

Towards a Swedish Concrete Industry: The Role of Aktiebolaget Skånska Cementgjuteriet (1887-1941)

Original

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Quaderni di Storia della Costruzione 3

Produrre per Costruire

a cura di Maria Luisa Barelli e Mauro Volpiano
Construction History Group - Politecnico di Torino DAD

Al centro del terzo volume dei Quaderni di Storia della Costruzione, pubblicato dal Construction History Group del Politecnico di Torino, è il tema della produzione edilizia, con particolare riferimento ai luoghi privilegiati nei quali, in età moderna e contemporanea, si sono tramandati – spesso per generazioni – adattati e talvolta innovati saperi e pratiche, capacità tecniche e organizzative, per “fare le cose”.

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Quaderni di Storia
della Costruzione
n. 3/2024

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Towards a Swedish Concrete Industry: The Role of Aktiebolaget Skånska Cementgjuteriet (1887-1941)

Sofia Nannini

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Introduction

This paper aims at briefly retracing the early history of Aktiebolaget (AB) Skånska cementgjuteriet, founded in Lomma, near Malmö, in 1887. AB Skånska was Sweden's first reinforced concrete contractor in the country. The company played a pivotal role in disseminating technical knowledge regarding concrete construction, not only in Sweden but also in Finland and Russia, by extending its trade network all over the Baltic Sea – generating what is one of the world's largest building firms today¹. AB Skånska promoted the construction of countless public and private buildings in Sweden and beyond, as well as infrastructures and industries. At the turn of the century, it was the official Swedish concessionaire for the Hennebique patent. Furthermore, the company played a key role as a construction hub which fostered a dialogue among professionals, such as engineers and entrepreneurs, creating commercial and technical connections between Sweden and Europe. Not only did AB Skånska publish several texts to advertise the company's activities, but it also promoted field research on Sweden's concrete construction challenges. This essay builds on some preliminary findings originating from archival research conducted at the National Library of Sweden, at the Royal Institute of Technology and at Tekniska Museet in Stockholm². The chronological timeframe bridges 1887, the year of the company's foundation, and 1941, when a major exhibition on concrete was held at Tekniska Museet, marking the breakthrough of concrete popularity in Sweden's building culture. Through an overview of the company's history, the essay scrutinizes the technical and cultural transformations promoted by reinforced concrete in Swedish architecture and engineering in the first half of the twentieth century. At the same time, it suggests an environmental perspective through which it is possible to interpret the history of reinforced concrete in

Fig. nella pagina precedente. Fornace Carena, Cambiano (Torino). Fasi di estrusione e produzione di blocchi laterizi da solaio (Archivio Munlab Ecomuseo dell'Argilla, Cambiano).

¹ Today the firm is known as Skanska AB. <https://www.skanska.com/>.

² The archival research discussed here is still at an early stage. Further research will be conducted on the archival fonds collected at the Centre for Business History (Stockholm) and at the National Archives of Sweden.



Fig. 1. The headquarters of Skånska cementgjuteriet in Malmö, 1903 (Wikimedia commons, CC BY-SA 4.0).

the Nordic countries: as one of the many factors that backed the industrialization of Northern Europe, this building technique was one of the causes of the utter anthropization of its natural landscape. Finally, the text briefly touches upon the political role of infrastructural projects, specifically in reinforced concrete, during the Second World War.

Early cement production in Sweden and AB Skånska cementgjuteriet

The history of cement production and concrete construction in Sweden is inextricably tied to that of Denmark. According to a 1946 article published by Swedish engineer Georg Wästlund (1905-1980) in the *Beton-Teknik* journal, unreinforced concrete structures were debated in Sweden for the first time in 1865, as a direct consequence of the application of concrete in the Danish harbours³. Denmark's early experiments with underwater concrete structures were a mirror of the country's professional connections to the German and French expertise on construction matters, and also of the Polytechnic School in Copenhagen, which acted as an epicentre for technical knowledge on concrete construction at the turn of the century⁴. However, the first cement plant in the Nordic countries was a Swedish enterprise: in 1871, the Skånska cementgjuteriet was founded in Lomma, near Malmö, in an area rich in limestone deposits on the

³ WÄSTLUND 1946, p. 5.

⁴ NANNINI 2021, pp. 162-65; CEDERBERG 1999.

Western coast of Sweden⁵ (fig. 1). Its founders were geologist Otto Torell (1828-1900) and Swedish engineer Otto Fahnehjelm (1846-1911). The latter had extensively researched the limestone deposits of the area and, in the same year of the inauguration of the cement plant, he published a short report on Portland cement production in the England and France, thus highlighting direct commercial and industrial connections with the leading producers of cement in Western Europe⁶. The early applications of Swedish cement were mostly related to groundworks and decorative elements, especially in church facades – for example in the St. John's church in Stockholm (1883-90) or the restoration works promoted by Helgo Zettervall (1831-1907) in the Uppsala cathedral (1885-93)⁷.

Since these early years, engineer Rudolf Fredrick Berg (1846-1907) was the plant's managing director. Berg played a crucial role in the history of concrete construction in Sweden, and he was one of the leading figures behind the foundation of the limited company AB Skånska cementgjuteriet in 1887, signed by approximately seventy partner⁸. The company was born as a firm specialized in prefabricated concrete elements, which were strictly connected to the cement production at Lomma. Among the company's first products were concrete blocks for telephone cables and pipes for water and sewage systems⁹. Berg acted as director of AB Skånska until the early twentieth century, and his figure contributed to define the role of the enterprise in the public sphere. His mottos were often featured in the company's promotional publications: through irony, they echoed a shared optimistic view towards the bright, industrial future of the country: «I don't smoke, but I build chimneys»¹⁰. When the firm was established, it was already divided into two branches, one in Malmö and the other in Stockholm. The initial leading position of Malmö slowly subsided, and the firm later opened new branches all over Sweden¹¹. Furthermore, the company promoted partnerships with several other firms, that specialized in asphalt, sand, and aggregates production – such as Nya Asphalt AB, Stockholms Sand AB, and Skånska Marmor AB¹².

Bygger allt, överallt: To build everything, everywhere

AB Skånska had considerable sway over the country's building industry and, subsequently, over its architectural history. The first projects promoted by the firm were mostly unreinforced concrete structures, such as Stockholm's first concrete bridge (Sveabron,

⁵ WÄSTLUND 1946, p. 6.

⁶ FAHNEHJELM 1871.

⁷ WÄSTLUND 1946, p. 6; BENNER 1987, p. 6.

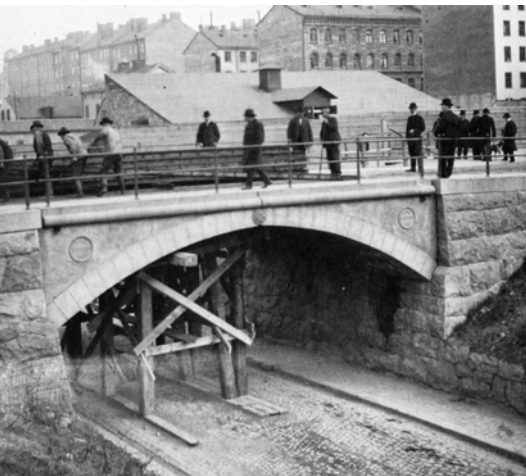
⁸ HELLSTRÖM 1937, pp. 40-41.

⁹ BENNER 1987, pp. 7-9.

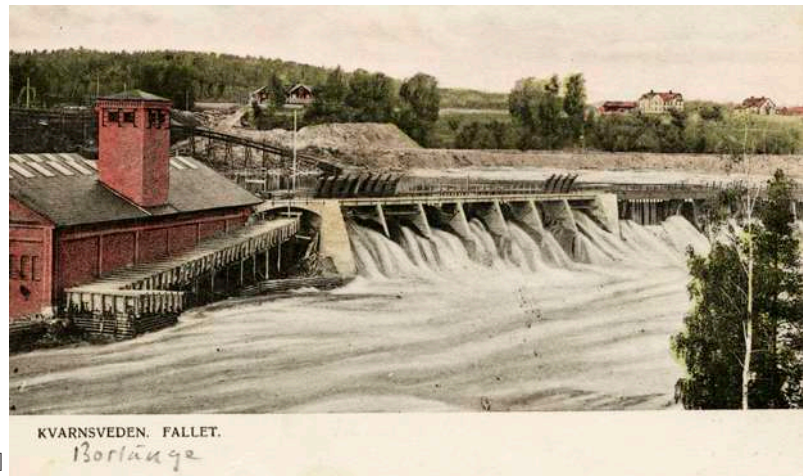
¹⁰ «Jag röker inte, men bygger skorstenar». BENNER 1987, p. 2. On Berg, see also: HELLSTRÖM 1937, pp. 64-67.

¹¹ HELLSTRÖM 1937, pp. 96-98; BENNER 1987, pp. 94-95.

¹² HELLSTRÖM 1937, pp. 47-52.



[2.]



[3.]

Exposition d'Helsingborg (Suède)



Escalier tournant en béton armé de 10 mètres de hauteur

[4.]

Fig. 2. The bridge over Sveavägen (Sveabron), Stockholm, 1897 (Wikimedia commons, Public domain).

Fig. 3. The Kvarnsveden powerplant, Falun, Dalarna country, 1898-1900 (unknown photographer, Järnvägsmuseet. Digitalt Museum, Public domain).

Fig. 4. Torben Grut, Reinforced concrete tower for AB Skånska, Helsingborg Exhibition, 1903 (*Le Béton Armé, Relevé des travaux exécutés*, 1903, p. 122. Bibliothèque d'architecture contemporaine).

1897) and the Kvarnsveden powerplant near Falun, in the Dalarna county (1898-1900) (figg. 2-3). At the end of the century, the company established a collaboration with the Hennebique company, and became the official concessionaire of the Hennebique patent in the country¹³. This collaboration was coordinated by the Danish agents, most likely by engineer Torben Grut (1865-1952), the official Hennebique agent in Denmark¹⁴. In the pages of *Le Béton Armé*, Hennebique's official journal and promotional tool, the works of AB Skånska were listed together with the structures promoted by the «Bureau de Copenhague»¹⁵. The connections to the Danish school are also manifest in Torben Grut's 10-meter spiral tower and observatory deck in reinforced concrete, designed for the Helsingborg exhibition in 1903, as a promotional sculpture for AB Skånska (fig. 4). A few years later, the competing company Kreuger & Toll, founded by Ivar Kreuger (1880-1932) and Paul Toll (1882-1946) in 1908, built a similar structure for the 1909 Stockholm exhibition – anticipating a functionalist architectural language years ahead of the 1930 exhibition¹⁶.

In the first decades of the twentieth century, AB Skånska was engaged in numerous building sites all over the country, from infrastructural projects to prefabricated concrete elements. Most of all, the firm was involved in the groundworks of many public buildings in the main Swedish cities, especially Stockholm, materially creating a new, artificial soil for the growth of the capital city¹⁷. An early and prominent example is the company's construction of the groundworks of the Royal Swedish Opera, designed by Axel Johan Anderberg (1860-1937) and built between 1889 and 1898¹⁸. From the Nordiska Museet, designed by Isak Gustaf Clason (1856-1930) and inaugurated in 1907, to the Engelbrekt Church, designed by Lars Israel Wahlman (1870-1952) and completed in 1914, AB Skånska silently contributed to building the foundations of Swedish national-romantic architecture¹⁹ (fig. 5).

In the same years, AB Skånska was extremely active in most of Sweden's industrial building sites, where reinforced concrete could be applied in more experimental ways, paving the way for the introduction of modern architecture into the country²⁰. The company



[5.]

built the headquarters of several industries, such as AB Separator in Stockholm and AB Litografiska in Norrköping, and the plants of a few paper mills in the country²¹. It may even be possible to affirm that the company directly contributed to Sweden's economic growth in the first half of the century, as one of the many actors which transformed the country into a leading industrial power in Europe²².

The sway of AB Skånska went beyond the geographical borders of Sweden. The firm was shortly active in England at the beginning of the century, contributing to the construction of underground telephone lines in Southampton²³. Most of all, the company promoted infrastructural and architectural works in Finland in the first decades of the twentieth century²⁴, and it also had a branch in St. Petersburg between 1902 and 1910²⁵. Its international network could be compared to another construction company that emerged in the Nordic countries in the same years: the Danish firm Christiani & Nielsen, founded in 1904, which acted as the concessionaire of the Hennebique patent in Denmark and beyond, soon attaining global relevance²⁶.

One of AB Skånska's mottos was *Bygger allt, överallt*: to build everything, everywhere²⁷. The pervasive presence of the building works promoted by the firm was also specifically evident in the Swedish non-urban landscape, which the company took part in transforming and bending for human consumption. The activities

Fig. 5. Nordiska Museet in construction (photo by Julius Grape. Digitalt Museum, Public domain).

¹³ HELLSTRÖM 1937, pp. 22-24.

¹⁴ NANNINI 2021, p. 164.

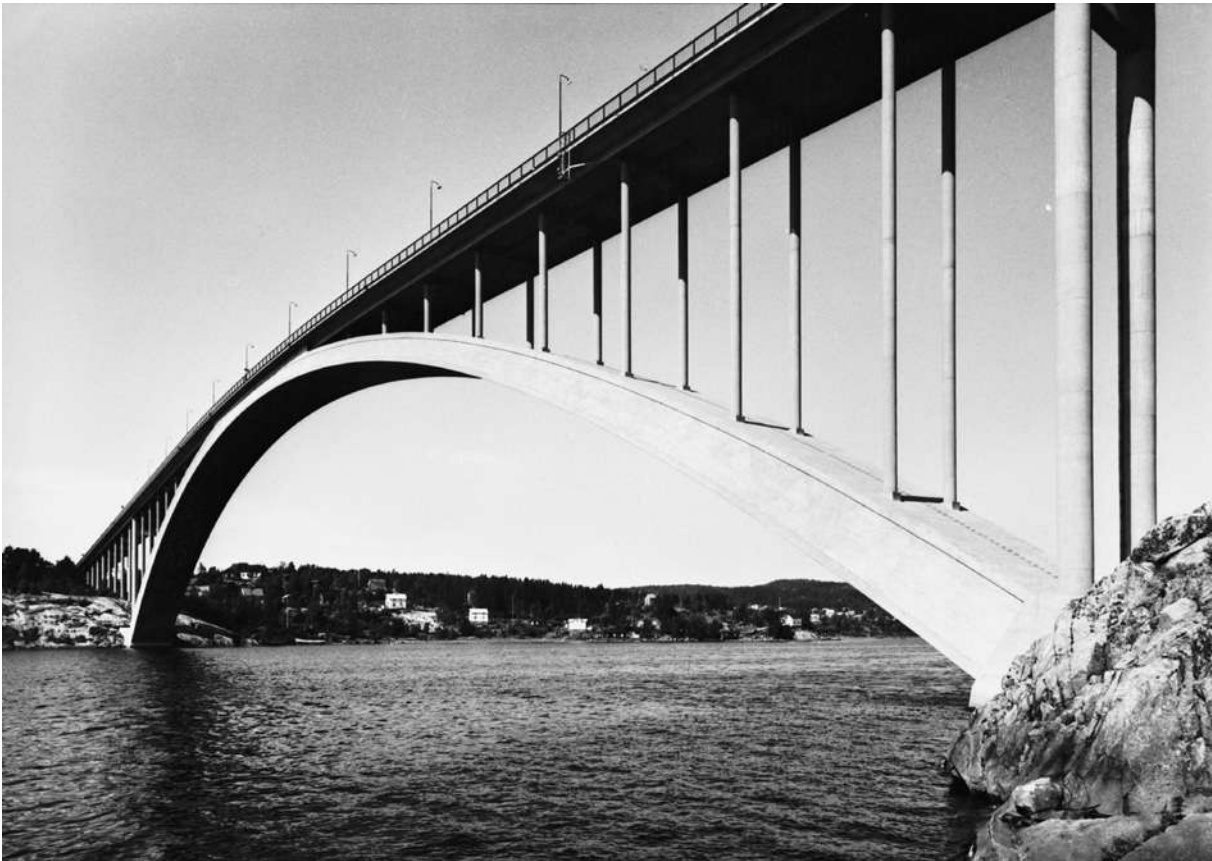
¹⁵ See for example the issues of *Le Beton Armé* published in 1903.

¹⁶ Kungliga biblioteket, Special reading room, Kreuger & Toll, 1909. Kreuger & Toll operated mostly thanks to the consultancy of engineer Henrik Kreüger (1882-1953). The company built many reinforced concrete structures in Sweden, including the Myrstedt & Stern building in Stockholm, the city's first reinforced concrete frame building (1908-10).

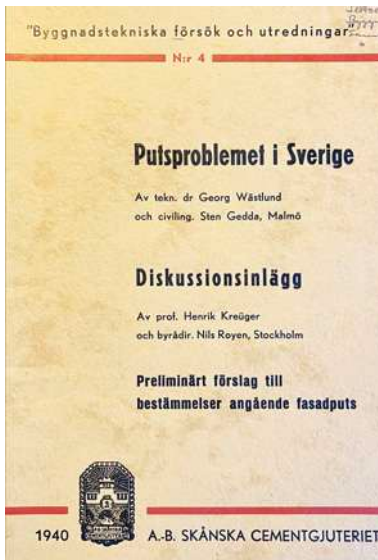
¹⁷ HELLSTRÖM 1937, p. 81.

¹⁸ On the groundworks of the Royal Opera House, see: RÖNNOW 1947, p. 55.

¹⁹ On Nordiska Museet, MÅRTELIUS 2020; on the Engelbrekt church, see: BERGSTEN 1914, pp. 17-32; ERIKSSON 2001, pp. 96-99; ERIKSSON *et al.* 2013.



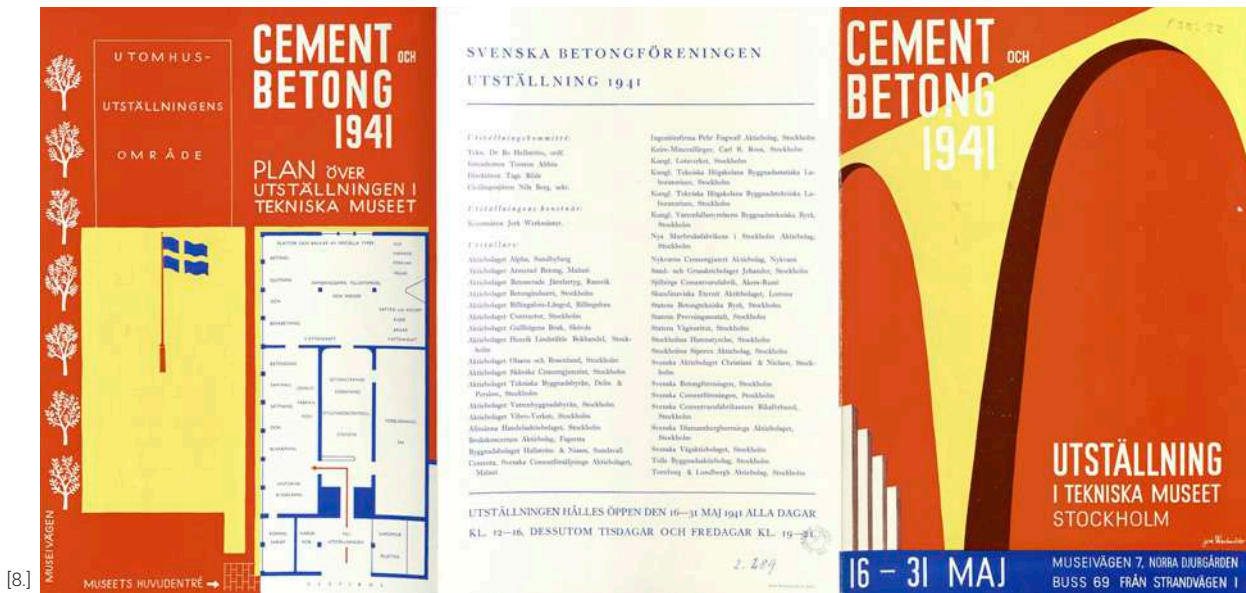
[6.]



[7.]

of the AB Skånska were undoubtedly the backbone needed to tame the Swedish nature according to capitalistic and extractivist logics and they later became examples of the material contribution to the economic prosperity of Postwar Sweden. The hydraulic works made possible by AB Skånska – especially dams and hydroelectric powerplants – could be seen as the main actors of the process which transformed Swedish waterways into «industrialized rivers», as defined by Eva Jakobsson²⁸. The company also played a key role in the construction of the Swedish road system, fostering bridges and infrastructural connections between the industrial South and the North, rich of ores and timber²⁹ (fig. 6). The increasingly reliable road network, together with the growing number of hydroelectric powerplants, also contributed to the decline of timber floating, which had been the main transportation system of timber logs since the 1850s³⁰.

Over the years, the company was always very conscious of its crucial position in Sweden's physical and economic construction. On several of the company's anniversaries, the firm promoted its activities through a series of celebratory publications³¹. Furthermore, AB Skånska also acted as a research center on concrete construction. At the end of the 1930s, the company promoted a research series titled «Byggnadstekniska försök och utredningar» [Research and



[8.]

investigations on building techniques]. The series was published in collaboration with prominent Swedish engineers, such as Georg Wästlund and Henrik Kreüger. Wästlund was active as the firm's construction manager at that time. The first booklet was devoted to rural buildings, the second to silos, the third to concrete tests³². The fourth booklet, published in 1940, is of particular interest: titled *Putsproblemet i Sverige* [The problem of plastering in Sweden], its goal was to tackle the difficulties of plastering concrete structures in Sweden's cold weather conditions (fig. 7). The research was based on a field investigation carried out in the summer of 1939 on approximately 150 facades of concrete buildings in Malmö, Göteborg, Borås, Örebro, Stockholm and Jönköping. The booklet includes comments on the different kinds of imperfections on concrete and plaster surfaces. This research mirrored similar contemporary experiments on the rendering and plastering of concrete surfaces, which were taking place in other Nordic countries, especially linked to cold weather conditions and the resulting damages, and which suggested an early debate on the obsolescence of this material³³.

Cement och betong 1941: An exhibition at Tekniska Museet

The growing relevance of cement and concrete in the Swedish building industry was soon acknowledged in an official location: on May 16, 1941, Tekniska Museet, the Swedish National Museum of Science and Technology, inaugurated an exhibition titled *Cement och betong* – cement and concrete –, a display of the widespread applications of this building technology in the country since the second half of the nineteenth century (fig. 8). AB Skånska took part in the event as one of the main exhibitors, together with several other companies such as Aktiebolaget Armerad Betong (Malmö), Aktiebolaget Vattenbyggnadsbyrå (Stockholm), and the Swedish division

Fig. 6. The Sandö bridge (Sandöbron), Kramfors, inaugurated in 1943 (unknown photographer, Tekniska Museet, 1959. Digitalt Museum, public domain).

Fig. 7. Cover image of Georg Wästlund, Sten Gedda, *Putsproblemet i Sverige*, Malmö: A. B. Skånska cementgjuteriet, 1940 (Kungliga biblioteket, Stockholm).

Fig. 8. *Cement och betong 1941*, exhibition booklet (Tekniska Museet, Tekniska Museets ämbetsarkiv, Volym L4:1).

²⁰ On the roots of functionalism in Sweden's industrial architecture, see: BRUNNSTRÖM 1990. On the 1930 Stockholm exhibition and the *Acceptera* manifesto: SEELOW 2016 & 2018.

²¹ Kungliga biblioteket, Special reading room, AB Skånska cementgjuteriet, 1915.

²² On the economic history of Sweden, see: MAGNUSSON 2000.

²³ Kungliga biblioteket, Special reading room, AB Skånska cementgjuteriet, 1915.

²⁴ For a selection of works in Finland, see: HELLSTRÖM 1937, pp. 220-23.

²⁵ BENNER 1987, p. 94.

²⁶ NANNINI 2021, pp. 164-165.



Fig. 9. "Cement och Betong 1941", *Stockholms-Tidningen*, May 17 1941 (Tekniska Museet, Tekniska Museets ämbetsarkiv, Volym L4:1).

Fig. 10. "Cement och betong 1941. En intressant utställning på Tekniska Museet", *Teknik för Alla*, May 25, 1941 (Tekniska Museet, Tekniska Museets ämbetsarkiv, Volym L4:1).

of Christiani & Nielsen³⁴. Promoted by Svenska Betongföreningen, the Swedish Concrete Association, the exhibition was directed by engineer Tage Bilde (1886-1972), and it was an opportunity to boast the uses of concrete in different areas of the Swedish building industry, from residential housing to infrastructural projects. *Cement och betong* had also nationalistic goals: during the chaos generated by the Second World War, Sweden was taking advantage of its neutrality and recognized the contribution of concrete in the definition of the country's political and economic strength. The exhibition's presentation claimed that:

Cement is today's most important binder in the construction field [...] We work and live in concrete buildings, we walk on concrete roads, we cross streams and rivers on concrete bridges, and cycle on concrete biking paths [...] It is with gratitude that we can state that our own country counts as one of the forerunners in the field of cement and concrete [...] And finally, we protect the freedom of our country and of the lives of its inhabitants with the help of concrete³⁵.

The exhibition also included a section dedicated to the history of cement and concrete production in Sweden. The historical section

²⁷ RÖNNOW 1947, p. 33.

²⁸ JAKOBSSON 2002.

²⁹ On the bridges and road network built by AB Skånska, see: RÖNNOW 1947, pp. 77-108.

³⁰ TÖRNLUND, ÖSTLUND 2006.

exhibited a model of the first cement plant in Lomma, and a concrete sculpture originally made for the Uppsala cathedral at the end of the nineteenth century. This sculpture, representing the archangel Michael, was aptly renamed *Sancta cementa* by the visitors³⁶ (fig. 9). The tight relationship between concrete and politics was made clear in the exhibition's reception in the local and international press. Some newspapers published a photograph of the Crown prince meeting Per Åkesson, who was presented to the readers as «Sweden's oldest cement worker»³⁷. Others, instead, included the model of the Svinesund bridge, connecting Sweden and Norway, a massive infrastructural project underway and which was inaugurated only in 1946³⁸ (fig. 10) Interestingly, the news of this exhibition – and specifically of the bridge – was celebrated on the *Deutsche Zeitung in Norwegen*, the newspaper published in Oslo during the German occupation³⁹. This clue highlights the inherent political values of concrete infrastructural works, which proceeded despite but also in connection to the contemporary turmoil caused by the war⁴⁰.

Conclusions

This essay tried to briefly underline the key role AB Skånska played in Sweden's social and physical construction, by means of cement production and concrete construction in the country since the 1880s. The paper discussed some preliminary findings which will form the basis for future archival research. The firm had direct influences on the Swedish building industry, and its sway went beyond the national borders of the country. Furthermore, AB Skånska fostered scientific research on concrete technology and was one of the most active promoters of the country's industrialization in the first half of the twentieth century. The resulting transformations occurred in the Swedish construction industry had a long-lasting impact on the country's cities and landscapes and created the basis for the Swedish transport network and manufacturing. The early history of AB Skånska sheds some light on the roots of prefabricated concrete architecture in Sweden, which in the Postwar years fully embraced prefabricated concrete panels as some of the most popular elements in the country's building industry⁴¹. In addition, the history of Swedish cement and concrete production discloses a rather undebated side of Sweden's architectural history, that is the all-pervading presence of concrete, reinforced or unreinforced,

³¹ Kungliga biblioteket, Special reading room, AB Skånska cementgjuteriet, 1915; HELLSTRÖM 1937; RÖNNOW 1947; BENNER 1987.

³² WÄSTLUND 1938; WÄSTLUND 1939; WÄSTLUND, GEDDA 1939.

³³ On the rendering of concrete surfaces in the Icelandic context, see: NANINI 2020. On the definition of architectural obsolescence, see: ABRAMSON 2016.

³⁴ Exhibition brochure, Tekniska Museets ämbetsarkiv, Volym L4:1.

³⁵ «Cement är nutidens mest betydelsefulla bindemedel på byggnadsområdet [...] Vi arbeta och bo i byggnader av betong, vi gå på betongvägar, passera strömmar och älvar på betongbroar och cykla på betongcykelbanor [...] Det är med tacksamhet vi kunna konstatera, att vårt eget land räknas till föregångarna på cement- och betongområdet [...] Och slutligen, allt detta, vårt lands frihet och dess inbyggares liv, värna vi med betongens hjälp». Tekniska Museets ämbetsarkiv, Volym L4:1. On the exhibition, see also: Tekniska Museet, *Daedalus. Tekniska Museets Årsbok* 1942 (pp. 27-28).

³⁶ See newspaper articles in: Tekniska Museets ämbetsarkiv, Volym L4:1.

³⁷ Untitled newspaper article, May 18, 1941. Tekniska Museets ämbetsarkiv, Volym L4:1.

³⁸ *Teknik för Alla*, May 23, 1941. Tekniska Museets ämbetsarkiv, Volym L4:1

³⁹ "Hundert Jahre Betonbau," *Deutsche Zeitung in Norwegen*, May 31, 1941. Tekniska Museets ämbetsarkiv, Volym L4:1. Infrastructural works were a key part of Nazi Germany's political and material strategy during the occupation of Norway. See: STRATIGAKOS 2020, p. 13.

⁴⁰ On the architectural developments during the Second World War, see: COHEN 2011.

⁴¹ PALMAROLA, ALONSO 2019.

in its twentieth-century architecture, in contrast with the persistent – and often romantic – idea that Nordic architecture is mostly composed of traditional building materials, and in harmony with nature⁴². On the contrary, twentieth-century Swedish construction seems to point at a very different direction, and the history of the country's concrete industry clearly highlights the systematic exploitation of the country's natural resources over the course of the century.

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⁴² See for example: NORBERG-SCHULZ 1996.

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