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Extractive visions: Sweden's quest for China's natural resources, 1913–1917

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ABSTRACT

This article scrutinises one of the most fascinating and ambitious cases of Swedish informal empire-building in the industrial age: the skilfully orchestrated attempts by scientists, diplomats, industrial companies and financial institutions to seize control over early Republican China's most strategic industrial sector – its iron and steel complex. Sweden's 'extractive vision', as we call it, started with the recruitment of Johan Gunnar Andersson, head of the Swedish Geological Survey, as a key advisor to the Chinese government. Contrary to earlier research on Andersson's Chinese career, which narrowly portrays Andersson as a scientist, we show that he was closely affiliated with the exploitative interests of Swedish industrial and foreign-policy actors. In the end he took the lead in seeking to secure, for Sweden, a quasi-colonial presence in Republican China, centring on large-scale extraction of Chinese iron ore, profit-maximising iron exports throughout the Pacific region and construction and operation of China's largest steel mills and weapons factories.

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1. Introduction

In recent years Scandinavian historians have become increasingly interested in their nations' colonial experiences. The twenty-first century has seen the emergence of a fascinating body of scholarship on various aspects of Swedish, Finnish, Danish and Norwegian colonial history, be it in the form of 'internal' colonialism (where the debate usually centres on Sápmi), outright territorial acquisitions in distant lands, participation in missionary and other 'civilizing' ventures in various non-European regions, trade and other forms of economic exchange with own and others' colonies, or scientific exploration of the colonial world (Brautaset, Gregersen, & Hestad Skeie, 2018; Kjerland & Bertelsen, 2015; Lehtola, 2015; Naum, 2019; Naum & Nordin, 2013; Priebe, 2016; and many others). Clearly, it is an exciting new research field in the making. A noteworthy feature in the literature, however, especially in the case of Sweden, is that it is mainly oriented towards the time period before the global industrial breakthrough. For example, there is an impressive number of in-depth studies of Sweden's tiny Caribbean colony, Saint Barthélemy (1784–1878) (e.g. Pålsson, 2016; Weiss, 2016; Wilson, 2015), whereas, as far as non-internal colonialism is concerned, we know surprisingly little about Sweden's twentieth-century colonial history. This is a strange and paradoxical bias in view of the well-established fact that it was only in the high-industrial age – that is, from around 1880 – that European colonial activities accelerated in earnest. Indeed, as argued by authors such as Ross

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(2017), the period before the mid-nineteenth century had better be regarded as a mere prelude to what was to come.

This bias appears to be the result of an overly narrow theoretical interpretation of colonialism by many of the authors involved in this research. There is a strong tendency to take into account *formal* colonialism only, while largely neglecting a range of other, much more informal colonial and empire-building activities. Since Sweden has not had any formal colonies since it sold Saint Barthélemy to the French in 1878, this narrow view leads to the premature conclusion that Sweden gave up its imperial ambitions in the late nineteenth century.

Yet Sweden and other smaller European nations that did not possess formal empires in the industrial age continued to dream about colonies and to initiate political and commercial ventures of a colonial nature. In the industrialising and increasingly globalised world that took form after 1870 they were more eager than ever to explore and exploit non-European regions for their own purposes. By the 1910s, many Scandinavian actors, especially in the financial-industrial sphere, argued vehemently that their countries had everything to gain from engaging in colonialism.¹ The main difference, compared to the great powers, was that they were rarely able to draw on military and political force. Only in exceptional cases did they actually (try to) conquer and annex foreign territories.² Recognising their own weakness in the international arena, they tried out alternative ways of establishing themselves in the colonial world.

Several different strategies emerged in this context. One was to cooperate with the larger imperial powers in their colonisation and exploitation schemes. For example, Scandinavians were among the most numerous in missionary activities linked to the quest to ‘civilize’ various regions in Africa, Asia and elsewhere (Brautaset et al., 2018; Nyberg, 2001). Others contributed to establishing and pacifying colonies such as the Congo Free State by serving as soldiers, policemen and navigators (Tell, 2005). Scandinavian business enterprises further provided the ‘tools of empire’, to use Daniel Headrick’s (1981) term, acting as suppliers of key technologies and equipment – from railway signalling systems to advanced mining equipment – in large-scale colonial projects; this became one of the main ways for the smaller nations to profit economically from colonialism. Shipping was another important way for Scandinavians to extract profit from the great powers’ imperial ventures (e.g. Nygaard, 2015).

Another strategy was the opposite: to cooperate with the colonised countries – rather than the colonisers – in their quest for freedom. This must be regarded as an intriguing avenue because of the contradictions it entailed: the smaller European nations here pointed to themselves as innocent actors in world politics, deliberately distancing themselves discursively from the greed and murky ambitions of the great powers – while at the same time working hard to profit from the cooperation and squeeze out as much as possible from it in terms of economic and political gains (Andersen, 2005; Vikström, Högselius, & Avango, 2017). In this way the participation in anti-colonial struggles in effect became an innovative form of imperialism in its own right.

By targeting phenomena like this, the study of Scandinavian colonialism and imperialism in the industrial age has the potential to contribute to and enrich ongoing scholarly debates about colonialism in general and about the meaning of theoretical concepts such as ‘informal empire’ and ‘semi-colonialism’, let alone the radical notions of ‘neo-colonialism’ and ‘neo-imperialism’ (Gallagher & Robinson, 1953; Nkrumah, 1965; Osterhammel, 1986). While these terms appear frequently in recent research – as well as in the public debate – on colonialism and colonial history, they continue to be used and defined very much with the great powers in mind, especially Britain, France, the United States, and most recently China, whose present-day activities in Africa and Central Asia are commonly interpreted by critics as being of a neo-colonial character (Lumumba-Kasongo, 2011). In fact, the above terms become even more intriguing when applied to the smaller European nations. For example, while most definitions of informal empire includes latent threats of violence or at least

¹See e.g. “Kolonial företagsamhet”, *Affärsvärlden*, 2 January 1913. Cf. Andersen (2005), p. 73.

²The closest one comes to Nordic annexation attempts in the industrial age is to quest for Spitsbergen in the Arctic Ocean. See Avango et al. (2018).

diplomatic pressure from the side of a dominant power as a necessary condition for a bilateral relation to deserve the label (see, e.g. Barton & Bennett, 2010), the smaller countries appear to have ended up more than once in bilateral relations that lack these attributes, although exploitative interests and activities of an unmistakably colonial character have been part and parcel of the relations.

This article seeks to contribute to the debate about informal empire and neo-colonialism – and to the history of Scandinavian colonialism – by scrutinising one of the most fascinating cases of Swedish foreign expansion in the industrial age: the skilfully orchestrated attempts by scientists, diplomats, industrial companies and financial institutions to seize control over early Republican China's most strategic industrial sector: its iron and steel complex. Taking control over strategic natural resources and extractive industries have long been known to lie at the heart of imperialism, in China and elsewhere. The conventional wisdom, however, has been that the smaller, formally non-colonial European nations have stayed at an arm's-length distance from such activities, which, instead, were driven, or so the argument goes, by the Western great powers and Japan (Shen, 2014; Wang, 2010; Wu, 2015). The smaller nations have been regarded as fairly passive and benign actors without any undue ambitions apart from profiting from trade and establishing fruitful and peaceful diplomatic relations with the involved polities. For example, a favourite figure in the existing literature has been the famous Swedish scientist Johan Gunnar Andersson, who in his role as advisor to the Chinese government is portrayed as a person who, on the one hand, helped China in the face of Western and Japanese imperial greed, and, on the other, as a scientist doing science for science's own sake and for his personal scientific fame (Chen, 1991; Han, 2018; Fiskesjö, 2011; Liu & Liu, 2008; Romgard, 2013, 2018). This article rejects this interpretation, showing, instead, how Andersson's activities in China were, in fact, part of a grand Swedish project that in many ways resembled typical great-power exploitative colonialism.

The article, then, addresses two main research questions. First, what did Johan Gunnar Andersson actually do in China? Secondly, to what extent can Sweden's activities in China in the early Republican era be interpreted as a form of informal empire-building?

The article is organised as follows. We first outline our methodology, and sketch the role of China in Sweden's overall industrial and foreign policy. We then turn to the recruitment of Andersson and two other Swedish geologists as advisors to the Chinese government, and trace how this captured the imagination of the Swedish business elite. Next, we follow the Swedish geologists in their surveying work, and how their geological insights inspired a grand Swedish vision aimed at transforming China's iron and steel complex. The final empirical section explores the broadening of this vision, in which Swedish industry was to play a key role, to other natural resources. In the concluding section we return to the two research questions posed above.

2. Methodology

Our study builds primarily on archival documents from Sweden and China. The Swedish National Archives and, in particular, the archives of the Swedish Legation in Beijing, forms a solid basis for reconstructing the role of foreign-policy actors in the Swedish undertakings. These documents are rich, well-ordered and valuable, containing detailed correspondence between the main involved parties. We are in no way the first to look into this collection; for example, Romgard (2013, 2018) makes extensive use of it, but in a selective way that, from our point of view, must be regarded as questionable, since he deliberately omits all economic aspects from his analysis. In order to reconstruct the activities of Swedish financial and industrial actors, we have mainly relied on the Archives of Stockholm's Enskilda Bank (SEB), which essentially translates into a number of business entities controlled by the powerful Wallenberg sphere. The most important of these was the Swedish Diamond Rock Drilling Company (Svenska Diamantbergborrningsaktiebolaget, SDAB), whose archives were also partly moved to the Swedish Centre for Business History (Centrum för Näringslivshistoria). The SEB documents were extremely valuable for the purpose of our research, comprising the full and

detailed correspondence between Wallenberg business leaders and the Swedish scientists and diplomats in China. On the Chinese side, we draw on the National Geological Archives of China, which contain the original reports of the Swedish geologists in their role as advisors to the Chinese government, and the Second Historical Archives of China, whose collections allow us to shed light on the Swedish undertakings from the perspective of Republican China's Ministry of Agriculture and Commerce. These Chinese documents have not, as far as we are aware of, been used before.

3. China in the context of Swedish industrial and foreign policy interests

Following its humiliating defeat in the First Sino-Japanese War (1894–95), China increasingly embarked on a path to modernise itself. One of the key challenges in this context was to make productive use of the country's natural resources. Large supplies of coal, iron, timber and a range of other raw materials were identified as the *sine qua non* for building up a modern Chinese industry and military. The challenge to actually make the resources available was daunting, partly because China lacked experience, knowledge, capital and infrastructure, and partly because a range of foreign powers competed with Chinese agencies for access to the country's resource base. Many of the extractive activities that were already in place were controlled by Western and Japanese companies (Wu, 2015).

The foreigners took interest in exploiting China's natural resources both for the huge business profits that could be made and for their own concrete resource needs. While bulky key resources such as coal, iron or timber could rarely be exported with a profit from China to Europe or North America due to the high transport costs, the Western and Japanese colonial settlements in China found themselves in need of cheap and reliable access to ever larger amounts of raw materials. Germany, for example, made sure its concessions in the Shandong peninsula, which it violently acquired in 1898, included exclusive rights to the peninsula's coal mines; the Shandong Railway, built by the Germans in 1898–1901, then took care of shipping the coal to the German naval base at Qingdao and the fuel-devouring warships there (Wang, 2010). In the same vein, British companies exploited a number of coal and iron mines in their 'sphere of interest', which essentially covered the Yangtze Valley and surroundings, and was protected by British warships patrolling the Yangtze River. The United States, for its part, had Standard Oil explore China's petroleum deposits. Japan also became very active, aggressively exploiting Manchuria's coal and iron resources in line with an ambitious resource imperialist strategy that also involved Korea (Shen, 2014). Other minerals the foreigners targeted included antimony, copper, tin and mercury.

Sweden's Chinese interests were initially very modest. At the turn of the twentieth century the most important Swedish activities in the country were those of missionaries, which were fairly numerous and spread throughout the empire's provinces – from Yunnan and Mongolia to Shanxi and Xinjiang (Brautaset et al., 2018; Nyberg, 2001). In Shanghai and other colonial-economic hubs, a few Swedish businessmen also tried their luck, mainly by piggy-backing on the activities of the imperial powers. A small consulate formed the only link between these actors and the Swedish state. Sweden had not yet any diplomatic representative in Beijing, the imperial capital (Larsson, 1977). A proud achievement was the conclusion, already in 1847, of a treaty between Sweden-Norway and China. This was an 'unequal' treaty of the kind that the imperial powers had concluded with China, giving Swedish nationals in China substantial privileges. But as of the early 1900s there was still considerable uncertainty about whether the treaty was actually valid, as it had not been ratified by the Qing court (Cassel, 2010).

The interest in China was growing, however. Especially after 1905, many Swedish analysts identified East Asia as a region that was likely to grow in importance globally, both economically and politically. Japan's victory over Russia in the 1904–05 war both shocked and impressed the Western world, and China seemed to be set on a path to emulating much of the Japanese modernisation strategy. At the same time Sweden saw its political union with Norway dissolve. The political and economic elite pondered on how to compensate for this loss, one key conclusion being that foreign

investment and a rapid growth in exports would strengthen the Swedish economy and lead the country to prosper, while also raising Sweden's reputation in the world more generally – a key task in its own right in this age of growing nationalist sentiments. Russia was identified as the most interesting 'new' region for Swedish industry, but East Asia was not far behind in the vision that gradually took form. Politics and industry joined forces in an orchestrated globalisation strategy, as show-cased by the 1905 reforms of the foreign policy bureaucracy (Larsson, 1976); in the debate about this reform a consensus emerged that one of the main tasks of foreign policy must be to support Swedish businesses abroad, while at the same time foreign policy makers increasingly eyed Swedish business activities abroad as tools that could be mobilised for political purposes.

Extraction of natural resources was hardly a surprising focal point in this context. Everyone was aware that Sweden's own industrial breakthrough had relied on the exploitation of the country's abundant resource riches, notably iron ore and timber. Considerable expertise – and pride – had accumulated here, as reflected not only in the tremendous success of a range of resource-based business enterprises, but also in the formation of new state agencies like the Swedish Geological Survey (SGU). The country also hosted a range of scientific and educational establishments that produced world-renowned scientists and droves of highly competent graduates in fields such as chemistry, geology, metallurgy and mining. Abroad, Sweden was especially renowned for its important role in the study and exploitation of iron ore – a natural resource that together with coal formed the very backbone of the industrial age (Avango, Högselius, & Nilsson, 2018).

In 1908 SGU, under the leadership of Johan Gunnar Andersson (1874–1960), a young but ambitious geology professor and explorer, took the initiative to compile a survey of the world's iron ore resources. For this purpose SGU brought together geologists and mining experts from all over the world to a major conference in Stockholm. Taking place in the summer of 1910, this event became a starting point for a Swedish awareness of China's natural resource riches, most of which had not yet been mapped. The inputs to the conference from China made clear that knowledge about its iron ore – and probably about most other resources as well – was patchy at best; no systematic explorations had yet taken place (Andersson, 1910, pp. 913–924).

4. A Chinese geological survey under Swedish leadership

One of the Swedish expatriates in China was Erik Nyström (1879–1963), a young geologist with degrees from KTH Royal Institute of Technology, Sweden's leading technical university, and Uppsala University. Having arrived in China in 1901, Nyström had found employment as a professor of geology and chemistry at a newly created university at Taiyuan in Shanxi Province. Over time he developed close ties to China and learnt fluent Mandarin, although he also maintained a patriotic sense of mission for his home country. Making use of his robust Swedish training in the field sciences he often took the opportunity to leave the classroom and explore, together with his students, the province's natural resources (Romgard, 2013). In 1912, this work eventually resulted in the publication of an English-language book, *Coal and Mineral Resources of Shansi Province* (Nyström, 1912).

Encouraged by this experience, Nyström came up with the idea that Swedish geologists might play an active role in systematically mapping China's natural resources. He reasoned that the new republican government would be more interested than the earlier regime in a modern scientific approach to industrialisation. He made contact with Sweden's main diplomatic representative in Beijing, G.O. Wallenberg (1863–1937), to discuss the issue (Romgard, 2018). Wallenberg had been appointed Sweden's first envoy to Japan and China in 1906. He had shown considerable skill in creating opportunities for Swedish business interests in both Japan and China. In 1908–1909 he had negotiated a new bilateral Swedish-Chinese Treaty (and this time it *was* ratified) (Cassel, 2010), which became part of a broader Swedish export initiative to China. During 1912, Wallenberg's efforts had yielded a breakthrough, the most important Swedish success being an Ericsson contract for a telephone network to be built in Shanghai. It also seemed that Sweden, through a credit arrangement involving SEB, might win the concession for the planned Anhui Railway (Larsson, 1977). Wallenberg was

very optimistic about the future possibilities for Sweden in China, reasoning that China was a nation destined to become a major industrial power and that the Chinese, in seeking to achieve this, would be more interested in cooperating with small nations such as Sweden than with the large imperial powers. This idea would be a recurring point of departure for Wallenberg's diplomatic initiatives not only in the Far East, but subsequently in the Near East as well (Vikström et al., 2017).

Nyström suggested approaching the Chinese government with a proposition that one or more Swedish geologists enter into Chinese service for geological surveying purposes. He obviously thought of himself as a suitable person in this context, but as he was only 34 years old he reasoned that the proposal would have greater chances of success if he could win over one or two more experienced persons for the initiative. Wallenberg supported the idea, recommending that Nyström take it up for discussion with Johan Gunnar Andersson at SGU. When Andersson heard about Nyström's plan, he became so interested in it that he eventually proposed that he himself accompany Nyström to China. Andersson also asked his close colleague at SGU, the young but already quite prominent Swedish-Finnish geologist Felix Tegengren (1884–1980), to accompany him. In the months that followed, Wallenberg and the three scientists started to elaborate on a plan to set up in China 'a geological survey after Swedish model and under Swedish leadership'.³

Internal political turmoil in China delayed the Swedish initiative by almost a year, but following the coup d'état of October 1913 and Yuan Shikai's (袁世凱, 1859–1916) definite rise to the Chinese presidency, Wallenberg and Nyström found the time ripe to approach the government and, in particular, the newly appointed Minister of Agriculture and Commerce, Zhang Jian (Chang Chien, 张謇, 1853–1926).⁴

Already during the Qing Empire, government advisory positions of the kind that the Swedes were seeking had been considered powerful tools of informal empire, that is, instruments for the foreign imperial powers in their designs to influence Chinese governmental affairs (see, e.g. Wu, 2015). Following the revolution the stakes were raised even higher, as the whole state apparatus was now in flux and perceived as malleable. Numerous foreign powers eyed a unique chance to take the lead in shaping government policy in the emerging Chinese Republic. The Swedes, accordingly, were not the only ones to approach the government and they faced tough competition, especially from Imperial Germany.⁵ They coped with the competition by explicitly distancing themselves, in their communication with the Chinese government, from the great powers, whom Wallenberg and Nyström portrayed as unreliable profit- and power-hungry actors who did not really care about China's own development prospects. 'To obtain unbiased judgment,' Nyström explained to Minister Zhang, 'I believe your Excellency will see the advantage of having on the commission foreigners of Swedish nationality, because Sweden has no undue ambitions in China.'⁶

As it seemed, the Swedes thus took an explicitly anti-imperialist stance. The anti-imperialist approach was further elaborated on by Andersson, who imagined that 'one of the Geological Survey's most important tasks shall be to assist the Chinese government with its expertise to guard the interests of the Chinese state against the greedy pretensions of the foreigners.'⁷ The Swedes would help the Chinese to 'make sure that China's enormous mineral riches are made use of not only for the benefit of foreign concession owners, but to the greatest possible extent of the Chinese state as well.'⁸

The Chinese government responded positively. In February 1914 Wallenberg met personally with Zhang Jian and the Director of the Mining Bureau, Yang Tingdong (Yang Ting-tung, 杨廷栋), to settle the agreement.⁹ On Andersson's behalf, Wallenberg signed the contract for employment in Chinese state service during a period of one year from May 1914. The contract also allowed

³G.O. Wallenberg to Andersson, 12 November 1913, RA F1:11.

⁴Ibid.

⁵Andersson to G.O. Wallenberg, 5 January 1914, RA F1:11. See also Wu's (2015) account of Friedrich Solger, the main German competitor to the Swedes.

⁶Nyström to Zhang, 21 October 1913, RA F1:11.

⁷Andersson to G.O. Wallenberg, 17 December 1913, RA F1:11.

⁸Andersson to G.O. Wallenberg, 19 December 1913, RA F1:11.

⁹G.O. Wallenberg to Andersson, 12 February 1914, RA F1:11.

Andersson to employ ‘assistants’. This made it formally possible for Nyström and Tegengren to join Andersson, although the financing of their salaries remained contentious; in the end Wallenberg and Andersson were able to hammer out an agreement with the Chinese government that secured Nyström’s salary. Tegengren’s salary, however, would have to come from other sources.¹⁰

5. From geology to business

Following up on the earlier anti-imperialist Swedish rhetoric vis-à-vis the Chinese, Andersson told G.O. Wallenberg that, in his new position, he intended to ‘make clear to the Chinese that my program for the work will be *China to the Chinese*, and that I thus in all instances will represent the interests of the Chinese state vis-à-vis the foreigners.’¹¹ However, things turned out differently, as Andersson came under pressure from Swedish foreign-policy and business actors to maximise the utility for Sweden of his appointment as a top adviser to the Chinese government. These non-scientific actors did not have anything against Andersson’s ambition to marginalise the influence of the great powers in China to the greatest possible extent. Sweden, however, would clearly have to be treated differently. It was widely expected that Andersson would represent not only the interests of the Chinese state, but also the interests of Sweden.

When the Swedish minister of agriculture Johan Beck-Friis and G.O. Wallenberg’s half-brother K.A. Wallenberg, who had just been appointed new Swedish Minister of Foreign Affairs, approved Andersson’s application for a one-year leave from SGU, they did so because they believed Andersson’s year in Chinese service might turn out to be highly beneficial for the long-term evolution of Sweden’s economic and political relations with the new Republic of China.¹² Moreover, when the news about Andersson’s Chinese appointment spread in the Swedish press, he was immediately approached by members of the Swedish industrial elite. G.O. Wallenberg, in particular, actively encouraged representatives of companies within his powerful family sphere – which dominated much of Sweden’s business life – to come up with ideas of how the Swedish geologists’ work for the Chinese government could be exploited for the purpose of Swedish business.

The Swedish industrialist who showed the greatest enthusiasm in the context of Andersson’s Chinese position was Oscar Falkman (1877–1961), a well-known Swedish mining industrialist with extensive experience abroad (see, e.g. Bergquist & Lindmark, 2016). Falkman had close ties to the Wallenberg family and was engaged to be married with G.O. Wallenberg’s daughter Karin. Most importantly, he had just returned from a journey to East Asia and was able to share some first-hand impressions of China’s recent industrial development.

Before Andersson’s departure for China in spring 1914, Falkman took the initiative to invite selected members of the Swedish industrial elite to a secret meeting. Those invited were all representatives of the Wallenberg industrial sphere. Apart from Falkman, who hosted the meeting, and Andersson himself, the participants were Lorens Carlson (1881–1932), director of the Wallenberg-controlled Swedish Diamond Rock Drilling Company (Svenska Diamantbergborrnings-Aktiebolaget, SDAB), further the mining engineer K.F. Johansson and, most importantly, the bank director and industrialist August Nachmanson (1878–1946). Nachmanson headed the newly founded Wallenberg-owned AB Emissionsinstitutet, while also serving as the managing director of the Orkla Grube mining company in Norway and as an SDAB board member, among other duties.

The explicit purpose of the meeting was to discuss

the possibilities for Swedish exploitation of ore and coal deposits in China, and other business activities in China related to this, for which excellent opportunities seem to have been opened up through the departure of Professor J. Gunnar Andersson to China.

¹⁰Zhang and Wallenberg (as intermediary), “Agreement”, 10 March 1914, RA F1:11. Andersson’s salary was finally set to £150 per month, while Nyström was to receive £100.

¹¹Andersson to G.O. Wallenberg, 21 March 1914, RA F1:11.

¹²Andersson to G.O. Wallenberg, 9 March 1914, RA F1:11.

Falkman, referring to his personal impressions of China, had got the ‘lively impression that the time has come for an exploitation of the country’s rich coal and ore deposits.’ Sensing that big money could be made, he argued that ‘initiatives should be taken from the Swedish side for a timely acquisition of the most promising deposits, once these have been investigated and exploitation recommended by a trustworthy expert.’¹³ With Andersson in charge of setting up a Chinese Geological Survey and Tegengren, one of the world’s best ore geologists, by his side, Swedish mining interests would have an invaluable advantage over other foreign nations in what Falkman thought amounted to a colonial-style scramble for China’s natural resources.

The other participants were not less enthusiastic. Director Carlsson of the drilling company envisaged great prospects for his firm in China, since a large-scale modern exploitation of China’s mineral resources would depend on extensive diamond drilling. Recognising the potential competitive advantage of first-hand access to important geological information, Carlsson happily agreed to dispatch one of the company’s drilling experts to China – and pay for his salary while in Andersson’s service. Nachmanson, for his part, regarded the current moment as a highly suitable starting point for a Swedish exploitation of China’s resource riches. He therefore happily agreed to finance Tegengren’s salary in China during a period of one year.¹⁴ All in all, everyone agreed that Andersson’s advisory position could and must be mobilised for the interests of Swedish industry. Andersson stressed that this dimension of his new appointment must be treated with the greatest possible secrecy. Briefing G.O. Wallenberg about the meeting, Andersson stressed that it was ‘of greatest significance that the Chinese at the present state of the issue do not receive any information’ about the link between the advisory positions and the Swedish mining interests.¹⁵

Before leaving Stockholm, Andersson also met with Marcus Wallenberg (1864–1943), G.O. Wallenberg’s half-brother and president of Sweden’s most powerful bank, Stockholms Enskilda Bank, with which both AB Emissionsinstitutet and SDAB were closely affiliated. Among other things, Andersson inquired what Wallenberg’s preferences would be in terms of potential mining investments in China. The bank director made clear to Andersson that he saw the greatest potential profits in precious metals. Iron ore or coal investments were bound to become much more complex and therefore appeared more risky, especially considering China’s fragile political state. Hence they were less interesting.¹⁶ As we will see, however, these judgments would subsequently change.

The industrial actors jointly decided to form a ‘Consortium for the Financing of the Swedish-Chinese Expedition’. To increase the geologists’ motivation to seek opportunities for Swedish investments in Chinese natural resource exploitation, the consortium signed special agreements with Andersson and Tegengren, to whom rich pecuniary awards were promised if their geological finds actually led to Swedish industrial investments in China. Tegengren agreed to devote himself mainly to studying such coal and ore deposits that he considered ‘particularly suited for economic exploitation’, while actively looking into the possibilities for ‘the introduction of Swedish diamond rock drilling in China’. In return he would receive up to 200,000 Swedish kronor – a huge sum at the time – ‘if the Consortium were to exploit one or more of the deposits’.¹⁷ The contract was subsequently complemented by a separate agreement between Tegengren, Andersson and Nyström in which Tegengren agreed to share his potential reward with Andersson and Nyström, who were not formally employed by the Wallenbergs.¹⁸ Tegengren promised to report to the Consortium about their activities at least once per month.

¹³“Protokoll över sammankomst på Direktör Oscar Falkman’s kontor”, Stockholm, 20 March 1914, RA F1:11.

¹⁴“Kontrakt mellan dir. Aug. Nachmanson (Konsortiet), och statsgeologen F.R. Tegengren”, 23 March 1914, SEB F1:2. Nachmanson agreed to pay Tegengren 20,000 kronor, of which 2,000 kronor were reserved for travel between Sweden and China. He would also reimburse Tegengren for all his travel expenses within China.

¹⁵Andersson to G.O. Wallenberg, 21 March 1914, RA F1:11.

¹⁶Andersson to Marcus Wallenberg, 24 June 1914, SEB F1:2.

¹⁷“Kontrakt mellan dir. Aug. Nachmanson (Konsortiet), och statsgeologen F.R. Tegengren”, 23 March 1914, SEB F1:2.

¹⁸The supplementary agreement specified that Andersson, Tegengren and Nyström would each get 30% of the reward. C.F. Erikson from SDAB would get the remaining 10%. Andersson to Nachmanson, 31 August 1915, SEB F1:1.

Thanks to Nachmansson's generous support, Tegengren was able to accompany Andersson on his rail journey across Siberia to Beijing. Nyström, who was in Sweden that spring, joined them, going back to China by the same train. At Chita in eastern Siberia they picked up Carl Fredrik Erikson (b. 1878), a drilling expert in the service of SDAB, who had been working for that company in Siberia for some time but was now ordered by Carlson to join Anderson and Tegengren to Beijing. There, Erikson was officially employed as Andersson's private secretary, although his salary, as we have seen, actually came from SDAB (Nachmansson & Sundberg, 1936, p. 56).

In the end Swedish industry thus came to provide direct and substantial financial support to Andersson's team. The industrialists did so because they viewed Andersson's Chinese appointment as a unique point of entry for Swedish industry to participate in the exploitation of Chinese natural resources. As we will see, this vision, which in a number of ways contradicted the official purposes of the Swedish experts' planned activities in China, would soon be further scaled up. First of all, however, the Swedish geologists needed to establish themselves as trustworthy partners to the Chinese state actors – and demonstrate that their expertise could be highly useful for the newly formed republic.

6. Surveying China's mineral resources

Andersson, Tegengren and Erikson arrived in Beijing on 16 May 1914. Ten days later, the Swedes were unexpectedly informed by the Chinese government that they were not the only foreign mining advisers that were to be employed. As it turned out, a Mr. A.S. Wheler, a British citizen, had also been recruited. Like Andersson, Wheler was an experienced geologist, but with a different area of specialisation, having worked for many years as a mining engineer for gold, diamond and tin deposits in British India and the Transvaal. Andersson was initially disappointed, having hoped that the Swedes would be the sole top advisers. Yet he managed to turn the problem into an advantage. He found Wheler, who arrived in mid-June, to be 'a good and honest man with whom it should be possible to cooperate.'¹⁹ Anderson then proposed that he and Wheler agree on a division of labour, which the latter accepted: while the Swedes would take care of surveying China's coal and iron resources, Wheler would focus on the precious metals: gold, silver, copper, tin, mercury, antimony and others. It was a logical division, mirroring the areas of the scientists' respective expertise. Andersson and Wheler also agreed to share the findings from their surveying activities with each other. This was crucial, because it guaranteed Swedish access to geological information about precious metals that, as Andersson wrote home to his industrial friends, could become of great value for future Swedish investments in Chinese mines.²⁰ In other words, Andersson hoped to mobilise Wheler's expertise for Swedish purposes. In this way Andersson kept Marcus Wallenberg's dream of acquiring a Chinese precious metals deposit alive.

However, iron was also identified as a metal of interest. Andersson early on concluded that the already known iron ore resources would in no way suffice to meet Chinese demand during the intense industrialisation phase that most observers thought China was about to enter. As of 1914 there was only one large-scale iron mine in operation in China: Daye (Tayeh, 大冶) in the Yangtze Valley, 70 miles downstream from Hankou (now Wuhan) in Hubei Province. This mine was reported to contain as much as 100 million tons of very rich iron ore. Mining operations had commenced back in 1891, based on imported German technology. The ore served the nearby Hanyang (汉阳) ironworks, where it was refined into pig iron, and the adjacent Chinese arsenal. The nearby Pingxiang (萍乡) coal mine added to the complex, supplying Hanyang with coking coal for ore smelting. The Hanyeping (HAN-yang, Da-YE, PING-xiang, 汉冶萍) industries, as the complex was called for short, were of immense significance for China, especially from a military point of view (Nishizawa, 1913). However, the enterprise had run into financial troubles, and when the

¹⁹Andersson to G.O. Wallenberg, 28 June 1914, RA F1:11.

²⁰Andersson to Marcus Wallenberg, 24 June 1914, SEB F1:2.

Swedes arrived in China in spring 1914, Hanyeping was all over the news due to a controversial loan agreement with a Japanese banking and industrial group. The deal had effectively put the entire complex under Japanese control. In addition, the Chinese had been forced to accept an arrangement under which, over the next 40 years, no less than 8 million tons of iron ore would be exported from the Daye mine to Japan.²¹

Andersson quickly became one of the staunchest critics of Japan's – and the Western great powers' – growing influence over China's natural resources. While he could not help China to regain control over Hanyeping, he offered his services when it came to finding new iron ore deposits, which could compensate for the 'loss' of Daye. In his communications with the Chinese government and President Yuan Shikai personally, he repeatedly pointed to the need for widening iron ore extraction by finding new deposits and starting up new mines, while strengthening national control over the country's resource base.²² Andersson here gained a reputation for passionately considering China's own interests in the face of geopolitical competition with the imperial powers; he had not forgotten his programme: 'China to the Chinese.' But neither had he forgotten that he served powerful industrial interests in Sweden. Nobody knew better than Andersson that Sweden was a world power in iron ore extraction, and a major opportunity now seemed to be emerging for Sweden to capitalise on that experience in the Far East. 'If we in one or the other way could bring a really first-class iron ore under Swedish influence,' he wrote to Marcus Wallenberg in late June 1914, 'it would be an extremely significant way of deepening the Swedish interest here in China in an area where we possess the very best expertise.'²³ As we shall see later on, what he had in mind here far exceeded any other Swedish industrial vision for China.

In mid-August Andersson left on an expedition to a first potentially promising iron ore deposit near the well-known Kaiping coalmine, not far from Beijing, which Minister Zhang had come to hear about. Andersson found that the deposit was very significant, and therefore wired Tegengren, who arrived and undertook a detailed survey. The ore was found to be of relatively poor quality. While this was initially interpreted as a problem, Andersson tried to turn it into an opportunity for Swedish industrial interests. He told his Chinese employers that the low grade of the ore meant that it 'cannot be smelted directly but requires a prior concentration process.' Luckily, precisely such a process had recently been 'developed for similar low grade ores by mining engineers in my home country, Sweden.' The implication was that these Swedish engineers could help the Chinese. As a first step in probing this possibility, Andersson ordered samples of the ore to be sent to Sweden for 'experimental treatment.'²⁴

A second iron ore discovery was made in September. The Swedes here cooperated with a Danish mining engineer, F.C. Mathiesen, who one day presented Andersson with 'a remarkably beautiful specimen of iron ore.' It was said to originate from Longguan (Lung Kuan, 龙关) in Xuanhua County of Zhili (Chihli, 直隶) province. Andersson, Mathiesen and Erikson decided to have a look at the deposit, which turned out to be a major one. The Scandinavians spent over three weeks further exploring the site. The Longguan ore was richer than the Kaiping ore. Andersson informed the ministry that the deposit would be able to supply the Hanyang Arsenal with sufficient amounts of ore for about 100 years at the present rate of consumption!

A third, even more promising iron ore deposit that the Swedes came across that autumn was the Molingguan (Molinkuan, 秣陵关) iron ore field. It was situated in the Yangtze Valley just 30 kilometers south of Nanjing. Its discovery was attributed 'to His Excellency' General Feng Guozhang (Feng Kuo-chang, 冯国璋, 1859–1919), Nanjing's military governor. Andersson dispatched Tegengren and a Chinese colleague to the site. The results were very encouraging. Tegengren, who immediately upon his return to Beijing reported in detail about the find to August Nachmanson at

²¹Cf. Andersson to Marcus Wallenberg, 24 June 1914, SEB F1:2.

²²Andersson to Yuan Shikai, 28 November 1914. "The future development of the Iron industry in China," RA F1:11.

²³Andersson to Marcus Wallenberg, 24 June 1914, SEB F1:2.

²⁴As quoted in Andersson to His Excellency Yuan Shih Kai, President of the Republic of China, 28 November 1914. "The future development of the Iron industry in China"; cf. Andersson to G.O. Wallenberg, 27 September 1914, RA F1:11.

Emissionsinstitutet,²⁵ estimated that the deposit contained about 40 million tons of very rich iron ore – roughly on par with the Daye deposit. If exploited, it would be sufficient to cover the present needs of the Hanyang ironworks for over 200 years! Tegengren commented that the terrain was suitable for the construction of a railway and that, once the ore reached the Yangtze River, it could be loaded onto oceangoing steamers bound for overseas markets.

7. A grand Swedish vision

By autumn 1914, after less than half a year in the country, Andersson and his team had already achieved remarkable results as geological surveyors in Chinese service, especially in terms of several promising new iron ore finds. Andersson noted with satisfaction that these early mappings had given his team an ‘excellent “face” at the ministry and the Mining Bureau.’ The preliminary delineation of the ore finds played an important part in enabling the Swedes to establish themselves as highly competent – and trusted – experts, and to build smooth social and professional relations with Chinese government representatives and Chinese geologists. For example, Andersson became a very close friend of Ding Wenjiang (V.K. Ting, 丁文江), a British-trained Chinese geologist whom the government had appointed as head of the emerging Geological Survey, while also developing close relations with Zhang Yi’ou (Chang Yi-ou, 张轶欧), one of the directors at the Mining Bureau.²⁶

In his reports to the Swedish industrial consortium that sponsored Tegengren’s and Erikson’s salaries, Andersson grew increasingly passionate about the possibilities for Swedish industrial interests to capitalise on the smooth and trustful Sino-Swedish relations. Iron ore was singled out here as the most promising resource, which indirectly also translated into an interest in coking coal, necessary for smelting. As early as late July 1914 Andersson already painted a vivid picture of the Swedish opportunities in this field, writing to Marcus Wallenberg that

it seems to me that there is a unique opportunity now to bring in Swedish enterprise on a grand scale in China. I am of the opinion that we could try and approach the Chinese government with a proposal of such content that, for example, a Swedish financial group could be allowed to find and exploit an iron ore and a [coking] coal deposit under the condition that these mines’ products first of all serve the state’s military needs. I also imagine that the Swedes would not only extract the ore, but also refine it ... A Sino-Swedish company could be formed in which the Chinese state would get a part of the shares, less than half. This company would be free to sell on the open market everything of its output that is not claimed by the Chinese state, and supplies to the state shall be paid for in accordance with world market prices for the respective products ...²⁷

Andersson reasoned that the Chinese could hardly be expected to ‘entrust such a company to anyone except citizens of a small and distant state, which cannot be suspected of political penetration tendencies.’ In other words, China would probably be very happy to cooperate with Sweden.²⁸

The outbreak of war in Europe in August 1914 did not deter this emerging vision. On the contrary, Andersson felt that the Swedish chances increased further. ‘The present point in time is surely uniquely favourable for planning new companies here,’ he wrote to Marcus Wallenberg in October, ‘because the competition with other nations is less now than at other times, and the Chinese seem quite tender and reasonable in all issues where European capital can be glimpsed in the background.’²⁹ Tegengren made the same argument, reporting to Nachmansson in Stockholm that

now, before the great powers nab China again, will be the right moment for Sweden to try and enter. Mining concessions could surely be received with ease. We also hope that the next few months of work will enable us to offer deposits to the Consortium with good prospects for a profitable exploitation.³⁰

²⁵Tegengren to Nachmansson, 29 November 1914, SEB F1:1.

²⁶For an account of Andersson’s friendship with Ding Wenjiang, see Fiskesjö (2011).

²⁷Andersson to Marcus Wallenberg, 19 July 1914, SEB F1:2.

²⁸Ibid.

²⁹Andersson to Marcus Wallenberg, 27 October 1914, SEB F1:2.

³⁰Tegengren to Nachmansson, 10 October 1914, SEB F1:2.

By late November 1914 Andersson judged that the iron ore issue, given the Swedish success in actually identifying promising new ore deposits, had reached a point in time where the Swedes' exploratory works had made the Chinese authorities interested in earnest. He thought that the government might want to take concrete measures within a near future, especially for the exploitation of the Molingguan deposit.³¹

In fact, Andersson himself *urged* the Chinese government to take measures as soon as possible. Filing an extensive report about the 'future development of the Iron industry in China' to President Yuan Shikai, he self-confidently concluded that the work carried out by the Swedes – in cooperation with Chinese geologists – opened up 'totally new opportunities for China's iron industry.' He argued that it was now high time to take key strategic decisions on how to exploit the enormous new deposits that had been discovered. He argued that here the government had to be extremely careful when it came to cooperation with foreign companies.³²

Anderson then approached Mining Bureau director Zhang Yi'ou, arguing that it was important to start thinking early on about suitable ways of attracting the necessary capital for the envisaged surge in Chinese state-led mining projects. Again, Andersson pointed to the danger of technological or financial dependence on the foreign great powers. Such dependence, Andersson told Zhang, could be lessened through 'participation of Sweden in the capitalization of your mining industry.'³³

Andersson thought it quite likely that the Swedes might soon be approached with some kind of offer from the Chinese side. Anticipating a need for action, Andersson, in cooperation with G.O. Wallenberg at the Swedish Legation, started drawing up concrete plans for a possible Swedish initiative. It targeted the Molingguan iron ore deposit. The Swedes saw two somewhat different opportunities here. The first concerned Swedish-led extraction of Molingguan iron ore and its export to countries in the Pacific region. The second centred on Swedish exploitation of the deposit 'for pig iron production and further refining within the country.' It seemed likely that the Chinese government would find a combination of the two approaches attractive; the Molingguan deposit, judging from the Swedish estimates, was so big that it could be used *both* to meet domestic Chinese needs *and* to generate export income through overseas ore sales. And there was no reason why Swedish industry could not take on a leading role in both cases.

In terms of ore exports, G.O. Wallenberg drew up a programme for the exploitation of Molingguan, centring on cooperation between the Chinese state, a Swedish finance consortium and a third, non-Swedish actor, the American Trading Company, whose role would be to help market Molingguan ore in the United States.³⁴ Andersson, meanwhile, following a proposal by Nachmanson of Emissionsinstitutet,³⁵ sought to gain more detailed insights into the iron ore market in the Pacific region and, most important, its expected future development. The goal was to find out whether it would be profitable to extract iron ore from Molingguan at an aggressive pace and sell it to countries in the Pacific region – essentially Japan and its colonies, the Philippines, Australia, the western states of Latin America and the US and Canadian West Coast. Andersson and G.O. Wallenberg were eager to predict the profitability.³⁶ The marketing study was complemented by continued surveying work at Molingguan. Tegengren, Nyström and Erikson spent much of the spring and summer of 1915 in the Yangtze Valley, delineating the deposit in further detail. G.O. Wallenberg at the Legation contributed by helping the scientists organise several purchases of equipment needed in the field.³⁷

At the same time, Andersson and Wallenberg worked hard to prepare for a Swedish takeover of China's internal iron ore supply chain. Here, the main focus was on the construction of one or more new steel-making plants that would refine Molingguan's high-quality iron ore into pig iron and high-

³¹Andersson to Marcus Wallenberg, 27 November 1914, SEB F1:2.

³²Andersson to Yuan Shikai, 28 November 1914. "The future development of the Iron industry in China," RA F1:11.

³³Anderson to Zhang, 11 December 1914, RA F1:11.

³⁴Andersson to Marcus Wallenberg, 27 November 1914, SEB F1:2.

³⁵Nachmanson to Andersson (undated), Archive of Beiyang Government, Ministry of Agriculture and Commerce.

³⁶Andersson to G.O. Wallenberg, 2 June 1915, RA F1:11.

³⁷Nyström to Wallenberg, 28 February 1915, RA F1:11.

quality steel products. The idea was that Swedish industry would be in charge of planning, building, operating and financing these facilities. Such an enormous undertaking was something that went far beyond the actual expertise of the Swedish geologists. Andersson and Wallenberg, therefore, set out to broaden the available Swedish scientific-technical expertise in China by bringing in more industrially oriented people, including Andersson's old friend Gunnar Dillner (1875–1942), a former professor of metallurgy who had become one of Sweden's most experienced mining industrialists and policy-makers, now serving governmental interests.³⁸

In March 1915 Andersson further expanded the Swedish iron ore initiative by linking up with the Chinese general Jiang Tingzi (Chiung Ting Tse, 蒋廷梓), whom President Yuan Shikai had charged with devising plans for a new Chinese arsenal. The latter would serve to make China independent of the Hanyeping complex, parts of which, as we have seen, had come under Japanese control. Andersson thought that the new arsenal could be supplied with raw materials – in the form of steel – from the envisaged Molingguan complex, thus forming another component in the Swedish-controlled supply chain that began at the iron ore deposit. Again, Andersson managed to assert himself as a highly trustworthy partner, and the interaction between the Swedish geologist and the Chinese military general ended with Andersson suggesting that Swedish industry play the main role in designing and building the centre-piece of the new arsenal: a weapons factory. To get this project going, it was decided that Andersson would help the Chinese government to recruit a suitable Swedish weapons expert, whose role would be to serve as a key adviser to General Jiang.³⁹

In summer 1915 Andersson temporarily returned to Sweden. He used his time there to propel the Swedish-Chinese iron, steel and weapons projects forward. He followed up his earlier talks with the diamond drilling company, the mining industrial interests and the financial institutions in the Wallenberg group. Moreover, he met with a number of key people in the Swedish weapons industry, especially at Bofors.⁴⁰ Last but not least, Andersson met several times with Marcus Wallenberg. Wallenberg, as we have seen, had so far mainly been interested in China's precious metals.⁴¹ Meeting in person with Andersson, however, he largely came to embrace the much more ambitious iron ore vision. Given the immense expected investments, he argued that if SEB and the Wallenberg group would actually take on organising such an 'iron-industrial enterprise in China', it would be useful to 'enter into cooperation with our business friends either here in Europe, or in this case, perhaps better with finance men in the United States.' Marcus Wallenberg encouraged the geologists to carry out a more detailed study of the Molingguan iron ore deposit, preferably involving deep drillings – to be undertaken by SDAB – and other extensive exploratory works. He also stressed that it would be critical to make sure that access to coking coal could be secured and that, in this connection, the means of communication and the freight tariffs for iron ore and coal must be studied in great detail.⁴²

Towards the end of the summer, Andersson sat down with Dillner in Stockholm to think through the totality of Sweden's potential investments linked to Molingguan's iron ore. Dillner was at the time Chairman of the Royal Industrial Commission. The two men elaborated on a plant that would make massive use of the ore for steel production, turning the site into the most important Chinese steel supplier by far. Andersson had so far assumed that a single, large-scale steel plant, preferably to be located just next to Molingguan, could serve the complex. Dillner, however, reasoned that a standard steel-making plant would not do for the production of the steel that the new weapons factory would consume. For that factory, higher-quality steel was needed and hence more advanced machinery and equipment. Dillner then came up with the idea that Sweden might build not only one, but two Chinese steel facilities: one large-scale, standard facility and another, smaller and more specialised one, which would be powered by electricity rather than coal.⁴³

³⁸Andersson to Marcus Wallenberg, 27 November 1914, SEB F1:2; Andersson to G.O. Wallenberg, 2 June 1915, RA F1:11.

³⁹See Andersson to Nachmanson, 31 August 1915, SEB F1:1.

⁴⁰Ibid.

⁴¹Marcus Wallenberg to Andersson, 11 January 1915, SEB F1:2.

⁴²Marcus Wallenberg to Andersson, 27 August 1915, SEB F1:2.

Dillner then worked out a preliminary plan for the entire complex, which Andersson brought with him to Beijing in late August. The plan, which also contained a rough budget, was translated into Chinese and submitted to Minister Zhou Ziqi (Chow Tzu-ch'i, 周自齊) in September.⁴⁴ With Dillner's expert recommendations in his luggage, Andersson, during his trip back to Beijing, also wrote up a comprehensive report to Minister Zhou, in which he further elaborated on the most suitable ways of exploiting China's iron ore.⁴⁵

He further stressed in his communications with General Jiang that China absolutely needed a weapons factory of the kind that the Swedes proposed to build. China needed to radically scale up its arms production. Referring to the ongoing war in Europe, Andersson emphasised that 'this is about life and death of the country.' Large-scale access to modern weapons was clearly crucial in the twentieth century.

The power and strength of the country is not only about having enough soldiers and generals, but also about having enough weapons. Therefore the General should know that it must be the most urgent policy for the government to build modern kinds of weapons.⁴⁶

While this was perhaps not a typical comment to be expected from a peaceful scientist, it reflected Andersson's enthusiasm for an all-Swedish supply chain, from mine to factory, and for capitalising in every possible way – and across the entire supply chain – on the Swedish geological surveying activities.

All in all, the Swedes thus devised an extremely ambitious and comprehensive plan for China's iron industry – an extractive vision that had no parallel in China at the time. They elaborated on the surveying needs and on how to keep the great powers at arm's length from China's mineral riches, but also on vast industrial projects involving the extraction of up to half a million tons of iron per year from the Molingguan deposit, and the erection of a huge new steel production complex on the Yangtze. They carried out market surveys of the whole Pacific region in preparation for the large iron ore exports that they foresaw, and produced elaborate designs of a modern weapons factory. Swedish scientists, engineers and other experts were to play the most important roles as engineers and consultants in virtually all projects – and everything was to be financed by Swedish banks.

8. Beyond iron: widening the Swedish vision

Building on their increasingly fruitful and trustful cooperation with Chinese state officials in the iron ore issue, Johan Gunnar Andersson and G.O. Wallenberg thought of ways to expand the Swedish involvement to other natural resources. These included a number of metals – such as antimony, gold, tin, zinc, lead and mercury – but also petroleum. In this context Andersson dispatched Tegengren and Erikson on a lengthy geological surveying mission to southern China. The trip started in November 1915, with the aim of exploring a variety of potentially important mineral deposits in the south. Escorted by ten soldiers, the Swedes travelled up the Yangtze River. The gold resources in the Yangtze Valley captured the Swedish imagination. In Tegengren's words they offered 'big opportunities'. The available raw material was 'practically inexhaustible' and Tegengren promised to bring physical samples to Sweden for laboratory analysis. A major challenge, however, was the fact that the resources were located in the British sphere of interest and that the British lay claim to exclusive rights to all minerals in the region.⁴⁷

⁴³Andersson to Nachmanson, 31 August 1915, SEB F1:1.

⁴⁴This plan could only be found in Chinese translation in Chinese archives. Dillner, 24 August 1915, "Budget for Construction of a Steel Factory" (in Chinese), Archive of Beiyang Government, Ministry of Agriculture and Commerce.

⁴⁵Anderson to Zhou, 2 September 1915, Archive of Beiyang Government, Ministry of Agriculture and Commerce.

⁴⁶Ibid.

⁴⁷Andersson to Lorens Carlson (SDAB), Stockholm, 16 January 1916, RA F1:11; Tegengren to Nachmanson, 21 March 1916, SEB F1:2; Erikson, "Rapport till SDAB," 23 June 1916, SDAB A2:1; see also excerpt from Erikson's travelogue as quoted in Nachmanson and Sundberg (1936), pp. 57–58.

Further south, Hunan's huge antimony riches were at focus. Spending several days at this site, Tegengren and Erikson came to witness, among other things, how the local police regularly whipped thieves who had been captured while trying to steal large pieces of antimony ore – tempted by the skyrocketing wartime antimony prices. The Swedes elaborated on possible ways of acquiring a major antimony deposit. In parallel G.O. Wallenberg made contact with a Swedish trading company in Tokyo, J.A. Kjellberg & Sons, which specialised in supplying the Japanese and Russian armies with raw and refined antimony.⁴⁸ Again, the Swedish ambition was to combine geological exploration, mining, refining and exports of Chinese natural resources, taking control of the supply chain.

Another interesting initiative was Andersson's creation of a geological museum connected to the Geological Survey in Beijing. At a first glance, such an institution would seem to fill purely scientific and educational purposes. Andersson, however, saw his creation in a wider perspective, noting that the museum 'gives me an excuse to inquire about all possible kinds of deposits and to request access to all possible documents that the Ministry might possess.' In what followed, the museum became a tool for the Swedish geologists to systematically look through potential business opportunities in a whole array of natural resources. Andersson optimistically concluded that 'we will probably be able to find ideas here regarding different kinds of deposits.'⁴⁹

For example, Andersson became very enthusiastic about the prospects for Swedish involvement in Chinese oil prospecting and exploration. A chance seemed to open up here as Standard Oil, which had cooperated for many years with China in opening up Shaanxi's (Shensi's) and Chihli's oilfields, faced opposition from the government when seeking to extend its contract, which in the end was not renewed after expiring in late 1915.⁵⁰ 'Would you be inclined to reflect on petroleum?' Andersson asked Carlson at the drilling company in Stockholm, suggesting that Tegengren and Erikson might be dispatched to the oilfields. Carlson, following a discussion with the consortium members in Sweden, replied positively. The companies would indeed be interested in investing in Chinese oil extraction. They urged Andersson to try and work out an arrangement in which 'the Chinese give us an unlimited concession for a certain area without any other significant conditions than that a part of the production be handed over to the Chinese state free of charge.' Organisationally, Carlson suggested that the Swedes form a joint stock company for the concession's exploitation, in which the central government and the provincial governments would receive shares as a compensation for the concession.⁵¹

9. Conclusion

The bold vision of a Swedish-led exploitation of China's natural resources came to a premature end in 1916, mainly due to the increasingly chaotic (geo)political situation in Europe and Asia. Gradually it became clear that the Great War would not be over soon. This made the Swedish industrial interests – and in particular the banks – hesitant regarding any large-scale foreign investment projects. Even more alarming was the dramatic political development in China itself. In December 1915 President Yuan Shikai proclaimed himself Emperor of China, thus reinstating the monarchy. This fuelled sharp protests both in China and internationally. A number of province governors rebelled, starting with the military governor of Yunnan. The period of warlordism had begun. Yuan Shikai himself, with whom the Swedes had established such good relations, died in June 1916. For the Swedish geologists in Beijing, as servants of the central government, this development was devastating.

Given the continued political turmoil, the Swedish consortium did not think the time ripe for actual investments. However, it did retain its interest in Molingguan's iron ore and other Chinese resource riches. In December 1917 the consortium was renewed. As before, its aim was to profit

⁴⁸G.O. Wallenberg to Andersson, 24 February 1915, RA F1:11; Lennart Tham (J.A. Kjellberg & Sons, Tokyo) to G.O. Wallenberg, 25 February 1915, RA F1:11.

⁴⁹Andersson to Carlson (SDAB), Stockholm, 16 January 1916, RA F1:11.

⁵⁰Cf. "Statsgeologen Dr. Tegengrens rapport öfver Kinas malm- och kolfyndigheter," SEB F1:1.

⁵¹Carlson (SDAB) to Andersson, 15 March 1916, SEB F1:2.

from resource extraction in China, should a practical possibility appear, but in contrast to spring 1914, the geological knowledge that might serve as a basis for such initiatives was now substantial. The consortium in its new form was, as before, led by Nachmanson, but the range of involved partners was broadened. Three Wallenberg actors participated: SDAB, AB Providentia and Marcus Wallenberg personally. Two other additional actors stepped in as co-owners: Oscar Falkman, who had been one of the initiators back in 1914, and the German company Rawack & Grünfeld each acquired 1/6 of the consortium's shares.⁵² Each of the five partners received a full copy of Tegengren's detailed reports that had been submitted during his time in China. The partners further agreed that if one of them would decide to take an interest in any of the deposits mentioned by Tegengren in his reports, that partner would have to inform the other four participants and let them participate in the deposit's exploitation, should they wish to do so.⁵³

In the end, none of the mineral deposits explored by the Swedish geologists ended up in Swedish hands. However, both Andersson, who stayed in China, and Tegengren, who left the country in 1917 but returned in 1922, continued to map China's resource riches well into the 1920s. The Molingquan iron ore deposits remained unexploited throughout this period. In 1921 the Provincial Government of Jiangsu Province charged Zhang Yi'ou, who now served as the province's Industrial Commissioner, with organising 'extensive exploratory work.' In this connection Andersson was called upon to guide the actual exploration. The extensive stripping work that was carried out, however, revealed that the earlier estimates of the deposit's size – and hence commercial value – had been vastly overestimated. It now appeared to comprise only 4.3 million tons of iron ore rather than 40 million.⁵⁴

In what followed, Johan Gunnar Andersson increasingly took on a new passion: fossil collection and Chinese prehistory. This ultimately paved the way for his true fame as a scientist. In Sweden he would later be remembered as 'Kina-Gunnar' and as the founder of the Museum of Far Eastern Antiquities in Stockholm. As our case study has shown, however, during the early Republican years his interests and activities in China were much broader. Indeed, our findings call for a fundamental reinterpretation of Andersson's remarkable Chinese career. Andersson was not merely, as portrayed in the existing literature, a scientist doing science for science's own sake and for his personal scientific fame. Rather, his activities were seamlessly interwoven with those of Swedish diplomats and, in particular, Swedish industrial companies. He did his utmost to make his Beijing advisory position beneficial and profitable for his own country and, in particular, for Swedish industry. His motivation in this regard was raised further by contractual agreements with the Wallenberg sphere of companies that guaranteed him and his fellow scientists rich pecuniary rewards should their geological surveying activities lead to actual Swedish mining projects in China.

Sweden was a weak power in the geopolitical arena; unlike the large imperial powers, it was clearly unable to deploy military force or other forms of coercion to attain its goals. However, Swedish diplomats, scientists and business leaders – working closely together in a concerted effort – thought it possible to compensate for this weakness by carefully mobilising Sweden's geological expertise and perceived geopolitical innocence for exploitative purposes. At one point it seemed that this strategy was about to make Sweden a dominant foreign power in Chinese iron ore extraction, in the Chinese iron and steel industry more broadly (including Chinese weapons production), and in the Pacific iron-ore and pig-iron trade – with potential spill-over into markets for other mineral resources like gold, antimony and petroleum. The attempt ultimately failed, but the archival sources cast no doubt about the fact that the Swedish extractive *vision* in China was on par with those of the great powers.

⁵²"Konsortialavtal," 28 December 1917, SEB F1:1.

⁵³Nachmanson to Felix Benjamin (General Director, Rawack & Grünfeld AG), 6 May 1918.

⁵⁴Tegengren, "Report on the Feng Huang Shan Iron ore deposit," 7 December 1923, CGS, Report 378. In the documents from the 1920s the site is no longer referred to as Molinkuan, but as Feng Huang Shan.

Can the Swedish activities in China, then, be interpreted as a form of (failed) informal empire-building? On the one hand, such a claim might sound counter-intuitive, since theories of informal empire are in essence theories of the great powers and their quest for influence over weaker states. On the other, the Swedish extractive vision has obvious similarities with the imperial powers' efforts to exploit weaker states. The literature, as exemplified here by Osterhammel and Jansen's (2012) authoritative account, models informal imperialism as a form of domination that hinges on latent threats of violence ('gun-boat diplomacy'), harsh diplomatic pressure, privileges of various kinds as codified in 'unequal treaties' and sometimes the right to station own troops in the host country and intervene in its military affairs. The imperialist power is able to place its own advisors in the host country's government while also relying on an indigenous 'collaboration elite'. The ultimate purpose of informal empire, the literature tells us, is usually linked to (the protection of) sizeable economic interests (trade, investments, loans), typically in mining or other forms of primary production.

The Swedish activities in China match this pattern partly, though not fully. Sweden never threatened China with violence. It certainly did not aim for a military presence in China and it was hardly able to exert diplomatic pressure on Beijing. We may also note that the Swedish central government, while supportive of the Swedish activities in China, does not appear to have been overly active in directing the 'men on the spot'; if Sweden's extractive vision constitutes a case of informal empire-building, it would thus seem to lie close to what has been theorised as 'periphery-led' imperial expansion (Robinson, 1972; Veracini, 2013). At the same time we may observe that Sweden, having signed its own political treaty with China in 1909, did enjoy formal colonial-style privileges in China that were similar to those of the great powers. As elaborated on in detail above, Sweden also proved fully capable of placing – in harsh competition with the great powers – own nationals in powerful advisory positions in the Chinese central government, and Swedish diplomats and industrialists did not hesitate to actively use these insider positions for leveraging large-scale Swedish investments in China's extractive industries. In the process the Swedish advisors even intervened in China's military affairs through an ambitious plan linking iron-ore extraction to large-scale weapons production.

Based on this, it does seem appropriate to discuss the Swedish extractive vision as a case of informal empire. Rather than concluding that Sweden does not *fully* fit the standard model, we may argue that our case points to the need for revising, or at least expanding the theoretical model by taking into account a greater variety of informal empire-building efforts than those considered in earlier research. In particular, this concerns the possibility that informal empire-building efforts can rely as much on close cooperation and trust-building as on 'gun-boat diplomacy' and other forms of confrontation; the Swedish initiative, as we have seen, built on the establishment of softer, friendlier relations as a way to domination, power and profits. In any case, our story can and should be regarded as a contribution to the history of Swedish colonialism in the industrial age (cf. Avango et al., 2018; Bruno, 2018; Vikström et al., 2017).

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