UK was the major effect of EFTA in this respect, as Norway already could export duty free to her Scandinavian neighbours before EFTA. Equally obvious is the effect of the EEC, or rather the non-effect as the only consequence of EEC was to substitute the various existing tariffs for one common prohibitive tariff. This alone should serve to explain why Norwegian aluminium industry favoured membership.

<sup>49</sup> Source: Jean Michelet's note "Some key facts about the Norwegian aluminium industry", 1.12.72, NHHA, ÅSVTLA, box 2279, file Samarbeide ÅSV-Alcan 1972

Of course, this and all other arguments failed to convince a majority in the Norwegian referendum of September 1972, and Norway remained a non-member. In the aftermath Norway negotiated a scheme towards duty-free trade with the EC in products of industry. Obviously responding to calls from EC industry, EC made aluminium a “sensitive commodity”. This warranted a seven year transition period rather than the normal four and a half. Tariffs during this transition period are displayed in table 7.2. In addition to this, the EC fixed a ceiling for imports from Norway, displayed in table 7.3. Furthermore, aluminium would be a closely monitored item, with a possibility for EC to adopt policies to correct any adverse effects import would have on EC industry.

**Table 7.2 Tariff schedule for semi-fabricated aluminium, 1973 trade agreement between Norway and EC. ad valorem<sup>50</sup>**

1973	1974	1975	1976	1977	1978	1979	1980
11.4%	10.8%	10.2%	9.0%	7.2%	3.0%	2.7%	0

**Table 7.3 EC import ceilings for semi-fabricated aluminium, tons, 1973 trade agreement between Norway and EC<sup>51</sup>**

	1973	1974	1975	1976	1977	1978	1979
Cable/extrusions	12 000	12 600	13 200	13 900	14 600	15 300	16 100
Rolled products	18 000	18 900	19 800	20 800	21 900	23 000	24 100

In practice, this barred Norway from marketing large scale tonnages until 1980. The aluminium industry of Norway was highly frustrated by these provisions of the 1973 agreement. Heeding government policy signals and expecting a further liberalisation of trade, the industry had planned an increase in capacity for semi-fabricated aluminium. By 1973 the industry had planned for a capacity of 150 000 tpy by 1980, 95 000 of which was to be exported.<sup>52</sup>

<sup>50</sup> Source: St. prp 126 (1972–73): 17, in SF.

<sup>51</sup> Source: Special annex no 2 to St. prp 126 (1972–73): 19

<sup>52</sup> Statement from Norwegian aluminium industry, reproduced in special annex 2 to St. prp. nr. 126 (1972–73), 18.

## The New Policies of Labour

The elections for Parliament in 1973 brought about major changes. Labour faced its worst result since the inter-war period, and had to deal with a vastly increased left-wing party harnessing political energy broken free in the rather fierce debate on Norway's potential membership in the EC a year earlier. Labour returned to government, but with no majority in Parliament. Facing the left-wingers, Labour moved to the left to stop the leakage of voters. Integrated in this turn to the left was a new policy of industry. Government and Parliament was to have a deciding influence on the development of industry. The fundamentals of this policy were financial strength from Norway's petroleum activities, combined with various means of direct government control of industry.<sup>53</sup>

The first major task taken up by the incoming Minister of Industry, Mr. Ulveseth, was to undo the 1966 ÅSV-Alcan deal.<sup>54</sup> Alcan proved to be a very unwilling seller, and the Kingdom of Norway ended up paying very good money for 50% of Alcan's ÅSV-shares. Now, there is no question that there had been differences of opinion within the ÅSV board since the deal took effect in 1967. However, as late as November 1973 the Norwegian and the Canadian members had agreed on the fundamentals of further cooperation, based on the balanced approach outlined above.<sup>55</sup> This did not suffice for Mr. Ulveseth. The crux of the matter was that he needed more room of manoeuvre for exploiting ÅSV as a political tool. In the 1966 deal, Alcan's board members were given a de facto right to veto any substantial investment. This right to veto was what Labour bought in 1974. This point was explicitly made by Labour's spokesman for the case in the debate in Parliament.<sup>56</sup> Of course, the logic of 1966 was to expand where and when business merit warranted it. At the time, this posed no problem. In the 1970s, it did.

Ulveseth's white paper on the future of Norway's industry strongly underlined that industry had to be of benefit to society, and maintained that all industry not necessarily would have to be profitable in its own right.<sup>57</sup> Although such considerations were supposed to be applicable for limited periods only, the underlying logic was clearly different from profit seeking private enterprise. Acquiring national control of ÅSV obviously was a major piece in the apparatus for imple-

53 St. meld. nr. 67 (1974–75), 14, in SF.

54 Odd Gøthe: *Ærlig talt! Om industriskandaler, statsråder og annet* (Oslo: Tiden, 1988), 107; St. prp. 17 (1974–75).

55 See document with title "ÅSV-gruppens målsetninger", reproduced in Nafstad *Årdal og Sunndal verk a.s i årene 1965–1979*, 239–242.

56 St.tid. 1974: 2080, in SF.

57 St. meld. nr. 67 (1974–75): 6, 38

menting this new policy. The logic of the bill enabling the acquisition of the ÅSV-shares and the white paper on the future of Norway's industry fit perfectly to each other. Labour's attitude towards ÅSV was now very different from that in Owe's period. In 1966, Owe had given a public lecture, where he had commented on being CEO of a state-owned company. He stated that it had been an absolute condition from the outset that the company was to be led according to business merit. Indeed, this was the only option for a company which sold 95% of its production on the world market, Owe maintained. Thus Owe concluded that he had experienced fewer grievances with his shareholders than most CEOs in private companies.<sup>58</sup> Those days were over, for a while.

In the 1970s, ÅSV clearly was given new guidelines. The aluminium industry would get additional energy only for rationalisation of existent plants. As rationalisation would reduce employment, expanding in fabricating was meant to create alternative employment. Policy towards aluminium was swung back to the ideas of 1946–48. Ulveseth now wanted to wrestle the Norwegian aluminium industry out of the hands of the major internationals. The barter-agreements of alumina for metal came under fire. They had been working well, Ulveseth admitted, but he wanted them undone. This would leave more metal for fabricating and marketing in the hands of Norwegians.<sup>59</sup>

The Ministry of Industry was clearly dissatisfied with ÅSV's performance in fabricating, underlining that an expansion in this had been a condition for the 1966 deal. ÅSV's fabricating activities were still modest with 55 000 tpy, one claimed in 1974.<sup>60</sup> Compared to primary production of 300 000 tpy this obviously was modest, but compared to the non-existence of ÅSV fabricating before 1966 this verdict is rather harsh. Now the Ministry wanted to expand substantially in fabricating, and pointed out that really large tonnages could be processed by a modern hot rolling mill.<sup>61</sup> This was another attempt at the scheme of 1962–63, but the basic obstacles were the same. In the white paper, market considerations for such a scheme were rather sanguine. Regarding access to EC markets, the Ministry referred to the considerations of the 1972 white paper suggesting Norwegian membership in the EC.<sup>62</sup> Although aware of the facts that membership was off and aluminium being a sensitive commodity, the Ministry failed to discuss the fundamental problems of the proposed strategy which is outlined above.

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58 Aage Owe, *En industribedrift blir til* (Bergen: 1966), 11.

59 St. meld. nr. 67 (1974–75): 105

60 St. prp. nr. 17 (1974–75): 10f, in SF.

61 St. meld. nr. 67 (1974–75), 106.

62 St. meld. nr. 67 (1974–75), 50.

Such a modern hot mill would preferably be operated in cooperation between several Norwegian aluminium companies, the Ministry stated, signalling ambitions of placing ÅSV and Norsk Hydro under joint, tighter government control. Neither ÅSV nor Hydro cared much for such a scheme. ÅSV least of all wanted Hydro to take charge in Norwegian aluminium, as Hydro's aluminium activities for a long time had remained a nuisance to ÅSV and its partner Alcan. Although poor in financial results, Hydro's fabricating in Norway won the company a good standing with Norwegian politicians, especially as the period of ingot's primacy was coming to an end. This was a source of frustration within ÅSV/Alcan. In 1971 Alcan believed an educational campaign was needed for setting the record straight in the state-Hydro relationship, as both the public and the government were deluded. Alcan at the time calculated that Alnor's return on investment was 3.5%, while the corresponding figure for ÅSV was 12%. On a possible cooperation between ÅSV and Alnor, the Alcan conclusion on the latter ran as follows: "Their record is sad. Future not sound. They are on the wrong course. Have nothing positive to bring into a corporation."<sup>63</sup>

The Ministry of Industry definitely thought differently. In 1975 the possibilities of closer integration of the state-owned aluminium activities of ÅSV and Hydro were an integral part of the new industrial regime. The Ministry wrote approvingly that Hydro right from the start had pushed hard for fabricating; now 50% of Hydro's primary aluminium was processed at plants in Norway. Of the remainder, one half was processed at Hydro's plants abroad.<sup>64</sup> The Ministry wisely said nothing about the profitability of Hydro's fabricating activities. The profitability in aluminium was no immediate problem for Hydro, as the company gained riches from its North Sea activities, really kicking in from 1977. Probably Hydro could have digested ÅSV from a business point of view. However, the plans implied more direct government intervention, which was repugnant to the company. The management of Norsk Hydro successfully mobilized its traditions of private enterprise, political support from the Conservatives and trade unions within the company. In the face of this opposition, the designs on directly controlling Norsk Hydro were shelved.<sup>65</sup>

Thus no cooperation between the two Norwegian companies materialized, and ÅSV in the 1970s was left to fend for its own. Heeding policy signals it was

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63 Note, "Møter i Montreal 21. og 22.4.1971", 29.4.71, NHHA, ÅSVTLA, box 2279, file Samarbeid ÅSV-Alcan 1971.

64 St. meld. nr. 67 (1974–75), 108.

65 Einar Lie, *Oljerikdommer og internasjonal ekspansjon. Hydro 1977–2005* (Oslo: Pax, 2005), 37–43.

supposed to diversify, and to integrate upstream as well as downstream at the same time. Unfortunately, the timing for embarking on this could hardly have been worse. Commenting on the year 1975, ÅSV stated that it had been the worst year of the aluminium industry since 1945. The general recession in the Western world had prompted a 22% decrease in aluminium consumption compared to 1974.<sup>66</sup> To make things worse, ÅSV no longer had the same secure position as it had a few years before this. 1971 had been a year of slow markets as well. ÅSV at the time had stated that the partnership with Alcan had cushioned the impact of the downturn.<sup>67</sup> In 1975 ÅSV found itself in the unfamiliar position of losing money for the first time since the company was established.

## The Road to Bankruptcy

Terminating the Alcan-deal seems to have been contrary to the wishes of the ÅSV top-management. CEO Jean Michelet found this to be an unwise decision.<sup>68</sup> Unfortunately, no in-depth analyses of the governance of ÅSV after 1974 exist thus far. What we do know, however, is that the Norwegian-Alcan relationship deteriorated in the wake of the 1974 deal which left Alcan a minority partner in ÅSV. In the fall of 1978 two representatives of Alcan demanded a meeting with Mr. Haukvik, Minister of Industry. They had a long list of grievances.<sup>69</sup>

Alcan believed ÅSV should remain an aluminium company, and should divest itself of its non-aluminium commitments, allowing management to concentrate on its main business and conserving cash for operations. Mr. Andersen, the senior civil servant preparing the Minister for the meeting, stated that ÅSV opting out of Saga Petrokjemi (a company processing petroleum, which was Alcan's primary target) would be sending a wrong signal to Norwegian industry. In aluminium, Alcan stated that "fabricating operations continue to be a drain on the Company's resources. Most are losing money in 1978." Alcan proposed a review and a process of specialisation as the remedy. ÅSV in Alcan's view remained in dire need for labour rationalisation in smelting. However, the power costs in Norway were

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66 A/S Årdal og Sunndal Verk – beretning for 1975, annex 12 to St. meld. nr. 19 (1976–77), 66, in SF.

67 A/S Årdal og Sunndal Verk – beretning for 1971, annex 11 to St. meld. nr. 27 (1972–73), 56, in SF.

68 Peter Innvik and John Kamsvåg, *Verket. Sunndal Verks historie gjennom 40 år* (Sunndal: Hydro Aluminium, 1993), 209.

69 The Alcan position: Gerald Clark, "Review of A.S.V. Present and future situation, October 1978"; The Norwegian position: E. Andersen's note "Møte med Alcan 23. oktober kl. 0900", 19.10.78, Both in RA, ID, Series Dbf-IV-1, box 16, folder Alcan generelt.

competitive. Alcan thus urged for making the most of Norwegian comparative advantage. Mr. Anderson commented that questions of fabricating and smelting were old and recurrent issues, and that the political goal remained clear. It was the task of the ÅSV management to come up with fabricating which could show reasonable profits. The Norwegian political goals were firmly entrenched, creating increasing friction between the majority and the minority partner. Alcan concluded that ÅSV was too dependent on aluminium ingot prices increasing more rapidly than costs increase, and insufficiently on a cost-cutting program. The company was in a very unstable financial situation. Any adverse occurrence in 1978–81 would result in difficult financing circumstances, Alcan warned.

The final straw for Alcan turned out to be modernising the old smelter in Høyanger which ÅSV had taken over from the Alcan subsidiary NACO. In the Høyanger case what was at stake was not fabricating, but where to utilize the Norwegian comparative advantage in cheap hydro power. Rather than modernize at Høyanger, Alcan wanted to close down the old smelter and utilize the hydro power at another location. In Alcan's view, the Høyanger project lacked business merit, and was proposed mainly for social reasons; i.e. avoiding loss of jobs at Høyanger, a small place with few alternatives for employment. In responding to this, Mr. Andersen of the Ministry maintained that it should be well known that in Norway one viewed industry's responsibility towards society differently from in Canada. In this case the ÅSV board clearly let the national task of securing employment override business considerations; Mr. Andersen told his minister that the Norwegian members of the board shared Alcan's opinion of the business merit of the Høyanger project.<sup>70</sup> Alcan now decided to exercise its right to sell its remaining ÅSV-shares to the Kingdom of Norway. ÅSV was now once again completely on its own.

The Ministry sent very clear signals that ÅSV should develop fabricating. ÅSV duly committed, and it did not necessarily do so against its better wisdom. CEO Håkon Sandvold as late as 1980 spoke favourably on continuing to spend money on expanding in fabricating, although ÅSV at the time would have made more money as a primary producer only. At the time he stated that aluminium was an industry where Norway had a strong position, even internationally. This could cater for expansion in fabricating abroad as well, but this should start from a position of strength at home.<sup>71</sup>

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70 E. Andersen's note "Alcan-ÅSV", 18.12.78, RA, ID, Series Dbf-IV-1, box 16, folder Alcan general.

71 H. Sandvold's note Energi/Industri, 27.2.80 (reproduced in Sverre Nafstad: *Årdal og Sunndal Verk a.s. i årene 1980–1984*, 5–8 (Unpublished manuscript, NHHA, ÅSVTLA, box 2250).

The ambitions of 1980 were dashed by 1981 and 1982 being bad years of aluminium in the Western world. Consumption was down 6% from 1980 to 1981, and an additional 6% down the next year. Vertically integrated companies had proven to be less susceptible to the downturn, ÅSV stated. Being among the largest exporters of primary metal in the world, the company had been especially hard hit.<sup>72</sup> The production figures show that that the fabricating strategy since 1974 had been an utter failure. In 1982 primary production was 310 300 tons, with 65 600 being processed to semi-fabricated products in ÅSV-subidiaries. In 1974, the year when Mr. Ulveseth bought Alcan's right to veto, the figures were 307 200 tons of primary metal and 50 000 tons of semi-fabricated products. Thus, the percentage of ÅSV fabricating had increased from 16 to 21%. Considering that this came about simultaneously as ÅSV was supposed to scale down its guaranteed metal sales to Alcan, this hardly placed ÅSV on firmer ground for meeting the recession of the early 1980s.

Though it is possible the Ministry, the ÅSV board and CEO Sandvold were aligned on the fabricating strategy in 1980, Sandvold was in no doubt about the wisdom of this strategy in 1982. Arguing for being exempt fee on electricity he delivered a harsh verdict on state policy towards ÅSV since 1974. As the Alcan-deal was undone, ÅSV had to negotiate long-term contracts for alumina, which in 1982 resulted in building excess stocks at high costs. Furthermore, ÅSV now faced huge losses from fabricating, to a large degree built up to secure employment opportunities.<sup>73</sup> Refraining from getting into the blame game, we certainly can say his analysis was accurate.

In 1982 the share capital was lost, and ÅSV had to ask the Ministry to strengthen the company financially. 'Thus, the Alcan verdict of 1978 was proven right. In the years 1978–81 the revenue from the smelting activities subsidized the other activities of the company. Investments in fabricating and non-aluminium proved to be a steady drain on the company's financial resources. These activities created employment, but did nothing to secure the profits of the company. When even the smelting lost huge amounts of money in 1982 due to a global collapse in aluminium, the consequence was obvious. For all the fuss about fabricating, what mattered to ÅSV remained the price of ingots. In 1983, ÅSV again made money, and 1984 saw an all-time high in ÅSV-profits. Now the price of ingot served ÅSV well, but the underlying structural problems remained.

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72 Årdal og Sunndal Verk a.s. – beretning for 1982, Annex no 1 to St. meld. nr 31 (1983–84), 10.

73 Letter, ÅSV to the Ministry of Finances, 3.9.82 (reproduced in Nafstad: *Årdal og Sunndal Verk a.s. i årene 1980–1984*, 170).

## The Final Chapter: Consolidating by Integrating Abroad under Hydro Auspices

Labour surrendered power in 1981, and the Ministry of Industry in the 1980s favoured rather different solutions from those of the 1970s. In August 1984, the Minister commented on ÅSV's plans. Although 1983 had been a good year and 1984 was promising, structural changes in the international order of industry was a source for concern. The changes underlined the importance of ÅSV securing a position in fabricating within the EC, being the most important market for Norwegian aluminium industry. Securing such a position would require substantial capital. The Ministry was informed of informal contacts between ÅSV and Hydro during 1983, and encouraged some form of cooperation between the two.<sup>74</sup>

At this time, ÅSV and Hydro were in complete agreement on the future. Both companies found integrating into profitable fabricating in Europe a necessity. Such a scheme was not viable by building new capacity, which would be costly and create devastating competition. One should integrate by buying existent capacity. Both companies thought it would be able to achieve this on its own, but *Norwegian* control of the process of integration probably would be better served if the two cooperated.<sup>75</sup> How to organize such cooperation was more problematic. Nothing materialized in 1984.

At the end of the day, only one possibility was realistic. A main point was to integrate into fabricating, which needed substantial financial strength. Hydro's financial strength was always superior to ÅSV's, thus making Hydro the better tool for consolidating Norwegian aluminium. While the price of aluminium reached a level where ÅSV hardly made money by December 1985, Hydro was in a position to acquire substantial fabricating capacity within the EC. In 1984, Hydro had bought Alcoa's extrusion plant in Châteaoux, France. At roughly this time Alcan decided to pull out of extrusion in Europe. ÅSV was offered Alcan's plants, but was not ready to close the deal. Thus, the offer went to Hydro, who closed the deal during 1985–86. In one swift move, Hydro doubled its extrusion capacity, and became the largest producer of extrusions in Europe. By this point, the plans of integrating ÅSV and Hydro had run aground, and ÅSV was about to enter negotiations with German VAW. Faced with this possibility, Hydro finally turned around and went

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74 Letter, Minister of Industry Jan P. Syse to ÅSV 6.8.84, reproduced in Nafstad: *Årdal og Sunndal Verk a.s. i årene 1980–1984*, 191f.

75 Note, "Samarbeide ÅSV – Norsk Hydro", 3.9.84, reproduced in Nafstad: *Årdal og Sunndal Verk a.s. i årene 1980–1984*, 199f.

for a merger with ÅSV. With surprising speed, a merger was negotiated, and ÅSV was merged with Norsk Hydro's aluminium activities in 1986. This decision now was supported by all major Norwegian political parties.<sup>76</sup>

Interestingly, there was no mentioning of altering the governance of Hydro, which successfully had fought the designs of tighter government control in the 1970s. Thus ÅSV was integrated in Hydro without altering what had now become the well-entrenched "Hydro-model" of governance. By this, we mean that the Kingdom refrained from active involvement in the company's affairs, as long as the company complied with a set of rather vague expectations of building Norwegian competence and making sure a substantial part of the wealth acquired from Norwegian natural resources stayed in Norway. Compared to ÅSV, Hydro always remained greater autonomy towards the state. Equally interesting; it was not this model of governance which had saved Hydro's aluminium division in the years of crisis when ÅSV's share capital was lost. Indeed, the top management of Hydro in 1980–82 contemplated shutting down its aluminium division, or at least the fabricating at Karmøy which every year produced reliable deficits. In reality, what saved Hydro's aluminium division were the financial muscles the company's North Sea oil activities catered for, combined with a will to persevere. Thus, Hydro could weather the storm, and managed to turn its aluminium division to success when the global market turned to the better in 1983–84. By keeping up its aluminium activities, Hydro also scored valuable points within the political apparatus, which in turn strengthened the Hydro-model.

The merger with ÅSV transformed Hydro from being a rather insignificant entity to becoming a recognized player in international aluminium. The changing roles of Hydro and German VAW illustrate the point. In 1986, the much larger VAW was an alternative candidate for buying ÅSV. In 2001, Hydro bought VAW, placing Hydro among the three biggest integrated aluminium companies in the world. Hydro's development since the early 1980s has been a story of internationalisation. In the grand scheme of things, it is possible to view this as an ambitious way of consolidating Norwegian aluminium industry. One part of the dream of the 1970s came true. Norwegian aluminium industry was taken out of the hands of the foreign multinationals. The irony is that the industry was consolidated by a Norwegian multinational. In Hydro, the Norwegian comparative advantage in smelting was integrated in chains of production under Norwegian control. However, the investment policy of Hydro turned out to be based primarily on business merit, in the same manner as Alcan's had been earlier. Hydro participated in up-stream acti-

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76 On Hydro in this period: Lie, *Oljerikdommer*, 172–202.

vities where bauxite was to be found and fabricating primarily where markets were to be found. Neither was found in Norway. Regarding large scale fabricating, the structural obstacles facing Norway proved to be prohibitive. Thanks to the EEA-agreement, Norway for all practical purposes is an EU-member in economic terms. This has not given rise to substantial expansion in fabricating in Norway.

At the turn of the century Hydro had been a company with activities in fertilisers, petroleum and aluminium. In 2004 the fertiliser activities were organized in a new company called Yara. In 2007 the petroleum division was merged with state company Statoil, leaving Hydro as an aluminium company only. Hydro today still produces a substantial amount of its aluminium in Norway. Energy prices in Norway are still competitive enough for Hydro to invest in rationalisation of this production. It remains an open question how long this will continue. At the time of writing this chapter, Hydro has constructed the world's largest smelter in Qatar, where energy comes cheaper than in Norway. In 2010 Hydro in a giant operation bought the Brazilian company Vale's aluminium assets to strengthen its position in bauxite and alumina. As a consequence of the deal, the state's ownership dropped from 43.8 to 34.5 per cent. However, the Minister of Industry, Trond Giske, when announcing the deal stated that Norway's ambition in the longer run was to bring the holding back up towards 40 per cent. Thus, key politicians are bent on securing a substantial state-ownership in Hydro.

The future of Hydro might put Norwegian politicians in an awkward position. Keeping Hydro involved in Norway depends on allocating sufficient energy at a price Hydro is willing to pay. Today however, smelting alumina is not the obvious way of exploiting Norwegian hydro power. Thus, some would argue for letting the market decide on this. Given time, this might lead to Hydro becoming even more of an international and less of a national Norwegian company. If such a situation arises: why should the Norwegian state continue to be a major shareholder in a company which so obviously no longer is a tool for exploiting national natural resources? Alternatively, Norwegian politicians might take control of the tool, and instruct it to invest in Norway. However, this would fundamentally change the governance of the company, alienate the large private ownership and put the company at risk in competing on the global market on which it depends. It is no easy task serving national tasks in global markets.

# **A Three-way Game: The Anglo-Norwegian Aluminium “Conflict” in the 1960s and the Role of Alcan**

Hans Otto Frøland<sup>1</sup>

“You can’t mention aluminium you know without making Norwegians prick their ears up”, an official at the British embassy in Oslo reported to his government in 1970.<sup>2</sup> He surely hit the nail on the head. Since 1967 the Norwegian government had opposed the Wilson government’s policy to expand domestic production of primary aluminium. Producing 37,000 metric tons in 1967, the British scheme targeted a capacity increase of 260,000 tons per year by 1970 and a further 60,000 tons by 1974. The Norwegian government worried that this venture, whose objective was to increase British self-supply, would challenge its own expansion program, which was even more ambitious and largely targeted the British market.

While producing 75,000 tons of primary aluminium in 1955, Norwegian government plans in 1958 called for an almost tripling of production capacity by the end of the 1960s. As production passed 167,000 tons in 1960 the expansion target was raised to 5-600,000 tons. By the mid-1960s it was fixed at 7-800,000 tons. The program never met the most ambitious targets as Norway’s production in 1970 was only 522,000 tons.<sup>3</sup> Yet it met with success as in the 1960s as Norwegian exports successfully replaced Canadian imports in the UK. The Norwegian government anticipated the British expansion scheme would end this success.

Unsurprisingly, disagreements arose among the two governments. While the Norwegians tended to overestimate the negative impact of new British smelters on bilateral aluminium trade the British tended to play it down. Whitehall rejected

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1 I am thankful to Olav-Johan Eide Øyan, who has assisted me in collecting much of the British government sources.

2 Crossley to European Integration Department, 31 October 1970, The National Archives (henceforth TNA), London, Foreign and Commonwealth Office (henceforth FCO) 30/698.

3 Statistics Norway, *Historical Statistics 1994* (Oslo-Kongsvinger: Statistics Norway, 1995), 391.

that their plans would destroy Norwegian exports as the industry majors involved in Norway would have the power to redirect Norwegian aluminium supply into other markets. This was a valid argument. All foreign corporations involved in the Norwegian program except for Alusuisse, were also involved in the British program. Aluminium Union Limited (Alcan), Aluminium Company of America (Alcoa) and British Aluminium Company (BACO), which together controlled 75% of British manufacturing industry, all had at least 50% stakes in smelters representing 81.5% of Norwegian aluminium production in 1967.

Norway soon brought the disagreements into the political machinery of EFTA, which presented expert reports in 1968 and 1969 that indicated the British plans would harm Norwegian exports.<sup>4</sup> However, it was not EFTA that brought an end to the conflict. In 1970 and 1971 aluminium prices slumped to their lowest level for 25 years as a substantial over-capacity occurred.<sup>5</sup> This made the three smelter companies involved in the British program delay their investment schedule. Hence, the disagreements were ended by the slump, not by Norwegian diplomacy.

As late as 1977 British primary aluminium production still totalled less than the targeted 320,000 tonnes while Norwegian production grew from 522,000 tonnes in 1970 to 617,000 tonnes in 1976. That year Norway supplied 51% of British aluminium imports while in 1968 only 40%. Enjoying the privilege of hindsight, the Norwegian concern was ungrounded. The fact that the British smelters turned out to be a failure adds further irony to the story.<sup>6</sup> But which phantom would know this in 1968? Although revealing about business – government relations in the period of competing expansion programs in the 1960s, this occurrence in Anglo-Norwegian commercial relations has so far attracted little attention.<sup>7</sup>

This is an account of the two expansion programs as well as their escalation into what appeared as a harsh intergovernmental conflict. By elaborating the strong Norwegian dependence on the British market it argues that initial Norwegian worries were highly rational. The Norwegians called for the Wilson government to cancel government subsidies, even while Oslo knew from the outset that this entreaty would be ignored. Hence, the Norwegian government's tactic was pragmatic. Actually, the Norwegian government colluded with Alcan, which partici-

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4 Ad hoc working party on the UK's aluminium smelters – chairman's summary, 8 March 1968, EFTA Archive (henceforth EFTA), Geneva, 23/05 II; Establishment of aluminium smelters in the United Kingdom. Report to the Council by Deputies, 23 July 1969, EFTA, 23/05 VIII.

5 OECD, *Problems and Prospects of the Primary Aluminium Industry* (Paris: OECD, 1973), 49–51.

6 Of the three smelters involved, the first was shut down in 1981 (BACO in Invergordon) while the second in 2009 (Anglesey Aluminium Metal). Only Alcan's smelter in Holyhead is still in operation.

7 In Norway, only two unpublished MA-theses have touched upon the topic.

pated in both the Norwegian and British programs, to secure the company's position within the latter. Furthermore, Alcan used its close relation to the Norwegian government to secure its position in the British program. Alcan was really the master of this three-way game, and took Norwegian concerns into account. What appeared in the public as an intergovernmental tug-of-war was less of a conflict behind closed doors.

The contribution consists of five empirical sections. Having first presented the Norwegian expansion program and thereafter elaborated the increasing significance of the British market for Norwegian smelters in the 1950s and 60s, the third section shortly presents the British expansion program. The fourth section provides an account of the course of the intergovernmental "conflict" while the last section provides evidence of Alcan's successful role in this. Alcan's influence is revealing, and suggests that business had a strong say in the political contest over European expansion programs in the 1960s.

## **The Norwegian Expansion Program<sup>8</sup>**

The Norwegian Minister of industry outlined the basic features of the Norwegian expansion programme in a memorandum to the cabinet in October 1960.<sup>9</sup> However, it originated in policy formulated back in 1954 to attract foreign direct investments into Norway by offering cheap energy supply. In the spring of 1954, cabinet members tried to persuade BACO, Pechiney and Alcan, all of which had interests in Det Norske Nitridaktieselskap (DNN) while Alcan also had a 50% share in the Norwegian Aluminium Company (NACO), to invest further in Norway. As this failed, in 1959 Trygve Lie, a former UN Secretary General who from 1963 served as Minister of industry, was appointed member of the cabinet and assigned to procure foreign direct investments into the Norwegian program. The government would prefer that Norwegian and foreign companies each owned 50% of the stakes in the new smelters.<sup>10</sup> While calling upon domestic companies to enter

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8 This section is largely based on Hans Otto Frøland, "The Norwegian Aluminium Expansion Program in the Context of European Integration, 1955–1975," *Cahiers d'histoire de l'aluminium* Special Issue 2 (2007): 103–124.

9 Memorandum on the expansion of the aluminium industry, 11 October 1960, Riksarkivet (National Archive, henceforth RA), Oslo, Industridepartementet (Ministry of Industry, henceforth ID), Utredningsavdelingen, (Planning Division, henceforth UA), box 17.

10 Stortingsmelding (Government white paper, henceforth St.m.) nr. 21, 1963–64 Om utenlandske eierinteresser i norsk industri, 16, in *Stortingsforhandlingene* (parliamentary papers, henceforth SF).

into joint ventures with foreign corporations, Lie allured them by offering cheap hydroelectric power and regional policy tax incentives. According to government estimates, in 1959 still only 25% of Norway's hydroelectric power capacity was utilized.<sup>11</sup> Hence, the program was accompanied by a vigorous expansion of hydroelectric power production, mainly implemented by government agencies.<sup>12</sup>

As Norway had no bauxite deposits Lie contacted the large European and North American aluminium majors in control of upstream production. He argued that Norway, as opposed to African countries, would provide political stability. He saw that this advantage might easily disappear and urged the government to quickly reach formal agreements with foreign partners.<sup>13</sup> As foreign corporations showed an interest, government planners started formulating a distinct program for rapid implementation. Karl Skjærdahl, Under-Secretary of State at the Ministry of industry, was in June 1960 assigned the task of formulating a coherent aluminium expansion plan.<sup>14</sup> He discussed with the CEOs of the Norwegian companies Årdal og Sunndal Verk (ÅSV), Elektrokemisk (Elkem)<sup>15</sup> and Norsk Hydro (Hydro), all of which endorsed the plan but clearly stated that they would prefer the foreign companies to be minority partners.<sup>16</sup> In March 1961 Skjærdahl submitted a detailed memorandum on three specific smelter projects at Karmøy, Lista and Husnes (cf. table 8.1 below). It also included the expansion of related hydroelectric power supply, which added up 10.440 Gwh.<sup>17</sup>

As displayed in table 1 the expansion program resulted in the establishment of four new large aluminium smelters, all located along the coast of Norway.

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11 St.m. nr. 6, 1959–60 Om utbygging av industrien i distriktene, 6, in *SF*.

12 St.m. nr. 6, 1962–63 Om utbygging av vannkraft og kraftkrevende industri, in *SF*.

13 Report by Roar Melien from discussions on the aluminium industry on 2 September, 10 September 1960, RA, ID, UA, box 17.

14 Odd Gøthe, *Ærlig talt! Om industriskandaler, statsråder og annet* (Oslo: Tiden, 1988), 36–37. Mr. Gøthe was a prominent aluminium planner in the Ministry of Industry.

15 Elektrokemisk changed name to Spigerverket in 1971 and to Elkem only in 1978. Yet in this article it is referred to as Elkem.

16 Memorandum on the expansion of the aluminium industry, 11 October 1960, RA, ID, UA, box 17.

17 Report 1 from Utvalget for kraftkrevende industri, 25 March 1961, RA, ID, UA, box 233.

**Table 8.1 New smelters under Norway's expansion programme<sup>18</sup>**

Est.	Company name	Location	Domestic owner	Foreign owner	Start-year	Production 1967	Prod. target for 1971 in 1967	Capacity 1975	Target market
1956	Mosjøen Aluminiumverk	Mosjøen	Elkem 66% 1963:50%	AIAG 33% 1963: Alcoa 50%	1958	60,000	85,000	95,000	UK
1962	Sør-Norge Aluminium (Søral)	Husnes	DnC consortium 20%	Alusuisse 80%	1966	60,000	120,000	70,000	EC
1963	Aluminium Norge (Alnor)	Karmøy	Norsk Hydro 51%	Harvey 49%	1967	80,000	120,000	120,000	NOR, UK
1967	Lista Aluminiumverk	Lista	Elkem 50%	Alcoa 50%	1971		80,000	82,000	UK

Mosjøen Aluminiumverk originated in plans developed already in 1951 when the government took up discussions with the management of Elkem on the matter. Elkem formed a joint venture with Swiss Aluminium-Industrie-Aktien-Gesellschaft (AIAG, Alusuisse from 1963) after contact was established in 1953.<sup>19</sup> The smelter was established in 1956, came on stream in 1958 and produced 32,000 tonnes in 1960. The partnership with Alusuisse ended in 1962 after fairly dramatic negotiations, in which Trygve Lie was actively involved. Elkem had been preparing for the Lista Aluminiumverk since 1960, for which Alcoa subsequently was Elkem's preferred partner. At the early stage of discussions, however, Elkem also wanted Alusuisse to join the Lista project as a third party. Discussions with Alcoa on the smelter project at Lista in 1961 easily spilled over to the Mosjøen plant. Alcoa in 1962 decided to replace Alusuisse while Elkem decided to reduce its control to 50%.<sup>20</sup> Alcoa and Elkem set up the company Mosjøen Aluminiumverk (Mosal) to take care of the two smelters' sales. Alcoa provided the plants with alumina while Mosal supplied the British-based aluminium fabricator Impalco

<sup>18</sup> Compiled from several documents.

<sup>19</sup> Rune Pedersen, *Til Verket. Elkem Aluminium Mosjøens historie gjennom 40 år* (Mosjøen: Aluminium Mosjøen, 1997), 29.

<sup>20</sup> Knut Sogner, *Skaperkraft. Elkem gjennom hundre år, 1904–2004* (Oslo: Messel Forlag, 2003), 161–168.

with primary aluminium.<sup>21</sup> Although established in 1967, not until 1971 did Lista Aluminiumverk come on stream.

In 1962, when leaving the plant in Mosjøen, Alusuisse invested in the Sørøst plant at Husnes. In close liaison with the government, the commercial bank DnC organized a Norwegian consortium to build the smelter. As the bank failed to raise sufficient Norwegian share capital, the government had to accept Swiss control over the plant. Alusuisse had an 80% stake and served as Sørøst's principal sales agent. Starting production in 1967 the smelter by and large supplied the EC market.

Hydro established the Alnor smelter with the American Harvey Aluminium Inc. at Karmøy in 1963. Having in the first place discussed with Alcoa, Hydro negotiated a contract with Pechiney in 1960, which however was never signed because the management would prefer Alcoa or Alcan as partners.<sup>22</sup> Thus, Harvey was not the preferred alternative.<sup>23</sup> The agreement made Harvey receive 25% of the production of primary aluminium. Much of the residual 75% of production was supposed to be processed at Karmøy as the plant from 1968 also included a cable mill, a rolling mill and an extrusion plant. The Alnor smelter started production in 1967.<sup>24</sup>

The government program also encouraged the expansion of the existing smelting plants of DNN and ÅSV. DNN was established in 1913 by Pechiney. In 1923 Alcoa (from 1928 Alcan) and BACO joined the company, which operated smelters in Tyssedal and Eydehavn. As Pechiney left in 1958 Alcan and BACO each had a 50% share until the company was bought by Hydro in 1975.<sup>25</sup> Together the two smelters produced 28,000 tons in 1962. Their subsequent expansion was however modest, and by 1975 capacity was still only 39,000 tons. BACO and Alcan tended to bring the produce of DNN to the UK, as indicated in table 8.2.

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21 Hans Otto Frøland and Espen Andresen, "Fra AIAG til Alcoa i Mosjøen", in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, ed. Johan Henden et al. (Bergen: Fagbokforlaget, 2008), 247–275.

22 Finn Erhard Johannessen, Asle Rønning, Pål Thonstad Sandvik, *Nasjonal Kontroll og Industriell Formyelse. Norsk Hydro 1945–1977* (Oslo: Pax Forlag, 2005), 233–240.

23 The partnership with Harvey turned sour and Norsk Hydro in 1973 purchased Harvey's shares. The company's name was changed to Norsk Hydro A/S Karmøy Fabrikker.

24 Cf. also Pål Sandvik, "Et kaos uten sidestykke: Hydro, Harvey og joint ventures i norsk aluminiumsindustri", in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, ed. Johan Henden et al. (Bergen: Fagbokforlaget, 2008), 277–295.

25 Cf. Espen Storli and David Brégaint, "The Ups and Downs of family Life: Det Norske Nitridaktieselskap, 1912–1976," *Enterprise & Society* Vol.10, no.4 (2009): 763–790.

**Table 8.2 Smelter capacity of Det Norske Nitridaktieselskab (DNN)<sup>26</sup>**

Plant location	Foreign owners from 1958	Total production 1967	Production target for 1971 in 1967	Capacity 1975	Target market 1967
Tyssedal Eydehavn	BACO 50% Alcan 50%	30,000	40,000	39,000	UK

Of much greater importance was the expansion of the state-owned ÅSV, which, as indicated in table 8.3, was by far the largest aluminium company in Norway. The Norwegian parliament decided in 1946 to establish the smelter in Årdal, and in 1951 also the smelter in Sunndal. The smelter in Årdal was on stream in 1948. The Sunndal smelter came on stream in 1954 while the Årdal smelter's capacity was expanded in 1959 and in 1961. 114,000 tons of the 186,000 tons produced in Norway in 1960 derived from ÅSV's two plants. In 1947 ÅSV had concluded a rather generous long-term barter agreement with Alcan, whereby alumina was exchanged for aluminium ingots.<sup>27</sup> This agreement was supplemented in 1951 and 1958, while in 1955 ÅSV also signed an equivalent barter agreement with Alcoa. In 1962 ÅSV increased the capacity at the Årdal plant by 40,000 tons a year and somewhat later another 10,000 tons. In 1967 the capacity in Sunndal increased by 50,000 tons. In effect, ÅSV's smelter capacity increased from 114,000 tons in 1960 to 261,000 tons in 1970. As in the 1950s the expansions were partly financed by loans from Alcan and Alcoa.

**Table 8.3 Smelter capacity of Årdal og Sunndal Verk (ÅSV)<sup>28</sup>**

Plant location	Start-year	Ownership	Production 1967	Production target for 1971 in 1967	Capacity 1975	Target market 1967
Årdal	1948	Government	172,000	222,000	330,000	UK
Sunndal	1954	From 1967: Alcan 50%				UK
Høyanger	Bought 1967					Domestic

<sup>26</sup> Source: compiled from several documents.

<sup>27</sup> Tore Grønlie, "Årdal verks oksydavtale med Alcan i 1947," *Historisk Tidsskrift*, vol.69, no.2 (1976): 139–194.

<sup>28</sup> Compiled from several documents.

The main constraint to ÅSV's expansion was the supply of alumina. In 1960 it had been realized that the company's expansion plans would meet a supply deficit by 1965 under the existing contracts, which would expire around 1970. Therefore, when discussing a possible joint venture between the ÅSV and the American corporation Olin Mathieson in 1960-61 as part of the government's expansion programme, the latter offered to sell a share in the FRIA alumina plant in Guinea to ÅSV. However, this never materialized as the management of ÅSV, unsurprisingly, preferred to deepen relations with Alcan.<sup>29</sup> As will be elaborated more in detail later, in 1967 Alcan became a 50% share-holder in ÅSV. This made the British market more important for ÅSV.

A smelter in Høyanger, owned by NACO and Alcan until it was taken over by ÅSV as part of the deal between Alcan and the Kingdom of Norway in 1967, was expanded from a yearly capacity of 13,000 in 1960 to 26,000 tons during the first half of the 1960s. Yet this mainly supplied the small Norwegian manufacturing market and was only modestly expanded by 1975.

## **The Increasing Significance of the British Market for the Norwegian Smelters**

Constrained by hydroelectric capacity, BACO's production in Britain was slightly above 30,000 tons per year, which contributed to about 10% of total consumption on the eve of the 1960s. Alcan was Britain's main supplier of ingots since 1939, when the Ministry of Supply concluded a long-term contract with the corporation. In 1943 alone the British government procured 220,000 tons of aluminium from Alcan's smelters in Quebec. The relation was prolonged after the war. Well into the 1970s various British ministries concluded long-term supply contracts with Alcan. In the 1950s Alcan supplied around 90% of British aluminium consumption, most of which was shipped from Canada.<sup>30</sup> Some of it was taken from Norway.<sup>31</sup>

During the war Alcan had established three large corporations to organize its assets in Britain and Scandinavia. Stand Ltd. took care of strategic holdings and

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29 Note on the meeting of the working party on alumina on 10 January 1963, undated, RA, ID, UA, box 19.

30 Duncan C. Campbell, *Global Mission: The Story of Alcan* (Toronto: Ontario Publishing Co., 1989), 443.

31 Future Supplies of Alcan Aluminium for the UK. Memorandum by Alcan (UK), 8 October 1959, University of Glasgow Business Records Archives (henceforth GUA), Glasgow, Records of British Alcan, UGD 347, 10/6/1 vol.2.

overseas interests, including those in Scandinavia. Aluminium Union Ltd. was responsible of Alcan's trading activities in the UK and Scandinavia. Aluminium Union took care of the supply of bauxite to Norwegian smelters in exchange for ingots, which were transported to the UK. Northern Aluminium Company was an expanding semi-fabricator. Alcan's strategic policy was to exploit its position in primary aluminium to also offer manufactured aluminium.<sup>32</sup> After the war Northern Aluminium bought the Rogerstone manufacturing plant, which Northern had built and operated during the war on behalf of the Ministry of Air Production. A rolling mill with 200,000 tonnes capacity was soon added to the plant while other mills, such as the Banbury Works, were modernized. Thereby Alcan already controlled much of British fabricating industry as the US corporations in the late 1950s, in response to over-capacity at home, intensified their efforts to control the European fabricating market. This intensification also applied to Alcan, whose policy in the 1960s was to buy British client's fabricating plants. While operating only two British fabricators in 1944 Alcan controlled 20 in 1975.<sup>33</sup>

The conquering of the fabricating industry changed the company structure of Alcan's British assets. In 1959 Aluminium Union changed its name to Alcan Aluminium (UK), which from 1967 also included Stand Ltd., thereby introducing a unified management in Britain. Hence, the company was generally referred to as Alcan (UK). In 1960, Northern Aluminium Company changed name to Alcan Industries. The structure of the Alcan group of companies in Britain in 1967 is revealed in table 8.4. By 1968 Alcan Aluminium (UK) Ltd, Alcan's British holding, controlled companies with 8000 employees in total. The company's President was John P. Elton, who had for long also been responsible for Alcan's relations with Norway.

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32 Campbell, *Global Mission*, 454–456.

33 Pierre Lanthier, "Alcan from 1945 to 1975: the uncertain road to maturity," *Cahiers d'histoire de l'aluminium*, Special Issue 1 (2003): 54.

**Table 8.4 The Alcan group of companies in Britain in 1967<sup>34</sup>**

<b>Company name</b>	<b>Function/production</b>
Alcan Aluminium (U.K) Limited	Holding
Alcan (U.K.) Limited	Ingot and chemical sales
Alcan Industries Limited	Sheet, plate, extrusions, rod, castings, forgings
Alcan Foils Limited	Foil, foil conversion
Alcan Polyfoil Limited	Foil conversion, household foil
Alcan Enfield Alloys Limited	Foundry alloys
D.K.B Electrics Limited	Wire products

Throughout the post war period Alcan was instrumental in linking Norwegian aluminium outlet to the British market. Alcan played a role, at least indirectly, when the Norwegian government already in the 1940s started targeting the British market. Having negotiated the alumina agreement with ÅSV and recognising the Norwegian Parliament's decision to exploit the Aura waterfalls for the future Sunndal smelter, in December 1947 Dana Bartholomew, who had served Alcan in Sweden during the war and later became Alcan's chief financial advisor and member of the board in Montreal, approached the Ministry of Industry in Oslo to elaborate the smelter project in Sunndal. Alcan would carry a large part of the investment and provide alumina as well as technical service if the Government would supply cheap energy. Bartolomew informed that the smelter in Sunndal would serve the British market, where demand was excessive.<sup>35</sup> The 1948 negotiations with Alcan failed but their agenda found its way into Norway's long-term program for the OEEC, which was submitted in the autumn of 1948. The government suggested Norway's aluminium production to be 95,000 tons in 1952 provided that the Sunndal smelter received Marshall Aid and started production that year.<sup>36</sup> In November 1950, the OEEC non-ferrous metal committee adopted this target, however on the basis that Norway's expanding smelting capacity was adjusted to British demand.<sup>37</sup> The committee had estimated European production

34 Alcan Aluminium Limited Montreal, *Annual Report* 1967.

35 Note by Drogseth on meeting with Bartholomew 23 February 1948, undated, RA, ID, S-1411, Parliamentary Secretary Drogseth's archive 1946–56 (henceforth Drogseth), box 20, file 2.

36 The Sunndal smelter was funded by US aid, cf. Mats Ingulstad, "Sunndal Verk: et norsk smelteverk i amerikansk storpolitikk," in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, ed. Johan Henden et al. (Bergen: Fagbokforlaget 2008), 211–245.

37 Non-Ferrous Metals Committee, Report on the Study of Aluminium, 2 November 1950, RA, ID, S-1411, Drogseth, box 28.

to be about 600,000 tons by the end of 1952 but, mainly because of British demand, a deficit of 23,000 tons would occur. On the committee's initiative, the Norwegian and British governments in 1949 discussed to set up a formal bilateral agreement. The British certainly wanted aluminium from Norway but would not in any way compromise its supply agreement with Alcan. London rejected a formal bilateral agreement.<sup>38</sup> Yet the British government nevertheless requested more aluminium than Norway would offer.<sup>39</sup> This was not least because of Alcan's own demand, as Alcan expanded its fabricating industry in the UK.

In the 1950s Alcan tended to bring the barter-ingots from DNN and ÅSV, which it received as payment for alumina supply, to its semi-fabricators in Britain. As much of the expanded Norwegian smelter capacity of the 1960s also targeted the British fabricating market, Britain grew in significance. Table 8.5 shows the increasing importance of the British market for Norwegian aluminium exports in the 1960s. The Canadian share in total British imports fell from 52% in 1960 to 33% in 1968. In the same period, Norway's share grew from 11% to 40%. When the Wilson government developed the expansion plan, Britain's share of Norway's total aluminium export was 33%.

**Table 8.5 British import of primary aluminium 1958-1968. Thousand tons<sup>40</sup>**

Country of origin	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Norway	21	35	37	52	52	46	78	67	115	106	146
Canada	149	147	166	142	156	148	176	168	135	122	121
USA	21	45	99	36	32	50	37	42	28	18	12
Total	214	254	316	240	255	271	331	324	346	307	362

The increasing importance of the British market in the 1960s was manifested also by Norwegian foreign direct investments. Norwegian fabrication was minor and government planners surely wanted new fabricators to be located in Norway.<sup>41</sup> However, the Norwegian companies looked for investment opportunities abroad because they feared that their customers might stop buying Norwegian alumi-

38 Alan S. Milward, *The Reconstruction of Western Europe 1945-51* (London: Routledge, 1992), 202.

39 Note on Norwegian supply of aluminium to the UK in 1951, 19 February 195, RA, Utenriksdepartementets arkiv (archive of Foreign Ministry, henceforth UD), box 3107.

40 Establishment of aluminium smelters in the United Kingdom. Report to the Council by Deputies, 23 June 1969, table 2, TNA, Board of Trade (henceforth BT), 241/1744.

41 Cf. Kobberrød's contribution in this volume.

nium. Not only Alcan, but also Alcoa, Kaiser and Reynolds had started buying up or setting up new manufacturers in Europe to secure an outlet for their American metal. In Britain, by 1965 their combined control of the aluminium fabricating industry was increased to 85%.<sup>42</sup> Hence the Norwegian aluminium producers also took strategic steps to reach formal influence on British manufacturing.

ÅSV chose to deepen relations with Alcan.<sup>43</sup> One third of ÅSV's production was barter payment to Alcan for alumina, while the rest was sold to independent buyers in Europe and the US. In 1959, the former amounted to 23,000 tons while the latter was 70,000 tons. In the early 1960s, the management of ÅSV was fairly pessimistic because it feared that demand for ingots would disappear as independent fabricating mills in Europe were bought up by the North American majors. In few years ÅSV lost five traditional customers to Alcan, representing an annual sales volume of 50,000 tons.<sup>44</sup> Hence, the company took a strong interest in influencing Alcan's corporate behaviour. Having expanded smelter capacity at Sunndal as well as negotiated with Alcan a revised contract on alumina supply, in the autumn of 1965 the management decided to integrate formally with Alcan. The Norwegian government was formally informed in February 1966 and in December that year the parliament decided to sell 50% of ÅSV's shares to Alcan in exchange for cash and a 3% minority share in the Canadian corporation.<sup>45</sup>

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42 "Aluminium's Private Slump", *The Economist*, 14 August 1965, Economist Historical Archive, accessed 30 August 2011, <http://www.tlmea.com/economixt/home/asp>

43 On the relation between Alcan and ÅSV, cf. Harald Rinde, "Alcan tur – retur," in *Verket og bygda 1947–1997*, ed. Rolv P. Amdam et al. (Oslo: Samlaget, 1997), 134–163; Harald Rinde, "Global Mission and National Interest: The Business Partnership of Alcan Aluminium Ltd. and the Kingdom of Norway," *Cahiers d'histoire de l'aluminium*, Special Issue 2 (2007): 83–99. On Alcan's European strategy, cf. Matthias Kipping and Ludovic Caillaud, "Mintzberg's Emergent and Deliberate Strategies: tracking Alcan's Activities in Europe, 1928–2007," *Business History Review* 84 (Spring 2010): 79–104.

44 Harald Rinde, "The Powerhouse of Europe," *Cahiers d'histoire de l'aluminium*, Special Issue 1 (2003): 42.

45 Cf. in *SF*: St.meld. nr. 23, 1966–67 Samarbeidsavtale mellom Den norske stat, Alcan Aluminium Limited og A/S Årdal og Sunndal Verk; St.prp. nr 23, 1966–67, Om avtalen mellom Den norske stat, Alcan Aluminium Limited og A/S Årdal og Sunndal Verk; Innst. S. nr. 85, 1966–67 Innstilling fra den forsterkede skog-, vassdrags- og industrikomite om fullmakt for Kongen til å inngå en avtale mellom Den norske stat og Alcan aluminium Limited og A/S Årdal og Sunndal verk og til å foreta de disposisjoner som fra Den norske stats side er nødvendig for å gjennomføre avtalen. Verbatim records from the debate in the parliament on 13 December 1966 in *Stortingsforhandlinger* 7b, 1966–67, 1701–1747. In 1974 the government repurchased 25% of the shares and in 1979 the residual 25%.

In 1967, a British government official maintained that 40% of British imports of Norwegian aluminium were controlled by Alcan.<sup>46</sup> The 1967 agreement between Alcan and the Kingdom of Norway explicitly made ÅSV the major supplier of ingots to Alcan's fabricating plants in Europe. Firstly, a fixed supply schedule was agreed from 1967 to 1970, increasing ÅSV's annual supply to Alcan from 15,000 tons in 1967 to 90,000 tons in 1970. Secondly, 75% of ÅSV's produce would thereafter be bought by Alcan: "For 1971 and each year thereafter Alcan undertakes to purchase and ÅSV undertakes to sell to Alcan not less than 75% of the aluminium ÅSV has available for sale (after payment for alumina or bauxite)." Thirdly, a further expansion clause was introduced, saying that: "the ÅSV is a natural supplier of ingot to fabricators in Europe and should expand its smelting facilities as the requirements of Alcan's European fabricating facilities increase. Alcan will agree that ÅSV's smelter facilities may be expanded so as to be capable of supplying at least 50% of the increase in annual ingot requirements of the Alcan-controlled fabricating companies in EEC and EFTA countries ..."<sup>47</sup> For ÅSV the agreed supply clause was nothing but a future security clause. Without establishing a formal preference in Britain it indirectly made the British market more important. Kipping and Cailluet conclude that "Alcan probably took this step to develop a geographically closer supply base for its most important European market, the United Kingdom."<sup>48</sup> Although Alcan's strategy was basically European, not only British, this holds true.

The agreement with Alcan also provided for the Kingdom of Norway to be represented in several of Alcan's companies which were of greatest interest to ÅSV. Firstly, the Norwegian government was represented in the board of Alcan Aluminium Limited in Montreal. In 1967 Knut Getz Wold was appointed. In 1971, Erik Brofoss replaced him. The former was a high-ranking official with a long record of international commercial negotiations, the latter a former Minister of finance and Minister of trade, who was the director of Norway's central bank at the time of appointment. Furthermore, the government appointed executives from ÅSV to represent Norway in the boards of the manufacturing company Alcan Industries Limited and the Jamaican alumina supplier Alcan Jamaica Limited.<sup>49</sup>

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46 Note by S. D. Wilks on Alcan's commitments to the Norwegian Government, 18 December 1967, TNA, BT 241/1731.

47 Quotes from the agreement's section 2 and 4.

48 Kipping and Cailluet, "Mintzberg's Strategies", 94.

49 As well as in the board of the German manufacturer Alcan Aluminiumwerke GmbH, which had a 50% stake in Aluminium Norf GmbH. Aluminium Norf set up a 20,000 tons hot rolling mill in 1965, This was supposed to receive the bulk of supplies from ÅSV.

Alcan would have a strong influence on ÅSV's future strategy as it would appoint 50% of the representatives for ÅSV's board, among which John P. Elton, the President of Alcan (UK), was one. Norway would however have the chairman of the board, whose vote would decide in case of an equality of votes.

While ÅSV chose to integrate with Alcan, Elkem, which ran the smelters in Mosjøen and Lista, preferred Alcoa as strategic partner. Imperial Aluminium Company (Impalco) was a British fabricator established in 1959 by Alcoa and Imperial Chemical Industries (ICI) after Alcoa failed to purchase BACO that year. After a complicated reorganisation in 1962 Impalco controlled seven fabricating plants, which counted for about 10% of British fabricating. Its annual consumption of primary aluminium in 1962–63 was about 40,000 tons.<sup>50</sup> Since 1960 Impalco had been the most important customer of the Mosjøen smelter, which from 1963 was owned jointly by Elkem and Alcoa. Impalco was half owned by Alcoa until 1968, when Alcoa and Elkem each acquired ICI's shares. Elkem now had a 25% stake in the company while Alcoa's share was 75%. The company's name was changed to Alcoa of Great Britain. In public company statements it was announced that the bulk of the metal required by Alcoa of Great Britain would be supplied by Mosjøen Aluminiumverk.<sup>51</sup> Elkem assumed that much of its aluminium sale was now secured.<sup>52</sup> Alcoa of Great Britain was Britain's third largest fabricator, and catered for expanding the capacity of the Mosjøen plant from 60,000 to 80,000 tons in 1968.

Also Alnor chased the British fabricating market as Hydro in 1969 decided to set up an extrusion plant in Wales. Hence, also the Karmøy smelter came to direct more of its export to Britain.

To conclude, having been important already in the 1950s, the British aluminium market grew significantly in importance for the Norwegian industry in the 1960s. The Norwegian expansion program largely depended on the British market and the Norwegian majors had invested directly in the British manufacturing industry with their North American partners. It followed from this that the Norwegians would follow developments in Britain closely.

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50 Note by John Mitchell on Alcoa's investments in Great Britain, 31 January 1963, Mosjøen Aluminiumverk Archive, Mosjøen, Alcoa-file 4013.

51 Company statement by Elkem in *The Economist*, 21 June 1969, Economist Historical Archive, accessed 30 August 2011, <http://www.tlmea.com/economixt/home/asp>

52 Sogner, *Skaperkraft*, 192.

## The British Expansion Program

British consumption of primary aluminium had increased from 235,000 tons in 1958 to 360,000 tons in 1967. Government planners in London assumed a future annual increase in demand of 8% while domestic primary smelter capacity would remain shortly above the modest 38,000 tons operated by BACO.<sup>53</sup> In December 1966 the Labour government had introduced a general 20% investment grant and an extra 20% for investments in development areas. To reduce UK's severe balance of payments problems while also promoting regional policy, in particular Highland development, in October 1967 the government announced it was ready to negotiate with industry the provisions of two large aluminium smelters adding up to 240,000 tons capacity. Seven companies were invited to tender bids.<sup>54</sup> They would receive investment grants applicable to the special development areas, announced to cover about 40% of construction costs, in addition to cheap government loans to set up nuclear power plants to run the smelters, and possibly also employment grants from local government.<sup>55</sup>

The smelter initiative had originated in the idea that the use of nuclear power would reduce the cost of electricity, yet not necessarily bring it down to Norwegian or Canadian levels.<sup>56</sup> Rio Tinto Zink (RTZ), which controlled large bauxite mines in Australia, had early in 1966 approached the government to elaborate the conditions of erecting an aluminium smelter in Anglesey on such a premise. The initiative had soon forced BACO to also table a smelter proposal. Alcan, which at the outset had no interest in developing its own smelting capacity in Britain, jumped on the bandwagon. After much back and forth about technicalities Alcan decided at the end of 1967 to submit a tender.<sup>57</sup>

Hence in January 1968 the government had received three tenders, displayed in table 8.6. While asking for a 240,000 tons capacity in the first place, the tenders catered for a total of 360,000 tons.

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53 Ludovic Cailluet, "The British aluminium industry, 1945-1980s: Chronicle of a death foretold?," *Cahiers d'histoire de l'aluminium* Special Issue 1 (2003): 73–88.

54 These were BACO, Rio Tinto Zink, Alcan, Alusisse, Impalco and Pechiney.

55 Cf. Mackenzie's contribution in this volume. On BACO's role in the Highlands see Andrew Perchard, "Sculpting the 'Garden of Eden': Patronage, community & the British Aluminium Company in the Scottish Highlands, 1895–1982," *Cahiers d'histoire de l'aluminium* 38–39 (2007): 11–30.

56 Capenhurst international considerations, undated, TNA, BT 241/1727: "Since the countries (Norway, Canada, USA) can produce aluminium more cheaply than we can in the UK, producers must either be enabled to charge a higher price or be given a subsidy if the scheme is to go forward."

57 Campbell, *Global Mission*, 460.

**Table 8.6 Tenders for the Wilson government's expansion project<sup>58</sup>**

Corporation	Locality	Capacity per year	On stream	Annual balance of payments effect	Production cost per ton
BACO	Invergordon	120,000	1970	£ 22.5 million	£ 137 million
Rio Tinto Zink	Holyhead	120,000	1970	£ 17.5 million	£ 148 million
ALCAN	Invergordon	120,000	Half 1970 Rest 1974	£ 16 million	£ 151 million

During the winter and spring of 1968 the government negotiated contracts with the three companies, and on 10 and 24 July 1968 it announced in the House of Commons that agreement had been reached with them for the establishment of three smelters with a total capacity of 260,000 tons by 1970. BACO, controlled by Reynolds Metals (49%) and Tube Investments Ltd. (51%), would set up a smelter in Invergordon, Scotland. Capacity would be 100,000 tons. A consortium consisting of Rio Tinto Zinc and BICC Aluminium Holdings controlling 60% and Kaiser Aluminum controlling 40% would establish Anglesey Aluminium Metal in Holyhead, Wales. Its capacity would also be 100,000 tons. Alcan would erect a smelter in Lynemouth in Northumberland, not in Invergordon as originally proposed. Its capacity would be 60,000 tons when on stream in 1970. While the two former projects would be based on nuclear power the latter would however be coal based. BACO and Anglesey Aluminium Metal would pay the capital costs of building new nuclear power stations but the expenses would be covered by cheap government loans. Electricity would be provided through the grid, but the companies would pay a price based on the running costs of the nuclear plants. Alcan would set up its own coal-powered station, and negotiate a long-term commercial contract for coal supplies with the National Coal Board. While Alcan would not receive the cheap government loan contingent upon the use of nuclear power, all companies would benefit from the 40% government investment grants. In November 1968, the Parliament authorized the financial provisions of the expansion scheme.

The Wilson government had reduced the schemes of BACO and RTZ, but not Alcan's, although it appeared as though that had been cut back as well. It was well aware of Alcan's aspirations to expand the Lynemouth smelter by further 60,000 tons by 1974. Because the Lynemouth smelter would not receive subsidies under

<sup>58</sup> Summary report from Industrial Reorganization Corporation to Board of Trade, 4 January 1968, TNA, Treasury (henceforth T) 326/740.

the nuclear power scheme, Alcan's second stage was publicly excluded from the government program. Only in January 1969 did Alcan announce publicly its plan to target 120,000 tons by 1974.

In 1969 an EFTA working party estimated the British expansion to make up 20% of total planned new capacity in Western Europe and 58% within EFTA.<sup>59</sup> On the assumption of a 5% annual increase in British demand, it concluded that if no British smelters were built, total British aluminium imports would probably reach more than 500,000 tons in 1973. However, given the establishment of the scheduled extra smelter capacity, British imports might reach only 140,000 tons. This was a substantial reduction as compared with the 361,000 tons imported in 1968. Under these conditions, even if total British aluminium imports were to come from Norway, Norwegian exports would go down. In 1968, Norwegian aluminium exports to Britain were 146,000 tons.<sup>60</sup>

The EFTA working party also indicated that the British government grants would cover 34% of the total capital costs of erecting the smelters. As for the two nuclear powered smelters the government aids were estimated to increase returns on investment from 18% to 23%. As for Alcan's coal-powered smelter the equivalent was an increase from 14% to 17%.<sup>61</sup> It goes without saying that the British government's financial support worked as intended. It obviously was a strong incentive for the companies to invest in the government's program.

### **The Course of the Anglo-Norwegian Intergovernmental "Conflict"**

Well before Harold Wilson's smelter initiative was formally announced in October 1967, government planners had reviewed the possible impact on Norway. In April 1967 the Industrial Policy Sub-Committee submitted a report which argued that the scheme would affect Norway's exports and that the Norwegian government might oppose the plan. However, as the Norwegian companies were controlled by Alcoa, Alcan and BACO it was assumed that these transnational corporations would easily redirect Norwegian exports elsewhere.<sup>62</sup>

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59 Establishment of aluminium smelters in the United Kingdom. Report to the Council by Deputies, 23 June 1969, TNA, BT 241/1744.

60 Ibid.

61 Establishment of aluminium smelters in the United Kingdom. Report to the Council by Deputies, 23 June 1969, annex XIII, table 1, TNA, BT 241/1744.

62 Draft Report by the Chairman of the Industrial Policy Sub-Committee, The Uncle Project, undated, TNA, BT 241/1728; Extract from the president's interim report. Effects on Norway's exports, 2 June 1967, TNA, BT 241/1729.

The planners also assumed Norway would complain about the character and level of the government investment grants. Norway had questioned the 40% government grant regulation introduced in 1966 for the years 1967 and 1968, and pushed it into EFTA's agenda. Now the smelters would receive these grants in addition to cheap loans for the supply of nuclear energy. Elaborating carefully how it should meet international critique, the British government anticipated an awkward agenda in EFTA.<sup>63</sup> However, it was well aware that also Norway applied government subsidies in terms of tax deduction for conditional investments and cheap long-term electricity contracts for heavy industry.<sup>64</sup> Actually, it was the Norwegian government which in 1959, when negotiating the Stockholm convention, had pushed for the EFTA clause which allowed for government aids as part of regional policy. Estimating discounted returns from aluminium smelter investments in Norway and the UK in 1969, Alcan found that the ratio for the UK was 16.9% while in Norway it was 14.5%.<sup>65</sup>

Prime Minister Wilson announced the smelter initiative in the EFTA Council of Ministers on 23 October 1967. The Norwegian government soon asked for a meeting, held in London on 11 December, in which UK officials informed about the plan more in detail.<sup>66</sup> Oslo assumed a British expansion would negatively affect the Norwegian companies' investment decisions.<sup>67</sup> The EC aluminium tariff was 9% and the 5% tariff quota for 130,000 tons per annum would be too small to substitute the British market. John D. Harper, the CEO of Alcoa, had signalled publicly that the British scheme might reduce Alcoa's investments in the Lista project, which was scheduled to be on stream in 1971.<sup>68</sup> The government immediately adopted a policy to stop, delay or reduce the British scheme by means of diplomacy. The best tool at hand was offered by the EFTA. As anticipated in

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63 The UNCLE project. Report by the Chairman of the Industrial Policy Sub-Committee, 5 July 1967, TNA, BT 241/1729.

64 Note by PJ. Streams on Norwegian electricity financing, 26 May 1967, TNA, BT 241/1729.

65 Memorandum on Discounted Cash Flow computations of an aluminium reduction plant with thermal power station with UK investment grant compared with the Discounted Cash Flow on the same smelter and thermal plant applying the Norwegian depreciation rates instead of the UK investment grant, 8 April 1969, UGD 347, 10/8/4.

66 Aluminium smelters and the Norwegians, 20 November 1967, TNA, BT 241/1730; Bilateral Discussions with a Norwegian delegation on United Kingdom proposals for developing an aluminium smelting industry in the U.K., 11 December 1967, BT, 241/1731.

67 Note on the British aluminium plans and their consequences for Norwegian aluminium industry, 20 November 1967, RA, UD, file 52.1/56.

68 Vurdering av de britiske planer om å reise aluminiumverk i Storbritannia, 27 December 1967, Norsk Hydro Archive (henceforth NHA), Notodden, ÅSV Saksarkiv, box: Handelsdept. utvalg vedr. al.verk i Storbritannia, file 15-4520: Norske rapporter og analyser.

Whitehall, the view in Oslo was that the British investment grants represented a violation of Article 13 of the Stockholm Convention, which, however vaguely formulated, restricted the use of government aids. It said that government aids must not cause “frustration of the benefits” stemming from EFTA’s free trade schedule. The frustration clause allowed for bringing a conflict under article 31, which laid out complaint procedures and eventually allowed for tariff retaliation. Bringing a conflict under Article 31 might in the last resort paralyze EFTA, which was something the British government did not want. Hence wishful thinking in Oslo said the British might accommodate Norwegian concerns even further.

Already in December 1967 the Norwegian government threatened to bring the issue into the EFTA machinery. Kåre Willoch, Minister of Trade, asked for a meeting with Anthony Crossland, President of the Board of Trade, held on 24 January 1968. Unsurprisingly, Willoch warned against government investment grants while Crossland responded that Norway also applied regional policy subsidies. Although Willoch at this point in time was involved in talks with Alcan to shove RTZ out of the British scheme, as will be shown in the next section, he still threatened to bring the issue of government aids into EFTA.<sup>69</sup> He did not want the collusive effort with Alcan to weaken his government’s EFTA strategy.

Willoch tabled the issue as the EFTA Council of Ministers convened on 3 February 1968. Having argued that the British plan violated the Stockholm convention, the Council appointed an ad-hoc working group to review the British plans and Norway’s allegations before London took its final decision to support the smelters. Norway submitted a memorandum which argued that by establishing the two announced smelters according to schedule, Norway might lose 240,000 tonnes of export by 1975. Such a distortion of trade would be caused by the government aids, which Oslo estimated to cover one third of the British companies’ production costs.<sup>70</sup> Britain on the other hand argued that the country profoundly needed smelting capacity, that government aids were part of regional policy schemes, and that these did not violate the EFTA treaty.<sup>71</sup> The EFTA working party submitted a report on 12 March 1968, well before the British government had struck any deal with the companies. Endorsed by the EFTA Council this was however rather ambiguous. It concluded that Anglo-Norwegian trade might be distorted and, further-

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69 Aluminium smelting: Discussions with Mr Willoch, 26 January 1968, TNA, BT 241/1732.

70 Ad Hoc Working Group on UK Aluminium Smelters, Geneva 13<sup>th</sup> and 14<sup>th</sup> February, 1968. Memorandum by the Norwegian Delegation, 13 February 1968, TNA, BT 241/1733.

71 UK Aluminium Smelting Proposals defensive Brief for use in EFTA, undated, TNA, BT 241/1733; Ad Hoc Working Party on United Kingdom Aluminium Smelters. Report to Council, annex XI Statement by the United Kingdom delegation, 12 March 1968, TNA, BT 241/1735.

more, that the two member-states ought to find a solution to the conflict through bilateral talks.<sup>72</sup>

The British EFTA delegation reported home that Norway were supported in EFTA: "... it was clear that even our partners who have not found us in breach of the convention were impressed by the Norwegian case and are moving towards a council conclusion which call on us to try again to reach some compromise with the Norwegians which would substantially reduce the level of our aid to the companies and guarantee Norway a quote fair share unquote of our market."<sup>73</sup> Whitehall planners assumed, rightly, that the other member states feared that the British government might also implement expansion schemes in sectors which were more important for their export industries.

Although anticipated, the EFTA support made the British government even less inclined to embarrass the Norwegians. When on 26 March 1968 Willoch and Crossland met in London for further talks, Crossland informed that BACO and RTZ each would set up smelters with 100,000 tons capacity while Alcan a 60,000 tons smelter. Total capacity would add to only 260,000 tons while the companies' tenders had amounted to 360,000 tons. Rightly indeed, Crossland presented the reduction as a concession to Norwegian concerns. However, Willoch was still displeased. According to a British account, he was stubborn at the start but turned cross during the meeting: "From the outset it was clear that no useful outcome could be expected. Willoch considers that the EFTA have largely supported the Norwegian case and that the Council's request for further bilateral discussions was essentially a request to the UK to reduce the amount of the proposed smelter capacity."<sup>74</sup> This seems to be a valid observation. With EFTA's support Willoch seems to have hoped for a political compromise.

Whatever inclination there was to appease the Norwegians, the Labour government was constrained by the domestic agenda. In political terms the smelter project was highly profiled and the Labour government could not afford to fail, and neither delay formal agreements with the companies for too long. The government was unable to force larger reductions upon the companies than those reported by Crossland to Willoch. When the EFTA Council met again on 28 March 1968, Eugene Melville, the UK deputy representative, clearly replied to the Norwegian accusa-

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72 Ad hoc working party on the UK's aluminium smelters – chairman's summary, 8 March 1968, EFTA, 23/05 II; Ad Hoc Working Party on United Kingdom Aluminium Smelters. Report to Council, annex XI Statement by the United Kingdom delegation, 12 March 1968, TNA, BT 241/1735.

73 Telegram (telno 95) Melville to Foreign Office, 14 March 1968, TNA, BT 241/1735.

74 Telegram (telno 561) Foreign Office to EFTA Delegation, 27 March 1968, TNA, BT 241/1735.

tions that EFTA was not a cartel that divided markets among the member-states but a free-trade association that conformed to GATT regulations.<sup>75</sup> The British tone was now more agitated.

The firmer British position made an impression in Oslo, where Willoch still believed in a political solution. He authorized Søren Chr. Sommerfeldt, the Norwegian deputy representative in EFTA, to suggest a compromise. On 3 April 1968 Sommerfeldt suggested that Britain should limit her production of primary aluminium at 180,000 tons per year until 1971, and EFTA would then evaluate the impact of the new British smelters on Norway's aluminium industry.<sup>76</sup> Willoch at this point in time might have hoped that Alcan might withdraw from the scheme. The next section will show that this actually was suggested by the ÅSV management. The Norwegian compromise suggestion was well received among the other EFTA members except for Britain. While influential government planners in Whitehall also tended to somewhat accommodate Norway's compromise suggestion, the Labour cabinet had no more to offer. Basically, it was the involved companies which turned down the compromise. Firstly, RTZ called for political momentum and lobbied to avoid any delay caused by EFTA. Secondly, and more importantly, Alcan bluntly turned down any further compromises. Peter J. Elton argued: "We can't accept now or in the future that EFTA views should in any way determine our rate of production or the timing of our reaching the 120.000 tonnes of output."<sup>77</sup> He believed that Norway's policy in EFTA reflected Willoch's ideas more than the ideas of the Norwegian cabinet.<sup>78</sup> Well informed about the manoeuvres of the Norwegian government with Alcan since January 1968, as will be revealed in the next section, he had good reason to believe so. When the EFTA Council met on 9 May 1968 to discuss the Norwegian compromise suggestion Britain rejected any further restrictions but accepted that EFTA would undertake an evaluation of the impact on Norway's aluminium exports in 1971. This concession seems to have been developed in dialogue with Mr. Elton.<sup>79</sup>

On the request of the other EFTA member states Crossland met Willoch one more time before the British cabinet would formally take its decision on the

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75 Aluminium Smelters in the United Kingdom EFTA/CJC.SR 12/68 (Melville's speech), 28 March 1968, TNA, BT 241/1735.

76 Telegram (telno 129) Melville to Foreign Office, 3 April 1968, TNA, BT 241/1735.

77 Letter from Elton to Brown, 9 April 1968, TNA, BT 241/1736.

78 Aluminium Smelters: Effect of ALCAN proposal on Norway, 5 April 1968, TNA, BT 241/1736.

79 EFTA Ministerial Meeting 9-10 Mai: Aluminium Smelters, 9 May 1968, TNA, BT 241/1737; Note on discussions in Oslo between Minister Anthony Crossland and Minister Kaare Willoch on 22 May 1968, undated, RA, UD, file 52.1/56 IV; Letter from Charlish to Elton, 30 September 1969, GUA, UGD 347, 10/8/11.

smelter issue. This took place in Oslo on 20 May 1968. According to the British Ambassador in Oslo, Willoch's intention was to reduce, or preferably remove, RTZ's involvement in the scheme. While BACO and Alcan had confirmed they would continue to buy Norwegian aluminium, although BACO not a fixed quantity, RTZ had given no such insurance.<sup>80</sup> Hence Willoch pleaded for a fixed ceiling on British expansion below the 260,000 tons that would allow for sustaining the export of 100,000 tons from Norway to Britain. However, Crossland accepted no fixed ceiling, only the 1971 EFTA evaluation already conceded in April.<sup>81</sup> Although the formal announcement in Parliament would take place in July 1968, under the pressure of the involved companies his cabinet had already made the informal decision to support the three smelters.

Having announced the three smelter projects in Parliament, Crossland wrote a letter to Willoch in which he reiterated that his government had no intention whatsoever of restricting Norwegian aluminium export and that no further expansion plans existed.<sup>82</sup> Since the EFTA working party submitted its report in March 1968 there had been no Norwegian explicit threats to apply EFTA's formal complaints procedure. Whitehall now hoped Oslo would stop messing about the smelter scheme.

Norway never invoked Article 31, but continued threatening to do so. On 8 August 1968 Willoch informed Crossland that his government once again would approach EFTA to elaborate the British smelter scheme.<sup>83</sup> With the support of Sweden, Switzerland and Denmark the EFTA Council on 12 September 1968 appointed another working party. This was commissioned to report on the commercial impact on Norway's exports of the British investment grants and power contracts. The report, submitted in July 1969, concluded that the British expansion was likely to harm Norwegian exports, but without making a big issue out of it.<sup>84</sup> Although Alcan in the meantime had announced it would accelerate the second stage of the Lynemouth smelter, on 27 November 1969 the EFTA Council adopted a *modus vivendi* void of any substance. It "would follow developments in EFTA trade in aluminium and in particular the development of Norway's exports to the UK and to other major markets and would consider to what extent Norwegian interests were being affected by the new British

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80 Telegram (telno 187) Ambassador Ian Scott to FCO, 22 May 1968, TNA, FCO 30/42.

81 Aluminium Smelters. Talks in Oslo with Mr. Willoch, 24 May 1968, TNA, BT 241/1737.

82 Letter from Crossland to Willoch, 24 July 1968, TNA, BT 241/1740.

83 Letter from Willoch to Crossland, 8 August 1968, TNA, BT 241/1740.

84 Establishment of aluminium smelters in the United Kingdom, Report to the Council by Deputies, 23 July 1969, EFTA, 23/05 VIII.

smelters.”<sup>85</sup> This was not only because EFTA was an intergovernmental organization with weak powers, but also because of valid British arguments. The British government never changed its line of argument, saying that also the Norwegian government applied government aids as part of regional policy, and that EFTA was not a cartel established to sustain a market division among the member countries. Not least, the Norwegian companies continued to expand as well. The Board of Trade aptly commented in the spring of 1969: “... recent optimistic pronouncements by chiefs of the Norwegian industry and announcements of major expansions of capacity in Norway have largely undermined the Norwegian position.”<sup>86</sup> Whitehall was convinced Britain had little to fear from EFTA.

It is not at all difficult to understand Norway’s initial response towards the British smelter scheme. The pressing question is why the Norwegian government sustained the issue for so long. Admittedly, on the basis of the information requested from the Norwegian companies the government in 1969 estimated a total Norwegian yearly loss of up to 140,000 tonnes in 1973.<sup>87</sup> Still, 1968 and 1969 were good years for business and the Norwegian industry was clearly optimistic. There was no sign whatsoever that the British scheme would adversely affect investment decisions in Norway, as originally feared by the planners.

ÅSV, which was less dependent on the British market, signalled optimism. On 30 July 1968, soon after the British smelter program was announced in the House of Commons, ÅSV’s board decided to ask Alcan for a rescheduling of its supply scheme. ÅSV wanted to sell more ingots to independent buyers on the free market and announced it would raise smelting capacity by 53,000 tons by 1971. As compared with the supply scheme agreed upon in 1966 for the years 1969–1972 the revised supply schedule, formally agreed in 1969, reduced annual supplies to Alcan by 50%.<sup>88</sup>

The smelters in Mosjøen and Lista were the most dependent on British consumption and Elkem even estimated their shipments in 1973 might be 142,000 tonnes without the British smelters while only 47,600 with.<sup>89</sup> However, already in November 1967 Georg Hagerup-Larsen, the CEO of Elkem, maintained towards the Minister of Industry that Norwegian industry must continue to expand despite

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85 EFTA Ministerial Council, 27 November 1969, EFTA, CJC.SR, 35/69.

86 Aluminium Smelters and EFTA, 28 March 1969, TNA, BT 241/1743.

87 Note by Nils Dahl to Skarstein on the aluminium conflict, 3 June 1969, RA, ID, UA, box 78.

88 Changes in quantities for the years 1973-75 of Alcan/ÅSV agreement, note by Gunnar Chr. Røed, 26 August 1969, GUA, UGD 347, 10/8/11.

89 Letter from Elkem to the Ministry of Trade, 23 April 1969, RA, ID, UA, box 78.

the British smelter initiative.<sup>90</sup> And Elkem surely did. Establishing Alcoa of Great Britain in 1968, in which Elkem had a 25% stake and which secured British demand from the Mosjøen and Lista smelters, in fact made the British expansion scheme close to harmless for them.

It is not easy to answer the question why the Norwegian government sustained the issue after July 1968. Some help is provided in the British records, which indicate Anglo-Norwegian liaison between closed doors. In August 1968 officials from the Norwegian Ministry of Foreign Affairs met with counterparts from the Board of Trade to discuss the issue. One report informed that the Norwegians “... went on to say that they were finding it difficult to decide how to proceed.[...] They obviously feel that after making such fuss they cannot drop the matter now, although they might do so in a few months time.”<sup>91</sup> In 1969 Elton indicated that the issue was kept alive because of domestic politics: “Recent discussions we had in Norway suggested that most people there would not be very concerned about it. The elections due to be held on 8<sup>th</sup> September might, however, have an important effect on the Norwegian attitude.”<sup>92</sup>

We should not exclude matters of political prestige from the explanation but a more significant answer is the Norwegian government’s increasing concern to avoid British policy to be adopted elsewhere, and particularly in the EC. During the spring of 1968 planners in Oslo were informed that the Federal Republic of Germany (FRG) would follow the British example and implement a 250,000 tons expansion program. The Norwegian embassy in Bonn reported that government subsidies would cover 15% of the construction costs.<sup>93</sup> Government planners as well as the ÅSV management obviously were worried as well by the West German plans than by the British.<sup>94</sup> A close reading of the Norwegian drafts for the 1969 EFTA report indicates that Norway maintained the issue on the EFTA agenda also to prevent other governments following the British example. It underlined “general industry effects” as “governmental subsidization of aluminium projects will counteract a rational division of labour. Furthermore it may be ascertained that countries

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90 Note on conversations between the Minister of Industry and representatives from the Federation of Industry, 13 November 1967, RA, Private archive 627: Knut Getz Wold (henceforth KGW), box 47.

91 Note by G.A. Barry on aluminium smelters, 16 August 1968, TNA, BT 241/1740.

92 Note for the Record. Meeting with Alcan on 27 August 1969, undated, GUA, UGD 347, 10/8/11.

93 Note by Knut Getz Wold on expansion of aluminium production in West Germany, 14 May 1968, RA, KGW, box 148.

94 Note by Roar Melien on protectionism and non-tariff barriers in the aluminium industry, 31 May 1968, RA, KGW, box 148; Note by Per G. Schøyen on the West German aluminium industry, 26 June 1968, RA, KGW, box 148.

and areas with the best conditions for a competitive and profitable production of aluminium will suffer most by such state interference.”<sup>95</sup> The section from which the quote is taken was formulated by the management of ÅSV.<sup>96</sup> In 1968 the FRG took 36.4% of the ÅSV outlet while the UK only 10.5%. The ÅSV management would take measures to sustain its German market.<sup>97</sup>

## The Role of Alcan

The role of Alcan and the liaison between Alcan and the Norwegian government renders support to the above interpretation. While accommodating Norwegian concerns in the first place Alcan also played an active role in appeasing the Norwegian government during the “conflict”.

According to Campbell, Alcan was contacted by the Highlands and Islands Development Board in November 1966, which suggested that Alcan in anticipation of government investment grants might be interested in building a nuclear-based smelter in Scotland. Elton obviously saw Alcan’s position in the UK threatened by the Labour government’s ambitions. Government papers indicate he felt Alcan was counteracted by the government.<sup>98</sup> In retrospect Nathaniel Davis, the President of Alcan Limited, Montreal, informed Knut Getz Wold, the Norwegian representative in Alcan’s board, why Alcan was concerned: if the new British smelters would sell badly, the government would want to shelter them, and Alcan’s Canadian and Norwegian smelters might face future import restrictions in Britain.<sup>99</sup> Hence Elton in 1967 intensified efforts to find an acceptable solution for Alcan. “The alternative is to whither in the UK. [...] We don’t have much choice”, the Alcan veteran Dana Bartholomew, now a member of the ÅSV board

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95 De britiske aluminiumprosjekter, note by Niles L. Dahl, 6 May 1969, NHA, ÅSV Saksarkiv, box: Handelsdept. utvalg vedr. al.verk i Storbritannia, file 15-4520: Norske rapporter og analyser.

96 Bidrag til EFTA-rapport om de britiske aluminiumverk, note by Reidar Melien, 16 April 1969, NHA, ÅSV Saksarkiv, box: Handelsdept. utvalg vedr. al.verk i Storbritannia, file 15-4520: Norske rapporter og analyser.

97 Note by Jean Michelet on market development and metal allocation 1969–1975, 15 July 1968, RA, KGW, box 148.

98 Cf. note by Douglas Allen on Alcan’s aluminium smelter to Board of Trade, undated, TNA, BT 346/1: “Elton obviously suspects that the IRC are prejudiced against ALCAN and that [...] their aim would be to demonstrate that it was a less attractive proposition than the BACO and RTZ proposals.”

99 Note by Knut Getz Wold on the British aluminium plan after conversation with Mr. Davis, 24 February 1968, RA, KGW, box 148.

as well as Alcan's board in Montreal, wrote after the British government's official call for smelter schemes in October 1967.<sup>100</sup>

It was basically Alcan's tender that exceeded the capacity originally foreseen by the Wilson government. As displayed in table 6, the smelter tendered by Alcan would also produce most costly of the three while it would also make the less improvement on the balance of payments. Hence, Alcan's bid was weaker than BACO's, and government planners tended in January 1968 to give preference to BACO and RTZ.<sup>101</sup> Campbell confirms that "The pressure on Alcan became even more severe when, early in the New Year, Elton learned from confidential sources that Alcan was to be excluded from the government's smelter plans."<sup>102</sup> Still Alcan was powerful enough to join the program as well as reduce the competitor's shares in it. According to Campbell, Elton made it clear that if Alcan was excluded from the expansion scheme, "the company would not buy metal from competitors but would fight for every ton of market it had developed in the U.K."<sup>103</sup> In retrospect Lord Harcourt, a member of the board of Alcan Limited, Montreal, said in a meeting of the Alcan Board of Directors: "... UK Government had only wanted two smelters and Alcan had pretty well forced its way in."<sup>104</sup> This is in a fair way an apt description.

So how did Alcan manage to force its way into the program during the spring of 1968 without even having to cut down its own expansion targets? Surely, the company's close relation with the British government since 1939 must have been conducive. Alcan also took steps to become less dependent. Having informed the Board of Trade of the option already in the tender of December 1967, in March 1968 Elton formally stated that Alcan would go for a solution independent of the government's nuclear power scheme.<sup>105</sup> This would make Alcan's project less dependent on the government's decisions. However, Alcan deliberately also used its relations with Norway to influence the decisions in Whitehall.

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100 Letter from PJ Elton to Nathaniel Davies, 5 May 1967, GUA, UGD 347, 10/8/3; UK Smelter, note by Dana Bartholomew, 6 November 1967, GUA, 347, 10/8/1. Quotation from Bartholomew's note.

101 Cf. Edmund Dell, *Political Responsibility and Industry* (London: George Allen & Unwell, 1973), 115: "From ALCAN's point of view the project was taking on by the appearance of a conspiracy of RTZ, aided and abetted by the British Government, to deprive ALCAN of a valuable market." Dell was Minister of State for Trade in the Wilson cabinet.

102 Campbell, *Global Mission*, 460.

103 *Ibid.*

104 Summary of the Proceedings of the Special meeting of the Board of Directors held in Montreal on 20 October 1971, undated, Arbeiderbevegelsens Arkiv og Bibliotek (Labour movement's archive, henceforth ABB), Oslo, Erik Brofoss papers (henceforth EB), box 102.

105 Alcan announced its intention publicly already in January, cf. *The Times*, 20 January 1968: "ALCAN makes go-it-alone bid for £ 49 m complex".

From the outset Alcan took Norwegian interests into consideration.<sup>106</sup> Before the tender was submitted, Elton informed government officials that “Alcan believed a phased programme could be implemented without market dislocation, whereas a 120,000 ton scheme starting up all in 1970 would be likely to result in cutbacks in metal production in Canada and Norway and consequent political repercussions.”<sup>107</sup> Elton’s statement reveals precisely why Alcan would expand by building only 60,000 tons capacity by 1970. After the tender was submitted he vouched explicitly that ÅSV would remain unharmed by Alcan’s smelter proposal: “Our proposals for a UK smelter were of course made in the full knowledge of our obligations under the Norwegian agreements and will not alter the tonnages of metal we shall take out of Norway to our various markets.”<sup>108</sup> As mentioned in Alcan’s press release of 19 January 1968, this is why the tender proposed an expansion in two stages, the second scheduled for only in 1974.

Mainly because of Norwegian objections the government might still restrain Alcan’s ambitions. On 15 February 1968, Prime Minister Wilson spoke publicly of Alcan’s tender as a “very complicated complication”.<sup>109</sup> Elton responded swiftly by sending letters to Wilson, Cabinet Members and Ministers of Parliament. He invoked the traditional close relation between Alcan and the British government but referred also to the position of the Norwegian government. Regarding the Norwegians he wrote to Wilson in early March: “... they are firmly against the principle of using investment grants for such industries as aluminium smelting, they also expressed the view that if nevertheless the UK Government were to proceed with smelting, they would certainly consider that it would be illogical and unjustified for EFTA ‘reasons’ to be used against an Alcan smelter, bearing in mind the preference already stated by the Norwegian minister of industry for the Alcan project rather than other smelters.”<sup>110</sup> At that point in time Elton had convinced planners in the Board of Trade that “... it does not look as though the British market could accommodate, in the early 1970s, an ALCAN smelter of 60.000 tons and both BACO’s and RTZ’s proposals.”<sup>111</sup> By linking Alcan’s Norwegian obligations as well as the Norwegian concern for British smelter expansion, Elton was able

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106 Note by S.D. Wilks on Alcan’s commitments to the Norwegian government, 18 December 1967, TNA, BT 241/1731.

107 Main points covered at meeting with IRC Tuesday 5<sup>th</sup> December 1967, note by Richard TV Martin, undated, GUA, UGD 347, 10/8/3 folder 2.

108 Letter from Elton to Denis Charlish (BT), 11 January 1968, GUA, UGD 347, 10/8/4.

109 Letter from Elton to Harold Wilson, 19 February 1968, GUA, UGD 347, 10/8/5.

110 Letter from Elton to Harold Wilson 1 March 1968, GUA, UGD 347, 10/8/5.

111 Note on talks between P.J. Elton (Alcan) and C.M.P. Brown (BT), 15 February 1968, TNA, BT 241/1733.

to influence government decisions. When the Cabinet took its final decision on the smelter scheme in early May 1968, it accepted Elton's reasoning. The government successfully moved a reluctant BACO and thereafter an angry RTZ to reduce their proposed smelter capacity from 120.000 to 100.000 tons each. However, in exchange Alcan accepted to not introduce the second expansion plan before the aluminium conflict in EFTA with the Norwegians was cleared away.<sup>112</sup>

To really acknowledge the power of Elton's arguments during these months, we must not only keep the intergovernmental "conflict" in sight but also shift our view towards Oslo. The Kingdom of Norway was from 1967 a large shareholder in Alcan. Already during his first board meeting in Montreal in April 1967 Knut Getz Wold was informed that Alcan (UK) was inclined to join a possible British expansion program. When the Norwegian Minister of Industry, Sverre Walter Rostoft, visited Canada some months later, he was also informed by Alcan. In November 1967 Getz Wold also met with Elton behind closed doors to discuss the matter. Elton said the expansion plan could not be stopped because Labour had already invested too much political prestige in it.<sup>113</sup> It has been impossible to identify exactly when Getz Wold's information accrued to the ÅSV management. But under any circumstance the management did not show much concern after the Wilson government had announced its intention in October 1967. The reason was, firstly, because ÅSV in December 1966 had agreed a fixed long-term supply contract with Alcan, secondly, because ÅSV would prefer Alcan to be inside the British program if it really was implemented.<sup>114</sup> With Alcan inside the program, this would allow for Norwegian influence. Hence, Getz Wold tabled no Norwegian objections in the Alcan board during 1967. Getz Wold knew very well that Alcan pursued a 120,000 tons target but that the expansion would take place in two stages. He was explicitly told that the British smelter would furnish the British market while Alcan's Norwegian and Canadian smelters would perform as swing exporters in the UK.

As Nathaniel Davis visited Norway in February 1968, Getz Wold arranged for a meeting between Davis and Elton from Alcan and Rostoft and Willoch from the cabinet of the Norwegian government. The two Norwegian ministers maintained ÅSV's policy although at this point in time Norway had raised concern in EFTA about the British scheme. Elton informed them that the British government

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112 Note on aluminium smelters, 6 May 1968, TNA, T 326/742.

113 Note by Knut Getz Wold on conversations with the Minister of Industry and representatives from industry, 8 November 1967, RA, KGW, box 48.

114 Letter from Jean Michelet to Ministry of Industry, 28 October 1967, RA, KGW, box 147; Note by Harald A. Sommern to Knut Getz Wold, 31 October 1967, RA, KGW, box 147.

was inclined to reject Alcan's tender but that Norwegian support for Alcan might help to avoid this. His strategy, he informed, was to push RTZ out of the scheme as BICC Aluminium Holdings hardly would be able to consume the 120,000 tons proposed for the Holyhead smelter. As this obviously fitted to Norwegian hopes Elton suggested that the Norwegian government informed its counterpart in London about its clear preference for Alcan. The argument would be that Alcan would only establish a modest 60,000 capacity by 1970 while BACO and RTZ each would establish a capacity of 120,000 tons. Having after the meeting spoken with Willoch about the matter, Getz Wold informed Davies that the Norwegian government would follow Elton's suggestion, although in a manner that would not compromise Norway's efforts also to reach a compromise through EFTA. The Embassy in London would soon contact the Board of Trade to convey the message.<sup>115</sup>

Admittedly, we do not know exactly when this message was passed on to the British but we know that Whitehall officials were aware of the Norwegians' preference for Alcan. Furthermore, we do not know whether the Norwegian concern made a difference when the government forced RTZ and BACO to reduce their expansion targets. Yet from circumstantial evidence, it is likely that it did. The tactical deal between Alcan and the Norwegian government later found its expression in Alcan's press release when its intention to erect the 60,000 tons coal-based Lynemouth smelter was announced: "The size of the smelter and the scheduling of its installation is designed to minimize disruptions to our existing supply lines from Canada and Norway."<sup>116</sup>

A short episode in late April 1968 clearly illustrates the Norwegian government's position. The management of ÅSV assumed that the profitability of its Norwegian smelters would be considerably higher than Alcan's envisaged Lynemouth smelter. ÅSV's capacity would expand by 50,000 tons in 1968 and by 1974 it was scheduled to reach 350,000 tons.<sup>117</sup> Jean Michelet, the new CEO of ÅSV, now argued that ÅSV's supply clause with Alcan would be much more valuable if Alcan's proposed smelter was removed.<sup>118</sup> He therefore wanted Getz Wold to vote

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115 Note by Knut Getz Wold on conversation with Mr Davis, 24 February 1968, RA, KGW, box 148; Note by Knut Getz Wold on the British aluminium plans and Alcan's position, 1 March 1968, RA, KGW, box 148.

116 Release Communiqué 4 April 1968, RA, KGW, box 148.

117 Memorandum by Håkon Sandvold on the modernization and expansion of the plants at Årdal and Sunndal, 22 April 1968, RA, KGW, box 148.

118 Note by Knut Getz Wold on ÅSV's attitude towards Alcan's British plans, 2 May 1968, RA, KGW, box 148.

against the Lynemouth smelter when Alcan's board would vote on the project.<sup>119</sup> However, Willoch, the cabinet minister most pronounced in favour of sustaining the "conflict" in EFTA, advised Getz Wold not to vote against the Lynemouth smelter. He should, on the basis of established confidence, try to convince Alcan to accommodate Norwegian interests when possible.<sup>120</sup> Getz Wold voted in favour of the Lynemouth smelter.

This pragmatic and cooperative approach, in contrast to the more highly profiled critique in EFTA, remained Norwegian policy. The Norwegian government knew from the outset that Alcan scheduled a second expansion stage in 1974. As part of the compromise with the Norwegian government in the spring of 1968, EFTA would in 1971 review the impact of the first stage on Norwegian exports as well as estimate the likely impact of the second stage.

In January 1969, Elton informed the British government that Alcan wanted to advance the second stage and asked for the review to take place already in 1970. There were financial reasons for doing this but also the relation to Norway mattered. Because the supply schedule agreed between ÅSV and Alcan in 1966 would be revised, Elton was concerned that ÅSV would not be able to supply Alcan's British demand. He argued: "Norway would be unable to meet Alcan's requirements for metal. Alcan had decided, therefore, that it was necessary to go ahead with their plans for expanding their smelter in the UK."<sup>121</sup> There is no indication that Getz Wold opposed this. However, Alcan's decision was not put into operation because the construction of the first stage was already well behind schedule. Only in late-1971 did members of the Alcan board in Montreal suggest a further expansion of the Lynemouth smelter. But at that point in time the aluminium industry faced increasing over-capacity in Europe. Getz Wold strongly opposed the idea and reminded about the traditional Norwegian concerns. He had no problem in getting the support of Mr. Davis.<sup>122</sup> Only in 1972 was Alcan's Lynemouth smelter brought on stream.

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119 Ibid.

120 Note by Knut Getz Wold on Alcan's and ÅSV's expansion plans, 14 May 1968, RA, KGW, box 148.

121 Note of Meeting with Alcan 13<sup>th</sup> January 1969, undated, GUA, UGD 347, 10/8/11.

122 Note by Knut Getz Wold after Alcan's board meeting on 20 October 1971, 9 November 1971, AAB, EB, box 109.

## Concluding Remarks

The European aluminium industry in the 1960s was not only characterized by increasing vertical integration on the part of the major aluminium corporations but also by strong government involvement.<sup>123</sup> Governments implemented expansion programs in close cooperation with the aluminium majors. Norway and France, who had emerged as fierce competitors in the 1950s, intensified their efforts in the next decade. In the 1960s also the Federal Republic of Germany and the United Kingdom launched schemes to expand their smelter capacity. While the British program largely failed the vigorous German program turned the country into the largest European producer by the 1970s.

A contest existed between the various national schemes, in which public policy to influence the aluminium corporations' investments was the instrument at hand. Profoundly concerned by British intentions the Norwegian government challenged the government aids announced by the Wilson government but never submitted a formal complaint in EFTA. Whether the British government aids were illegal according to EFTA regulations, was never tested. The Labour government really had little to offer beyond lip-service to the principles of free trade. Too much was at stake for the British government to allow for any splitting of the difference. Anthony Crossland maintained that Britain must implement the scheme whatever conclusions the EFTA Council of Ministers would reach.<sup>124</sup> Basically, the Norwegian government acknowledged the position in Whitehall.

Why did the Norwegian government keep the ball rolling for so long in EFTA? Obviously it could not afford to lose prestige in the public but it was more important to signal to governments the view that government subsidisation of aluminium industry would counteract a rational division of labour based on natural advantages, the doctrine on which Norwegian growth policy depended. The government feared that other governments might follow the Wilson government's example.

The Norwegian government's position was certainly weak in relation to the British. However, the British government's position towards Alcan was also weak. Alcan, which had interests in both countries, managed to emerge as a winner of the three-way game. Maintaining close liaison with both governments Alcan forced its way into the British scheme and, with the active support of the Norwegian government, was instrumental in reducing BACO's and RTZ's involvement.

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123 Cf. John Stuckey, *Vertical integration and joint ventures in the aluminium industry* (Cambridge Mass.: Harvard University Press, 1983).

124 Note on Aluminium Smelter Proposal, 1 April 1968, TNA, BT 241/1735.

Alcan's Lynemouth smelter was not opposed by Knut Getz Wold, the Norwegian government's representative in Alcan's board. Basically, ÅSV had little to fear from Alcan's involvement in the British program.

While there is good reason to question whether there was an Anglo-Norwegian conflict at all, Alcan's influence in the three-way game suggests that the industry majors were able to influence and moderate the political contest among the various national expansion programmes in the 1960s.

# References

## Archives

### *Chapter 1:*

The National Archives, Kew, England.

Das Bundesarchiv, Berlin, Germany.

### *Chapter 2:*

Alcoa Archives, Heinz History Center, Pittsburgh, PA, United States.

Franklin Delano Roosevelt Presidential Library, Hyde Park, NY, United States.

Harry S Truman Library, Independence, MO, United States.

Library of Congress, Washington DC, United States.

National Archives and Records Administration, College Park, MD, United States.

### *Chapter 3:*

BACO Records (British Alcan), University of Glasgow Business Records Archives, Glasgow, Scotland.

Alcoa Archives, Heinz History Center, Pittsburgh, PA, United States.

NACO Archives, Hydro bedriftshistoriske samling (Norsk Hydro Historical Archives), Notodden, Norway.

Private archival material, in possession of Thomas Fearnley, Nittedal, Norway.

Private archival material, in possession of decendants of Michel Glouchevitch, United States.

Pechiney Archives, Institut pour l'histoire de l'aluminium, Paris, France.

Riksarkivet (National Archives) Oslo, Norway.

### *Chapter 4:*

Alcoa Archives, Heinz History Center, Pittsburgh, PA, United States.

Alcan Rio Tinto, ex Alusuisse (AIAG) Archives, Zurich, Switzerland.

Archivio Banca Intesa San Paolo, Milano, Italy.  
Archivio Storico Banca d'Italia, Rome, Italy  
Archivio Edison in Corsico, Milano, Italy.  
Archivio Storico IRI, Rome, Italy.  
Archivio Thaon di Ravel, Fondazione Luigi Einaudi,, Torino, Italy.  
Pechiney Archives, Institut pour l'histoire de l'aluminium, Paris, France.

### *Chapter 5:*

Alcan Rio Tinto Archives, Business Information Centre, Montréal, Canada.  
BACO Records (British Alcan), University of Glasgow Business Records Archives, Glasgow, Scotland.  
Bodleian Library, University of Oxford.  
The National Archives, Kew, England.  
The National Archives of Scotland, Edinburgh, Scotland.

### *Chapter 6:*

BACO Records (British Alcan), University of Glasgow Business Records Archives, Glasgow, Scotland.  
The National Archives, Kew, England.  
The National Archives of Scotland, Edinburgh, Scotland.

### *Chapter 7*

NACO Archives, Hydro bedriftshistorisk samling (Norsk Hydro Historical Archives), Notodden, Norway.  
Riksarkivet (National Archives), Oslo, Norway.  
Årdal og Sunndal Verk Topplederarkiv (ÅSV Top management Archives), Hydro bedriftshistorisk samling (Norsk Hydro Historical Archives), Notodden, Norway.

### *Chapter 8:*

Arbeiderbevegelsens Arkiv og Bibliotek (Labour Movement Archives), Oslo, Norway.  
BACO Records (British Alcan), Glasgow University Archive Services, Glasgow, Scotland.  
European Free Trade Association (EFTA) Archive, Geneva, Switzerland.  
Mosjøen Aluminiumverk Archive, Mosjøen, Norway.  
Riksarkivet (National Archives), Oslo, Norway.  
The National Archives, Kew, England.  
Årdal and Sunndal Verk Saksarkiv (ÅSV Case File Archive), Hydro bedriftshistorisk samling (Norsk Hydro Historical Archives), Notodden, Norway.

## Newspapers, Printed Sources and Periodicals

*Alluminio. Rivista tecnica del gruppo metalli leggeri della associazione nazionale fascista fra gli industriali metallurgici italiani*

*Cassier's Magazine*

*The Economist*

*Fortune*

*Hansard*

*The Independent*

*The Iron Age*

*The Nation*

*New York Times*

*Popular Mechanics*

*Public Papers of the President*

*Statistische Zusammenstellungen über Aluminium, Blei, Kupfer, Nickel, Quecksilber, Silber, Zink und Zinn Stortingsforhandlingene*, Official report of the proceedings of the Norwegian Parliament.

*Stortingstidende*, Verbatim proceedings of the Norwegian Parliament.

*Time*

*The Times*

*United Kingdom House of Commons, Parliamentary Papers*

*Verdens Gang*

## Literature

Albert, Michael. *Capitalism Vs. Capitalism: How America's Obsession with Personal Achievement and Short-Term Profit Has Led It to the Brink of Collapse*. New York: Four Walls Eight Windows, 1993.

Alcan Aluminium Limited Montreal. *Annual Report*. 1967.

Amatori, Franco and Bruno Bezza, eds. *Montecatini, 1888–1966. Capitoli di storia di una grande impresa*. Bologna: Il Mulino, 1990.

Amatori, Franco. "Growth via Politics: Business Groups Italian Style" in *Beyond the Firm: Business Groups in International and Historical Perspective*, eds. Takao Shiba and Masahiro Shimotani. Oxford: Oxford University Press, 1997: 109–134.

Amatori, Franco. "The Fascist Regime and Big Business: The Fiat and Montecatini Cases," in *Enterprise in the Period of Fascism in Europe*, eds. Harold James and Jakob Tanner. Hants: Ashgate, 2002.

Andersen, Kjetil Gjølme and Gunnar Yttri. *Et forsøk verdt. Forskning og utvikling i Norsk Hydro gjennom 90 år*. Oslo: Universitetsforlaget, 1997.

Andersen, Kjetil Gjølme. *Flaggskip i fremmed eie: Hydro 1905–1945*. Oslo: Pax Forlag, 2005.

Anderson, Dewey. *Aluminium for Defense and Prosperity*. Washington: Public Affairs Institute, 1951.

Armentano, Dominick. *Antitrust Policy; The Case For Repeal, Revised 2nd Edition*. Auburn: Ludwig von Mises Institute, 1999.

- Arnold, Thurman. *The Bottlenecks of Business*. New York: Reynal & Hitchcock, 1940.
- Arnold, Thurman. *The Folklore of Capitalism*. New York: Blue Ribbon Books, 1941.
- Associazione fra le Società Italiane per Azioni. *Notizie Statistiche sulle Società Italiane per Azioni*, 1928.
- BACO. *Aluminium*. London: The British Aluminium Company, 1908.
- BACO. *Aluminium in the Highlands*: promotional brochure. London: Raithby, Lawrence & Co. 1978.
- Ball, Simon. "The German Octopus: The British Metal Corporation and the Next War, 1914–1939" *Enterprise & Society* vol.5 no.3 (2004), 451–489.
- Bank Of England. *Quarterly Bulletin 16*. London: HMSO, 1976.
- Banse, Ewald. *Raum und Volk im Weltkrieg*. Oldenburg: Gerhard Stalling, 1932.
- Barham, Bradford. "Strategic Capacity Investment and the Alcoa-Alcan Monopoly 1888–1945," in *States, Firms And Raw Materials; The World Ecology and Economy of Aluminium*, eds. Bradford Barham, Stephen Bunker and Denis O'Hearn. University of Wisconsin Press, Madison 1994: 69–110.
- Baruch, Bernard. *American Industry During the War, a report of the War Industries Board (March 1921)*. New York: Prentice-Hall, 1941.
- Baruch, Bernard. *Baruch: Public Years*. New York: Holt, Rinehart and Winston, 1960.
- Bastable, Marshall. *Arms and the State*. Burlington: Ashgate, 2004.
- Bentley, Michael. "Boundaries" in theoretical language about the British State" in *The Boundaries of the State in Modern Britain*, eds. Simon Green and Richard Whiting. Cambridge: Cambridge University Press, 1996: 29–56.
- Bertilorenzi, Marco. *Il Controllo della sovrapproduzione. I cartelli internazionali nell'industria dell'alluminio in prospettiva storica 1886–1945* (PhD thesis, Univeristà degli Studi di Firenze, 2010).
- Bertilorenzi, Marco. "L'Alliance Aluminium Compagnie, 1931–1939. Organisation et gestion de la branche internationale de l'aluminium entre Grande Crise et Guerre Mondiale", in *Contribution à une histoire des cartels en Suisse*, ed. A. Cortat (Neuchâtel: Editions d'Alphil 2010).
- Bertilorenzi, Marco. "The International Aluminium Cartels, 1901–1939: The construction of international corporate business" *I jordanas de historia empresarial: España y Europa* (11–12 December 2008).
- Bianchi, Bruna. "L'Economia di Guerra a Porto Marghera: produzione, occupazione, lavoro. 1935–1945," in *La Resistenza nel Veneziano. La società veneziana tra fascismo, Resistenza, repubblica*, eds. Giannantonio Paladini and Maurizio Reberschak (Venezia: Istituto veneto per la storia della resistenza, 1985), 167–169.
- Bond, Brian. *British Military Policy between the Two World Wars*. Oxford: Clarendon Press, 1980.
- Bonfils, René. "Pechiney au pays des Soviets. Le contrat russe de 1930," *Cahiers d'histoire de l'aluminium* 23 (1998), 29–50.
- Bonfils, René. "Pechiney en Espagne, 1925–1985," *Cahiers d'histoire de l'aluminium*, n. 38–39, (2007): 77–92.
- Bothwell, Robert and William Kilbourn. *C. D. Howe: A biography*. Toronto: McClelland and Stewart, 1979.
- Bowman, Isaiah. *The New World; Problems in Political Geography*. London: George Harrap & Company Ltd, 1928.

- Brands, H. W. *Traitor to His Class; The Privileged Life and Radical Presidency of Franklin Delano Roosevelt*. New York: Doubleday, 2008.
- Bregaint, David. "Det 'uønskede barnet'." Pechineys norske datterselskap DNN, 1913–1958" in *Globalisering gjennom et århundre, norsk aluminiumsindustri 1908–2008*, eds. Johan Henden, Hans Otto Frøland, and Asbjørn Karlsen. Bergen: Fagbokforlaget, 2008: 101–135.
- Brofoss, Erik. *Planene for økonomisk integrasjon i Europa. Fire forelesninger ved Norges Tekniske Høgskole, januar 1958*. Trondheim: Arbeidernes Opplysningsforbund, 1958.
- Bulson, Phillip. ed. *Aluminium Structural Analysis: Recent European Advances*. Oxon: Taylor & Francis, 1991.
- Burk, Kathleen, ed. *War and the State: The Transformation of British Government, 1914–1919*. London: Allen & Unwin, 1982.
- Cailluet, Ludovic. "The British Aluminium Industry, 1945–80s: Chronicles of a Death Foretold?" *Accounting, Business & Financial History*, vol.11 no.1 (2001): 79–97.
- Cailluet, Ludovic. "L'impact de la Première Guerre mondiale et le rôle de l'État dans l'organisation de la branche et des entreprises," in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: Armand Colin, 1997.
- Cailluet, Ludovic. *Stratégies, structures d'organisation et pratique de gestion de Pechiney des années 1880 à 1971*. Lyon : Thèse de doctorat, Université de Lyon III, 1995.
- Cain, Frank. *Economic Statecraft during the Cold War: European Responses to the US Trade Embargo*. New York: Routledge, 2007.
- Cain, Louis and George Neuman. "Planning for Peace: The Surplus Property Act of 1944", *The Journal of Economic History* vol.41 no.1 (March, 1981): 129–135.
- Cain, Peter and Anthony Hopkins. "Gentlemanly capitalism and British expansion overseas II: new imperialism, 1850–1945" *Economic History Review* vol.40 no.1 (1987): 1–26.
- Cairncross, Alec. "Economic policy and performance, 1945–1964" in *The Economic History of Britain since 1700, vol.3: 1939–1972*, eds. Roderick Floud and Deidre McCloskey. Cambridge: Cambridge University Press, 1994.
- Calendoro, Giorgio. *Storia dell'Italia Moderna. Il fascismo e le sue guerre, 1922–1945*. Milano: Feltrinelli, 1993.
- Campbell, Duncan. *Global Mission; The Story of Alcan, vol.I*. Toronto: Ontario Publishing, 1985.
- Campbell, Duncan. *Global Mission; The Story of Alcan, vol.II*. Toronto: Ontario Publishing, 1990.
- Cannadine, David. *Mellon: An American Life*. New York, A. A Knoph, 2006.
- Carley, Michael Jabara. "Episodes from the Early Cold War: Franco-Soviet Relations, 1917–1927", *Europe-Asia Studies*, vol.52, no.7 (Nov. 2000): 1275–1305.
- Carley, Michael Jabara. "Five Kopecks for Five Kopecks: Franco-Soviet trade negotiations, 1928–1939", *Cahiers du monde russe et soviétique*, vol.33, no.1 (1992).
- Carr, Charles. *Alcoa, An American Enterprise*. Rinehart: New York, 1952.
- Carr, Edward. *A History of Soviet Russia, Vol.12, Foundations of a Planned Economy 1926–1929*. London: Macmillan, 1976.
- Carr, Edward and Robert Davies. *A History of Soviet Russia, Vol.10, Foundations of a Planned Economy 1926–1929*. London: Macmillan, 1969.
- Castronovo, Valerio. *Giovanni Agnelli. La Fiat dal 1899 al 1945*. Torino: Einaudi, 1977.
- Castronovo, Valerio. *Fiat: Una storia del capitalismo Italiano*. Milano: Rizzoli, 1999.

- Catton, Bruce. *The War Lords of Washington*. New York: Harcourt, Brace, 1948.
- Chandler, Alfred. *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge: Belknap Press 1990.
- Chandos, Oliver. *Memoirs*. London: Bodley Head, 1962.
- Chick, Martin. "Listing potential candidates for nationalization: Britain, 1948" *Enterprises et histoire* vol.37 (2003/4): 167–171.
- Cianci, Ernesto. *La nascita dello stato imprenditore in Italia*. Milano: Mursia, 1977.
- Ciocca, Pierluigi and Gianni Toniolo. *L'economia italiana nel periodo fascista*. Bologna: Il Mulino, 1976.
- Clarkson, Grosvenor. *Industrial America in the World War, the Strategy Behind the Line, 1917–1918*. New York: Houghton Mifflin, 1923.
- Clawson, Marion. *New Deal Planning; The National Resources Planning Board*. Baltimore: Johns Hopkins University Press, 1981.
- Coopey, Richard. "Industrial Policy in the White Heat of the Technological Revolution" in *The Wilson Governments 1964–1970*, eds. Richard Coopey, Steven Fielding and Nick Tiratsoo. London: Pinter, 1995.
- Cordero, Harry and Leslie Tarring. *Babylon to Birmingham. An Historical Survey of the Development of the World's Non-Ferrous Metal and Iron and Steel Industries and the Commerce in Metals since the Earliest Times*. London: Quinn Press, 1960.
- Cordero, Harry. *The World's Non-Ferrous Smelters*. London: Quinn Press, 1960.
- Corporazione della Chimica. *Piano Autarchico, voll.II, Bozze di stampa (riservato), vol.14. Potassa ed Alluminio*. Roma: 1937.
- Cotula, Luigi Spaventa, ed. *La politica monetaria tra le due guerre. 1919–1935*. Roma-Bari: Laterza, 1993.
- Creveld, Martin Van. *The Rise and Decline of the State*. Cambridge: Cambridge University Press, 1999.
- Cuff, Robert. "A 'Dollar-a-Year Man' in Government: George N. Peek and the War Industries Board", *The Business History Review* vol.41 no.4. (Winter, 1967): 404–420.
- Cuff, Robert. "From the Controlled Materials Plan to the Defense Materials System 1942–1953", *Military Affairs* vol.51 no.1 (Jan 1987): 1–6.
- Cuff, Robert. *The War Industries Board, Business-Government Relations During World War I*. Johns Hopkins University Press, Baltimore, 1973.
- Cumings, Bruce. *The Origins of the Korean War, 2 vols*. Princeton: Princeton University Press, 1981, 1990.
- Davenport-Hines, Richard. *Dudley Docker: The Life and Times of a Trade Warrior*. Cambridge: Cambridge University Press, 1984.
- David, Paul. "Path Dependence: A foundational concept for historical social science" *Clio-metrica* vol.1 no.2 (2007): 91–114.
- Davies, Robert and Stephen Wheatcroft. "Further Thoughts on the First Soviet Five-Year Plan", *Slavic Review* 34, no.4 (1975).
- Davis, Cullom. "The Transformation of the Federal Trade Commission, 1914–1929", *The Mississippi Valley Historical Review* vol.49 no.3 (Dec., 1962): 437–455.
- De Luigi, Guido, Edgar Meyer and Andrea Saba. "Industrie, pollution et politique: la "zone noire" de la Società Italiana dell'Alluminio dans la province de Trente (1928–1938)", *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: Armand Colin, 1997: 314–323.

- Dell, Edmund. *Political Responsibility and Industry*. Edinburgh: Allen & Unwin, 1973.
- Dell, Edmund. *A Strange Eventful History: Democratic Socialism in Britain*. London: HarperCollins, 2000.
- DeMille, John. *Strategic Minerals: A Summary of Uses, World Output, Stockpiles, Procurement*. New York: McGraw-Hill Book Company, 1947.
- Direktorium der AIAG. *Geschichte der Aluminium Industrie Aktien Gesellschaft, 1888–1938, vol.II*. Chippis, 1943.
- District Court of the United States for the Southern District of New York, United States of America vs. Aluminum Company of America, et al.*
- Dobson, Alan. *US Economic Statecraft for Survival 1933–1991: Of Embargoes, Strategic Embargoes, and Economic Warfare*. London: Routledge, 2002.
- Douhet, Giulio. *Il Dominio dell' Aria; Probabili Aspetti della Guerra Futura e gli Ultimi Scritti del Gen Gioulio Douhet*. Milano: A. Mondadori, 1932.
- Durr, Clifford. "The Defense Plant Corporation" in *Public Administration and Policy Development*, ed. Harold Stein. New York: Harcourt, Brace, 1952: 294–312.
- Dwork, Deborah. *War is good for Babies and Other Young Children. A History of the Infant and Child Welfare Movement in England 1898–1918*. London: Tavistock Publications, 1987.
- Eckes, Alfred. *The United States and the Global Struggle for Minerals*. Austin: University of Texas Press, 1979.
- Edgerton, David. "The White Heat Revisited: The British Government and Technology in the 1960s", *Twentieth Century British History*, vol.7 no.1 (1996): 53–82.
- Edgerton, David. *The Warfare State*. Cambridge: Cambridge University Press, 2006.
- Edgerton, David. "The Prophet Militant and Industrial: The Peculiarities of Corelli Barnett", *Twentieth Century British History* vol.2, no.3 (1991): 360–379.
- Edwards, J. R. "Tait, Andrew Wilson (1876–1930)," *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com.ezproxy.webfeat.lib.ed.ac.uk/view/article/47710>, [accessed 4 March 2008].
- Emeny, Brooks. *The Strategy of Raw Materials. A Study of America in Peace and War*. New York: The MacMillan Company, 1934.
- Engerman, David. "The Romance of Economic Development and New Histories of the Cold War," *Diplomatic History* vol.28 no.1 (2004): 23–54.
- Eudin, Xenia Joukoff, Harold H. Fisher and Rosemary Brown Jones. *Soviet Russia and the West 1920–1927: A Documentary Survey*. Stanford: Hoover Library on War, Revolution, and Peace, 1967.
- Farazmand, Ali. *Privatization or Public Enterprise Reform: International Case Studies with Implications for Public Management*. Westport: Greenwood Press, 2001.
- Fasting, Kåre. *Norsk aluminium gjennom 50 år: forhistorie og historikk 1915–1965*. Oslo: Høyang, 1965.
- Federico, Giovanni and James Foreman-Peck. "Industrial Policies in Europe" in *European Industrial Policy: The Twentieth-Century Experience*, eds. James Foreman-Peck and Giovanni Federico. Oxford: Oxford University Press, 1999.
- Ferrell, Robert. *The Presidency of Calvin Coolidge*. Lawrence: University Press of Kansas, 1998.
- Finn Erhard Johannessen, Asle Rønning, Pål Thonstad Sandvik. *Nasjonal kontroll og industriell formyelse. Norsk Hydro 1945–1977*. Oslo: Pax Forlag, 2005.
- Flor, Patricia. *Die Sowjetunion in Zeichen der Weltwirtschaftskrise: Außenhandel, Wirt-*

- schaftsbeziehungen und Industrialisierung 1928–1933*. Berlin: Duncker & Humblot, 1995.
- Foreman-Peck, James and Leslie Hannah. “Britain: From Economic Liberalism to Socialism – And Back?”, *European Industrial Policy*, eds. James Foreman-Peck and Giovanni Federico. Oxford: Oxford University Press, 1999: 18–57.
- Forrestal, James. *The Forrestal Diaries*, ed. Walter Millis. New York: The Viking Press, 1951.
- Franck, Louis. *Il corporativismo l'economia dell'Italia fascista*. Torino: Bollati Boringhieri, 1990.
- Freidel, Robert. “A New Metal! Aluminium in its 19<sup>th</sup>-Century Context” in *Aluminium as Design: Jewelry to Jets*, ed. Sarah Nichols. Pittsburgh: Carnegie Museum of Art, 2000: 58–83.
- French, David. *The strategy of the Lloyd George coalition, 1916–1918*. Oxford: Oxford University Press, 1992.
- Frøland, Hans Otto and Espen Andresen. “Fra AIAG til Alcoa i Mosjøen” in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, eds. Johan Henden, Hans Otto Frøland and Asbjørn Karlsen. Bergen: Fagbokforlaget, 2008.
- Frøland, Hans Otto. “Nazi Planning and the Aluminum Industry” in *Alan S. Milward and a Century of European Change*, eds. Fernando Guirao, Frances Lynch, Sigfrido Ramirez Perez. (London: Routledge, 2012), 168–188.
- Frøland, Hans Otto. “The Norwegian Aluminium Expansion program in the Context of European Integration, 1955–1975”, *Cahiers d'Histoire de l'Aluminium*, Special Issue 2, 2007: 103–123.
- Gagliardi, Alessio. *Limpossibile autarchia. La politica economica del fascismo e il Ministero scambi e valute*. Milano: Rubattino, 2006.
- Gaius Plinius Secundus. *Historia Naturalis*.
- Gibson-Jarvie, Robert. *The London Metal Exchange: a Commodity Market*. Cambridge: Woodhead-Faulkner Ltd, 1976.
- Gignoux, Claude. *Histoire d'une entreprise française*. Paris, Hachette, 1955.
- Glesinger, Egon. *Nazis in the Woodpile : Hitler's Plot for Essential Raw Material*. Indianapolis: Bobbs-Merril, 1942.
- Golzio, Silvio. *L'industria dei metalli in Italia*. Torino: Einaudi, 1942.
- Gøthe, Odd. *Ærlig talt! Om industriskandaler, statsråder og annet*. Oslo: Tiden, 1988.
- Goto, Akira. “Japan: A Sunset Industry” in *The World Aluminium Industry in a Changing Energy Era*, ed. Merton Peck. Washington DC: Resources For the Future, 1988: 90–120.
- Graham, Margaret and Bettye Pruitt. *R & D for Industry. A Century of Technical Innovation at Alcoa*. Cambridge: Cambridge University Press, 1990.
- Graham, Margaret. “R & D and Competition in England and the United States: The Case of the Aluminium Dirigible”, *Business History Review* vol.62 no.2 (1988): 261–285.
- Graham, Ronald. *The Aluminium Industry and The Third World: Multinational Corporations and Underdevelopment*. London: Zed Press, 1982.
- Grant, Wyn. “Government and manufacturing industry since 1900” in *Competitiveness and the State: Government and business in twentieth-century Britain*, eds. Geoffrey Jones and Maurice Kirby. Manchester: Manchester University Press, 1991.
- Green, Simon and Richard Whiting, eds. *The Boundaries of the State in Modern Britain*. Cambridge, Cambridge University Press: 1996.

- Greenspan, Alan. "Antitrust" in *Capitalism; The Unknown Ideal*, ed. Ayn Rand. New York: The New American Library, 1967: 63–71.
- Gressley, Gene. "Thurman Arnold, Antitrust, and the New Deal," *The Business History Review* vol.38 no.2 (1964): 214–231.
- Grifone, Pietro. *Il capitale finanziario in Italia*. Torino: Einaudi, 1948.
- Grinberg, Ivan. *L'Aluminium: Un si léger métal*. Paris: Gallimard, 2003.
- Grinberg, Ivan. "Introduction: L'aluminium, matériau emblématique de la deuxième industrialization" in *Industrialisation et sociétés en Europe occidentale de la fin du XIXe siècle à nos jours*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: A.Colin, 1997: 18–19.
- Grinberg, Ivan and Florence Hachez-Leroy, eds. *Industrialisation et sociétés en Europe occidentale de la fin du XIXe siècle à nos jours*. Paris: A. Colin, 1997.
- Grønlie, Tore. "Årdal verks oksydavtale med Alcan i 1947", *Historisk Tidsskrift* vol.69 no.2 (1976): 139–194.
- Grønlie, Tore. *Statsdrift. Staten som industrieier i Norge 1945–1963*. Oslo: TANO, 1989.
- Gualerni, Guadberto. *Industria e Fascismo. Per un'interpretazione dello sviluppo economico italiano tra le due guerre*. Milano: Vita e Pensiero, 1971.
- Guarneri, Felice. *Battaglie economiche fra le due guerre*. Milano: Garzanti, 1953.
- Hachez-Leroy, Florence. *L'Aluminium français: L'invention d'un marché 1911–1983*. Paris, 1999.
- Hachez-Leroy, Florence. "Le construction européenne et ses conséquences sur l'industrie française de l'aluminium", *Cahiers d'Histoire de l'Aluminium*, Special Issue No.1, 2003: 23–35.
- Hachez-Leroy, Florence. "Stratégie et cartels internationaux, 1901–1981," in *Industrialisation et sociétés en Europe de la fin du XIXe siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: Armand Colin, 1997: 164–174.
- Hachez-Leroy, Florence. "The Productivity Missions for Metal Assembly Work" in *Catching up with America: Productivity Missions and the Diffusion of American Economic and Technological Influence after the Second World War*, ed. Dominique Barjot. Paris: Presses de l'Université de Paris-Sorbonne, 2002: 405–411.
- Hah, Chong-do and Robert Lindquist. "The 1952 Steel Seizure Revisited: A Systematic Study in Presidential Decision Making" *Administrative Science Quarterly* vol.20 no.4 (Dec 1975): 587–605.
- Hannah, Leslie. *Electricity before Nationalisation: a study of the development of the electricity supply industry in Britain to 1948*. London: Macmillan, 1979.
- Leslie Hannah. *The Rise of the Corporate Economy*. London: Johns Hopkins University press, 1976.
- Hardach, Gerd. *The First World War* Berkeley: University of California Press, 1977.
- Harris, Kenneth. *Attlee*. London: Weidenfeld and Nicolson, 1995.
- Hatch, Stephen and Michael Fores. "The Struggle for British Aluminium", *The Political Quarterly* 31 (1960): 477–487.
- Hawley, Ellis. *The New Deal and the Problem of Monopoly, A Study of Economic Ambivalence*. Princeton: Princeton University Press, 1966.
- Hayes, Peter. *Industry and Ideology. IG Farben in the Nazi Era*. Cambridge: Cambridge University Press, 2001.
- Heywood, Anthony. *Modernising Lenin's Russia: Economic Reconstruction, Foreign Trade and the Railways*. Cambridge: Cambridge University Press, 1999.

- Higham, Robin. "Government, Companies, and National Defense: British Aeronautical Experience, 1918–1945 as the Basis for a Broad Hypothesis", *Business History Review* vol.39 no.3 (1965): 323–347.
- Hiley, Nicholas. "Decoding German Spies: British Spy Fiction 1908–18", *Intelligence and National Security* vol.5 no.4 (1990): 55–79.
- Himmelberg, Robert. "The War Industries Board and the Antitrust Question in November 1918," *The Journal of American History* vol.52 no.1 (Jun., 1965): 59–74.
- Hooks, Gregory. *Forging the Military-Industrial Complex; World War II's battle of the Potomac*. Chicago: University of Illinois Press, 1991.
- Hurstfield, Joel. *The Control of Raw Materials*. London: HM Stationery Office, 1953.
- Huston, John, ed. *American Airpower Comes of Age; General Henry H. "Hap" Arnold's World War II Diaries, vol.I*. Maxwell: Air University Press, 2002.
- Ickes, Harold. *Lowering Clouds: The Secret diary of Harold L. Ickes, vol.III, 1939–1941*. New York: Simon and Schuster, 1955.
- Ingulstad, Mats. "Cold War and Hot Metal: American Strategic Materials Policy, the Marshall Plan and the Loan to the Sunndal Smelter", *Cahiers d'histoire de l'aluminium* Special Issue 2 (2007): 125–144.
- Ingulstad, Mats. "Sunndal Verk: et norsk smelteverk i amerikansk storpolitikk", in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, ed. Johan Henden, Hans Otto Frøland and Asbjørn Karlsen. Bergen: Fagbokforlaget 2008: 211–245.
- Innocenti, Riccardo. *L'industria dell'alluminio in Italia. Un profilo storico. 1907–1943*. Florence: Master Dissertation, University of Florence, 1984.
- Innvik, Peter and John Kamsvåg. *Verket. Sunndal Verks historie gjennom 40 år*. Sunndal: Hydro Aluminium.
- James, Harold and Jakob Tanner, eds. *Enterprise in the Period of Fascism in Europe*. Hants: Ashgate, 2002.
- Jenkins, Roy. *Truman*. New York: Harper and Row, 1986.
- Jennings, Jeremy. "France and the 'Anglo-Saxon' Model: Contemporary and Historical Perspectives", *European Review* vol.14 no.4 (2006): 537–554.
- Jolly, Thomas. "The Recent Expansion of the Aluminium Industry," *Science, New Series*, vol.96 no.2480 (Jul. 10, 1942): 29–32.
- Jones, Geoffrey. *The Evolution of International business: An Introduction*. London: Routledge, 1996.
- Jones, Jesse. *Fifty Billion Dollars, M Thirteen Years with the RFC, 1932–1945*. New York: Macmillan, 1951.
- Kipping, Mathias. "Business-Government Relations: Beyond Performance Issues" in *Business History around the World*, eds. Franco Amatori and Geoffrey Jones. Cambridge, Cambridge University Press, 2003.
- Kipping, Mathias and Ludovic Cailluet. "Mintzberg's Emergent and Deliberate Strategies: Tracking Alcan's Activities in Europe, 1928–2007", *Business History Review* 84, (2010): 79–104.
- Knauer, Manfred. "'The Golden Years.' The European Aluminium Industry during the Postwar Economic Boom", *Cahiers de l'histoire d'aluminium* Special Issue 1, (2003): 11–18.
- Knauer, Manfred. "Une industrie née de la guerre: l'aluminium en Allemagne de 1890 à 1950", in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: Armand Colin, 1997: 127–143.

- Knowles, Elizabeth. ed. *The Oxford Dictionary of Modern Quotations*. Oxford: Oxford University Press, 2002.
- Koistinen, Paul. *Planning War, Pursuing Peace, The Political Economy of American Warfare 1920–1939*. Lawrence: University Press of Kansas, 1998.
- Koistinen, Paul. “The ‘Industrial-Military Complex’ in Historical Perspective: The Interwar Years,” *The Journal of American History* vol.56 no.4, (Mar., 1970): 819–839.
- Kovacic, William and Carl Shapiro. “Antitrust Policy: A Century of Economic and Legal Thinking”, *The Journal of Economic Perspectives*, vol.14, no.1 (Winter, 2000): 43–60.
- Krutilla, John. “Aluminium: A Dilemma for Antitrust Aims,” *Southern Economic Journal*, vol.22 no.2 (Oct., 1955): 164–177.
- Kynaston, David. *The City of London, Vol IV: A Club No More*. London: Pimlico, 2002.
- Lanthier, Pierre. “Alcan from 1945 to 1975: the uncertain road to maturity”, *Cahiers d'histoire de l'aluminium*, Special Issue 1 (2003): 54.
- Lie, Einar. *Oljerikdommer og internasjonal ekspansjon. Hydro 1977–2005*. Oslo: Pax, 2005.
- Lied, Jonas. *Over de høye fjelle*. Oslo: Ernst G. Mortensen, 1961.
- Lindner, Stephan. *Inside IG Farben. Hoechst During the Third Reich*. New York: Cambridge University Press, 2008.
- Litvak, Isaiah and Christopher Maule. “Assessing Industry Concentration: The Case of Aluminum”, *Journal of International Business Studies* vol.15 no.1 (Spring–Summer, 1984): 97–104.
- L'Organisation Européenne de Coopération Économique. *L'Industrie Des Métaux Non-Ferreux en Europe, 1954*. Paris: L'Organisation Européenne de Coopération Économique, 1954.
- Macdonald, Catriona. *Whaur Extremes Meet: Scotland's Twentieth Century*. Edinburgh: John Donald, 2009.
- MacKenzie, Hector. “‘Arsenal of the British Empire’? British orders for munitions production in Canada, 1936–39”, *The Journal of Imperial and Commonwealth History* vol.31 no.3 (2003): 48.
- Marlio, Louis. *The Aluminum Cartel*. Washington: The Brookings Institution, 1947.
- Martin, Jean. “The Canadian Triumph of the Second World War: Alcan: From the Canadian Little Sister to Alcoa's Major Competitor”, *Cahiers d'Histoire de l'Aluminium*, Special Issue no.2, 2007: 29–37.
- Massell, David. “‘As Though There Was No Boundary’: the Shipshaw Project and Continental Integration”, *American Review of Canadian Studies* vol.34 no.2, (2004): 187–222.
- Matthews, Derek. “The Business Doctors: Accountants in British Management from the Nineteenth Century to the Present Day” *Business History* vol.40 no.3 (1998): 70–103.
- McCormick, Gordon and Richard Bissell, eds. *Strategic Dimensions of Economic Behavior*. New York: Praeger, 1984.
- McCraw, Thomas. “Government, Big Business and the Wealth of Nations” in *Big Business and the Wealth of Nations*, eds. Alfred Chandler, Franco Amatori and Takashi Hikino, Cambridge: Cambridge University Press, 1997: 522–545.
- McCrone, Gavin. “The Role of Government” in *The Economic Development of Modern Scotland 1950–80*, ed. Richard Saville. Edinburgh: John Donald Publishers Ltd, 1985.
- McCullough, David. *Truman*. New York: Simon and Schuster, 1992.

- McFarland, Keith and David Roll. *Louis Johnson and the Arming of America*. Bloomington, Indiana University Press, 2005.
- McFarland, Linda. *Cold War Strategist: Stuart Symington and the Search for National Security*. Westport: Praeger, 2001.
- McLean, Ian and Alistair McMillan. *Oxford Concise Dictionary of Politics*. Oxford: Oxford University Press, 2009.
- Merriam, Charles. "The National Resources Planning Board; A Chapter in American Planning Experience", *The American Political Science Review* vol.38 no.6 (Dec., 1944): 1075–1088.
- Mikdashy, Zuhayr. "Aluminium" in *Big business and the State: Changing Relations in Western Europe*, ed. Raymond Vernon, Cambridge: Harvard University Press, 1974: 170–194.
- Miller, John. "Military Procurement Policies: World War II and Today", *The American Economic Review* vol.42 no.2 (May 1952), 453–475.
- Milward, Alan. *The Reconstruction of Western Europe 1945–51*. London: Routledge, 1992.
- Milward, Alan. *War, Economy and Society, 1939–1945*. Los Angeles, University of California Press, 1979.
- Ministry of Munitions, *Official History*, Vol.7. London: HMSO, 1922.
- Minniti, Fortunato. "La realtà di un mito. L'industria aeronautica durante il fascismo" in *L'Aeronautica italiana. Una storia del Novecento*, ed. Paolo Ferrari. Milano: Franco Angeli, 2004.
- Miscamble, Wilson. "Thurman Arnold Goes to Washington: A look at Antitrust Policy in the later New Deal", *The Business History Review* vol.56 no.1 (Spring, 1982): 1–15.
- Mitchell, James. *Conservatives and the Union: A Study of Conservative Attitudes Towards Scotland*. Edinburgh: Edinburgh University Press, 1990.
- Moos, Siegfried. "The Structure of the British Aluminium Industry", *The Economic Journal* vol.58 no.232 (1948) 522–537.
- Morgan, R. O. "The Political Significance of German-Soviet Trade Negotiations, 1922–5", *The Historical Journal*, vol.6, no.2 (1963): 253–271.
- Mueller, Dennis. "Lessons from the United States' antitrust history", *International Journal of Industrial Organization* vol.14 (1996): 415–445.
- Muller, Charlotte. "The Aluminium Monopoly and the War", *Political Science Quarterly* vol.60 no.1 (March 1945): 14–43.
- Munting, Roger. "Becos Traders and the Russian Market in the 1920s", *The Journal of European Economic History* vol.25 no.1 (1996): 69–96.
- Munting, Roger. "British business and the politics of trade with the USSR during the New Economic Policy (NEP)", *Business History* 48:2 (2006): 255–266.
- Mutton, Alice. "Hydro-Electric Power Development in Norway", *Transactions and Papers of the Institute of British Geographers* no.19, (1953): 123–130.
- Neale, Alan and Daniel Goyder. *The Antitrust Laws of the United States of America: A study of Competition Enforced by Law*. New York: Cambridge University Press, 1980.
- Nichols, Sarah. "Aluminium by Design: From Jewelry to Jets" in *Aluminium as Design: Jewelry to Jets*, ed. Sarah Nichols. Pittsburgh: Carnegie Museum of Art, 2000.
- O'Hara, Glen. "Dynamic, Exciting, Thrilling Change: The Wilson Government's Economic Policies, 1964–70", *Contemporary British History* vol.20 no.3 (2006): 383–402.
- Odell, Peter. "The British Gas Industry: Review" *The Geographical Journal* vol.134 no.1 (1968): 81–86.

- Olson, James. *Stuart Symington: A Life*. Columbia: University of Missouri Press, 2003.
- Organisation for Economic Co-operation and Development. *Aluminium Industry: Energy Aspects of Structural Change*. Paris: Organisation for Economic Co-operation and Development, 1983.
- Organisation for Economic Co-operation and Development. *Problems and Prospects of the Primary Aluminium Industry*. Paris: Organisation for Economic Co-operation and Development, 1973.
- Overy, Richard. "German Business and the new Nazi order" in *Business and politics in Europe, 1900–1970: essays in honour of Alice Teichova*, ed. Terence Richard Gourvish. Cambridge: Cambridge University Press, 2003.
- Owe, Aage. *En industribedrift blir til*. Bergen: 1966.
- Patterson, Walt. *Going Critical*. London: Paladin Books, 1985.
- Payne, Peter. *The Hydro: A Study of the Development of the Major Hydro-Electric Schemes Undertaken by the North of Scotland Hydro-Electric Board*. Aberdeen: Aberdeen University Press, 1988.
- Peck, Merton. *Competition in the Aluminium Industry*. Cambridge: Harvard University Press, 1961.
- Peck, Merton, Hans Landsberg and John Tilton, eds. *Competitiveness in Metals: The Impact of Public Policy*. London: Mining Journal Books, 1992.
- Peden, George. *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs*. Cambridge: Cambridge University Press, 2007.
- Pedersen, Rune. *Til Verket. Elkem Aluminium Mosjøens historie gjennom 40 år*. Mosjøen: Aluminium Mosjøen, 1997.
- Perchard, Andrew. "Sculpting the 'Garden of Eden': Patronage, community & the British Aluminium Company in the Scottish Highlands, 1895–1982", *Cahiers d'histoire de l'aluminium* 38–39 (2007): 11–30.
- Perchard, Andrew. "'Of the highest Imperial importance': British strategic priorities and the politics of colonial bauxite, c.1915–1958" in Robin Gendron, Mats Ingulstad and Espen Storli (eds.), *Bauxite, State and Society in the 20<sup>th</sup> Century*. (Vancouver: University of British Columbia Press, forthcoming 2012).
- Perchard, Andrew. *Aluminiumville: Metal, the British Government & the Scottish Highlands* (Lancaster: Crucible Books, forthcoming 2012).
- Petersen, Klaus. *Legitimität und Krise. Die politische Geschichte des dänischen Wohlfahrtsstaates 1945–1973*. Berlin: Verlag A. Spitz, 1998.
- Petri, Rolf and Maurizio Rebershak. "La SADE e l'industria chimica e metallurgica tra crisi e autarchia", in *Storia dell'Industria elettrica in Italia, Vol.3, Espansione e oligopolio, 1926–1945*, ed. Giuseppe Galasso. Roma-Bari: Laterza, 1994.
- Petri, Rolf. "L'Industrie italienne de l'aluminium à la veille de la Seconde Guerre mondiale" in *Industrialisation et sociétés en Europe de la fin du XIX<sup>e</sup> siècle à nos jours. L'Âge de l'aluminium*, eds. Ivan Grinberg and Florence Hachez-Leroy. Paris: Armand Colin, 1997: 143–152.
- Pettigrew, Andrew. "On Studying Organisational Cultures", *Administrative Science Quarterly* vol.24 no.4 (1979): 570–81.
- Plowden, Edwin. *An Industrialist in the Treasury: The Post-War Years*. London: Deutsch, 1989.
- Porter, Michael. *The Competitive Advantage of Nations*. Basingstoke: Macmillan, 1998.
- Postan, Michael. *British War Production*. London: HM Stationery Office, 1952.

- Poulantzas, Nicos. *Classes in Contemporary Capitalism*. London: NLB, 1975.
- Rand, Ayn. "America's Persecuted Minority: Big Business" in *Capitalism; The Unknown Ideal*, ed. Ayn Rand. New York: The New American Library, 1967: 44–62.
- Rauch, Ernst. *Geschichte des Hüttenaluminiumindustrie in der westlichen Welt*. Dusseldorf: Aluminium Verlag, 1962.
- Rauh, Cornelia. *Schweizer Aluminium für Hitlers Krieg? Zur Geschichte des "Alusuisse" 1918–1950*. Munchen: Verlag C. H. Beck, 2009.
- Rebershak, Maurizio. "Barnabò, Alessandro Marco (Marco)", in *Dizionario Bibliografico degli Italiani*.
- Redfield, William. *Dependent America: A Study of the Economic Base of Our International Relations*. Boston: Houghton Mifflin Company, 1926.
- Report of the Departmental Committee on the Non-Ferrous Metal Trades*. London: HMSO, 1917.
- Reynolds, Richard. *Opportunity in Crisis: The Reynolds Metals Story*. New York: Newcomen Society of America, 1956.
- Richards, D. "Charles Frederick Algernon Portal," *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com> [accessed 23 March 2007].
- Riddle, Donald. *The Truman Committee: A Study in Congressional Responsibility*. New Brunswick: Rutgers University Press, 1964.
- Rinde, Harald. "Den Lange Ventetida" in *Årdal: Verket og Bygda 1947–1997*, eds. Rolv Petter Amdam, Dag Gjestland and Andreas Hompland. Oslo: Samlaget, 1997: 56–83.
- Rinde, Harald. "The Powerhouse of Europe", *Cahiers d'histoire de l'aluminium*, Special Issue 1 (2003).
- Rinde, Harald. "Alcan tur – retur", in *Verket og bygda 1947–1997*, eds. Rolv Petter Amdam, Dag Gjestland and Andreas Hompland. Oslo: Samlaget, 1997:134–163.
- Rinde, Harald. "Global Mission and National Interest: The Business Partnership of Alcan Aluminium Ltd. And the Kingdom of Norway", *Cahiers d'histoire de l'aluminium*, Special Issue 2 (2007): 83–99.
- Rodriguez, Peter, Donald Siegel, Amy Hillman and Lorraine Eden. "Three Lenses on the Multinational Enterprise: Politics, Corruption, and Corporate Social Responsibility", *Journal of International Business Studies* vol.37 no.6 (Nov. 2006): 733–746.
- Rooth, Tim. *British protectionism and the international economy: overseas commercial policy in the 1930s* (Cambridge: Cambridge University Press, 1993), 71–143.
- Ropes, Ernest. "The Shape of United States-Soviet Trade, Past and Future," *Slavonic and East European Review, American Series*, vol.3 no.2 (Aug. 1944).
- Rossi, Ernesto. *I padroni del vapore*. Roma-Bari: Laterza, 1955.
- Roush, G. A. *Strategic Mineral Supplies*. New York: McGraw-Hill Book Company, 1939.
- Rugman, Alan; Alain Verbeke and Nathan Greidanus. "Multinational Enterprises and Governments: An Analysis of New Trends" in *The Accountable Corporation, vol.IV, Business-Government Relations*, eds. Marc Epstein and Kirk Hanson. London: Praeger, 2006: 145–170.
- Russell, Colin and Sarah Wilmot. "Metal Extraction and Refining" in *Chemistry, Society and Environment: A New History of the British Chemical Industry*, ed. Colin Russell. Cambridge: Royal Society of Chemistry, 2000: 308–318.
- Sandvik, Pål and Espen Storli. "Big Business, Market Power and Small Nations: The Norwegian Aluminium and Nickel Industry 1920–1939" in *Managing Crises and De-*

- Globalization: Nordic Foreign Trade and Exchange, 1919–1939*, ed. Sven Olof Olsson. New York: Routledge, 2009.
- Sandvik, Pål. “Et kaos uten sidestykke: Hydro, Harvey og joint ventures i norsk aluminiums-industri,” in *Globalisering gjennom et århundre. Norsk aluminiumindustri 1908–2008*, eds. Johan Henden, Hans Otto Frøland and Asbjørn Karlsen. Bergen: Fagbokforlaget.
- Santomassimo, Gianpasquale. *La terza via fascista. Il mito del corporativismo*. Roma: Carocci, 2006.
- Schatzberg, Eric. “The Cultural History of Aluminium as an Industrial Material” *Cahiers d’histoire de l’aluminium* 35, (Winter 2005–2006): 74–96.
- Schatzberg, Eric. *Wings of Wood, Wings of Metals: Culture and Technical Choice in American Airplane Materials, 1914–1945*. Princeton: Princeton University Press, 1999.
- Schein, Edgar. *Organizational Culture and Leadership*, third edition. San Francisco: Jossey-Bass, 2004.
- Schmitz, Christopher. *World Non-Ferrous Metal production and Prices, 1700–1976*. London: Frank Cass 1979.
- Schwarz, Jordan. *The Speculator: Bernard M. Baruch in Washington, 1917–1965*. Chapel Hill: University of North Carolina Press, 1981.
- Scott, Alex and Margaret Cuthbert. *Reviewing Industrial Aid Programmes: (I) The Invergordon Smelter Case*. Edinburgh: David Hume Institute, 1985.
- Scotti, Piero. *Geografia dell’alluminio Italiano*. Genova: Edizioni Lupa, 1948.
- Seligmann, Matthew. *Naval Intelligence from Germany: The Reports of British Naval Attachés in Berlin, 1906–1914*. Burlington: Ashgate, 2007.
- Serrani, Donatello. *Lo stato finanziatore*. Milano: Franco Angeli, 1971.
- Shearer, David. *Industry, State, and Society in Stalin’s Russia, 1926–1934*. Ithaca: Cornell University Press, 1996.
- Siegel, Katherine. *Loans and Legitimacy: The Evolution of Soviet-American Relations 1919–1933*. Lexington: University Press of Kentucky, 1996.
- Skjold, Dag Ove. *Statens kraft 1947–1965*. Oslo: Universitetsforlaget, 2006.
- Skockpol, Theda. *Protecting Soldiers and Mothers: The Political Origins of Social Policy in the United States*. Cambridge: Harvard University Press, 1992.
- Smil, Vaclav. *Creating the Twentieth Century: Technical Innovations of 1867–1914 and Their Lasting Impact*. Oxford: Oxford University Press, 2005.
- Smith, George David. *From Monopoly to Competition; The Transformations of Alcoa, 1888–1986*. Cambridge: Cambridge University Press, 1988.
- Snyder, Glenn. *Stockpiling Strategic Materials: The Politics of National Defense*. San Francisco: Chandler Publishing, 1966.
- Società Mineraria Montecatini. *Relazione annuaria agli azionisti, 38 esercizio*, 1925.
- Sogner, Knut. *Skaperkraft. Elkem gjennom 100 år*. Oslo: Messel Forlag, 2003.
- Spackman, Anne. “The Role of Private Companies in the Politics of the Empire: A Case Study of Bauxite and Diamond Companies in Guyana in the Early 1920s’, *Social and Economic Studies* vol.24 no.3 (1975): 341–378.
- Spykman, Nicholas. *America’s Strategy in World Politics*. Hamden: Archon Books, 1970.
- Staley, Eugene. *Raw Materials in Peace and War*. New York: Council on Foreign Relations, 1937.
- Statistics Norway. *Historical Statistics 1994*. Oslo: Statistics Norway, 1995.

- Stein, Harold. "The Disposal of the Aluminium Plants" in *Public Administration and Policy Development* ed. Harold Stein. New York: Harcourt, Brace 1952: 313–362.
- Stelzer, Irwin. *Landmark Antitrust Cases: Landmark Decisions*. Illinois: Irwin, 1986.
- Stocking, George and Myron Watkins. *Cartels in action. Case studies in International Business Diplomacy*. New York: The Twentieth Century Fund, 1946.
- Stokes, Raymond. "From the IG Farben Fusion to the Establishment of BASF AG (1925–1952)", in *German Industry and Global Enterprise. BASF: The History of a Company*. New York: Cambridge University Press, 2004: 206–301.
- Stone. I. F. *Business As Usual: The First Year of Defense*. New York: Modern Age Books, 1941.
- Storli, Espen. *Out of Norway Falls Aluminium: The Norwegian Aluminium Industry in the International Economy, 1908–1940*. Trondheim: PhD-thesis, NTNU, 2010.
- Storli, Espen and David Brégaint. "The Ups and Downs of family Life: Det Norske Nitridaktieselskap, 1912–1976", *Enterprise & Society* vol.10 no.4 (2009): 763–790.
- Storli, Espen. "The Norwegian Aluminium Industry, 1908–1940: Swing Producers in the Hands of the International Oligopoly?", *Cahiers d'histoire de l'aluminium* Special Issue 2 (2007): 11–28.
- Strachan, Hew. *Financing the First World War*. New York: Oxford University Press, 2004.
- Streat, Raymond. "Government Consultation with Industry", *Public Administration* vol.37 no.1 (1959):1–8.
- Stuckey, John. *Vertical Integration and Joint Ventures in the Aluminium Industry*. Cambridge: Harvard University Press, 1983.
- Sun Tzu. *The Art of War*. London: Running Press, 2003.
- Tawney, Richard. "The Abolition of Economic Controls, 1918–1921", *The Economic History Review* vol.13 no.1/2 (1943): 1–30.
- Timmons, Bascom. *Jesse H. Jones*. New York: Henry Holt and Company, 1956.
- Tomlinson, Jim. "Mrs Thatcher's Macroeconomic Adventurism, 1979–1981, and its Political Consequences", *British Politics* vol.2 nr.1 (2007): 3–19.
- Tomlinson, Jim. *Democratic Socialism and Economic Policy: The Attlee Years 1945–1951*. Cambridge: Cambridge University Press, 1997.
- Tomlinson, Jim. *The Labour Governments, 1964–70, vol.3: Economic Policy*. Manchester: Manchester University Press, 2004.
- Tomlinson, Jim. *The Politics of Decline: Understanding Post-War Britain*. London: Longman, 2001.
- Toniolo, Gianni. *L'Economia dell'Italia Fascista*. Roma-Bari: Laterza, 1980.
- Trani, Eugene and David Wilson. *The Presidency of Warren G. Harding*. Lawrence: University Press of Kansas, 1977.
- Trebilcock, Clive. "Spin-Offs" in British Economic History: Armaments and Industry, 1760–1914", *Economic History Review* vol.22 no.3 (1969): 474–490.
- Truman, Harry S. *Memoirs of Harry S Truman: vol.I, Year of Decisions*. New York: Doubleday & Company, 1955.
- Turner, John, ed. *Businessmen and Politics. Studies of Business Activity in British Politics 1900–1945*. London: Heinemann, 1984.
- Turner, John. "The Politics of Business" in *Businessmen and Politics. Studies of Business Activity in British Politics 1900–1945*, ed. John Turner. London: Heinemann, 1984: 1–20.

- Uldricks, Teddy. "Russia and Europe: Diplomacy, Revolution, and Economic Development in the 1920s", *The International History Review*, vol.1, no.1 (Jan. 1979): 55–83.
- United States Army and Navy Munitions Board. *Strategic and Critical Raw Materials*. West Point: Department of Economics, Government and History, 1940.
- United States Bureau of Mines. *Mineral Raw Materials: Survey over Commerce and Sources in Major Industrial Countries*. New York: McGraw-Hill, 1937.
- United States Bureau of the Budget. *The United States at War*. Washington, Government Printing Office, 1946.
- United States Business and Defense Services Administration. *Materials Survey: Aluminium, compiled for the Office of Defense Mobilization*. Washington: Department of Commerce, 1956.
- United States Civilian Production Administration. *The Aluminium Policies of the War Production Board and predecessor Agencies, May 1940 to November 1945*. Washington, Government Printing Office, 1946.
- United States Geological Survey. *Aluminium*. <http://minerals.usgs.gov/minerals/pubs/commodity/aluminum/050798.pdf> [Accessed: August 20, 2011]
- United States Office of Defense Mobilization. *Materials Survey, Aluminium*. Washington: Government Printing Office, 1956.
- United States President's Materials Policy Commission. *Resources for Freedom, vol.V, Selected Reports to the Commission*. Washington: Government Printing Office, 1952.
- United States Surplus Property Board. *Aluminium Plants and Facilities: Report of the Surplus Property Board to the Congress, September 21, 1945*. Washington: Government Printing Office, 1945.
- United States Temporary National Economic Committee. *Investigation of Concentration of Economic Power*. Washington: Government Printing Office, 1940.
- United States War Assets Administration. *Aluminium Plants and facilities, First Supplementary report of the War Assets Administration to the Congress, February 12, 1947*. Washington: Government Printing Office, 1947.
- Utiger, Ronnie. *Never Trust An Expert: Nuclear power, Government and the Tragedy of the Invergordon Aluminium Smelter*. London: London School of Economics, 1995.
- Van Der Veer Hamilton, Virginia. *Lister Hill; Statesman from the South*. Chapel Hill: The University of North Carolina Press, 1987.
- Vereinigte Aluminium-Werke Aluminium Zeitschrift. *Hauszeitschrift der Vaw und Erftwerk AG für Aluminium*. Berlin: 1932, 1933.
- Vereinigte Aluminium-Werke. *Bericht des Vorstandes, Jahre 1935*. Berlin: 1936.
- Vereinigte Aluminium-Werke Aktiengesellschaft zu Lautawerk. *Geschäfts – Bericht Über das sechste Geschäftsjahr vom 1 Januar 1926 bis 31 Dezember 1926*. Berlin: 1927.
- Vogel, David. *Fluctuating Fortunes: The Political Power of Business in America*. Washington: Beard Books 2003.
- Wallace, Donald. "Aluminium" in *International control in the non-ferrous metals*, William Elliott, Elizabeth May, John Rowe, Alex Skelton, and Donald Wallace. New York: Macmillan, 1937.
- Wallace, Donald. *Market Control in the Aluminium Industry*. Cambridge: Harvard University Press, 1937.
- Watkins, Myron. "The Sherman Act: Its Design and Its Effects", *The Quarterly Journal of Economics*, vol.43 no.1 (Nov., 1928): 1–43.
- Wells, H.G. *The War in the Air*. London: George Bell, 1908.

- Wells, Wyatt. *Antitrust and the Formation of the Postwar World*. New York: Columbia University Press, 2002.
- White, Christine. *British and American Commercial Relations with Soviet Russia, 1918–1924*. Chapel Hill: University of North Carolina Press, 1992.
- White, Christine. “‘Riches have Wings’: The Use of Russian Gold in Soviet Foreign Trade, 1918–1922” in *Contact or isolation? Soviet-Western Relations in the Interwar Period*, eds., John Hiden and Aleksander Loit. Stockholm: Almqvist & Wiksell, 1991.
- White, Gerald. “Financing Industrial Expansion for War: The Origin of the Defense Plant Corporation Leases”, *The Journal of Economic History* vol.9 no.2 (Nov., 1949): 156–183.
- White, Gerald. *Billions for Defense; Government Financing by the Defense Plant Corporation during World War II*. Tuscaloosa: University of Alabama Press, 1980.
- Williams, Andrew. *Trading with the Bolsheviks. The Politics of East-West trade, 1920–39*. Manchester: Manchester University Press, 1992.
- Williams, Benjamin. *Foreign Economic Policy of the United States*. New York: McGraw-Hill Book Co, 1929.
- Wilson, Joan Hoff. *Ideology and Economics: U.S. Relations with the Soviet Union, 1918–1933*. Columbia: University of Missouri Press, 1974.
- Wilson, John. *Ferranti and the British electrical industry, 1864–1930*. Manchester: Manchester University Press, 1988.
- Wrigley, Chris. “The Ministry of Munitions: An Innovatory Department” in Kathleen Burk, ed. *War and the State: The Transformation of British Government, 1914–1919*. London: Allen & Unwin, 1982: 32 and 52.
- Wyse, Robert. “The Future of London as the World’s Money Market”, *The Economic Journal* vol.28 nr.112 (1918): 386–397.
- Yoshpe, Harry. “Economic Mobilization Planning Between the Two World Wars”, *Military Affairs* vol.15 no.4 (Winter, 1951): 199–204.
- Young, Alf. “Industry” in *Highlands and Islands: A Generation of Progress*, ed. Alastair Hetherington. Aberdeen: Aberdeen University Press, 1990.
- Zeitlin, Jonathan. “Productive Alternatives: Flexibility, Governance, and Strategic Choice in Industrial History” in *Business History around the World*, eds. Franco Amatori and Geoffrey Jones. Cambridge, Cambridge University Press, 2003: 62–82.