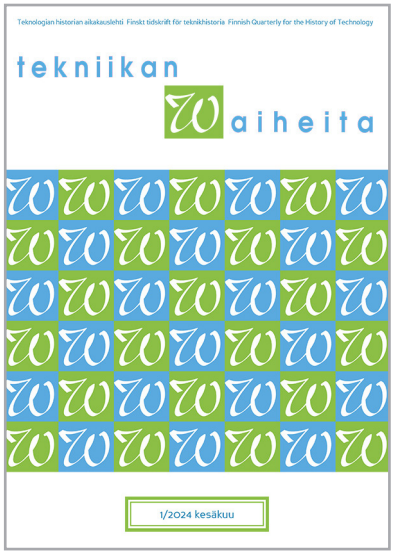

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Kati Toivanen

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One man's waste is another man's business: The early scrap business as a predecessor to the later circular economy

Kati Toivanen[1]

A form of "green entrepreneurship" was born and developed in Finland during the first decades of the 20th century but not intentionally and not based on ecological principles. As the melting technology in iron and steel industry had developed considerably in the earlier decades, it increasingly created more of a demand for and supply of raw material. Gradually, scrap became the most important and valuable waste raw material. A huge leap in technology, changes in national legislation concerning the freedom of occupation, a lack of raw material, and the growing waste problem created a new group of professionals, scrap dealers. Some of the new entrepreneurs in the scrap business came from marginalized ethnic, social, or religious groups with fewer options. This article examines the birth of the Finnish scrap business as a systematic profession for collecting and sorting scrap iron and metals and delivering them to the iron and steel industry and engineering works, from around 1900 until 1930. It focuses on two themes: the demand for and size of the new profession, and the status and background of the entrepreneurs. Who were they? How did they succeed? How did scrap materials circulate?

Introduction

Utilizing scrap as raw material in steel production is more ecological and cheaper than using the virgin raw material iron ore. The steel industry in Europe and, for example, in Northern America is investing heavily in more sustainable production methods and technology. There are steel factories that have already for decades based their raw material pool entirely on scrap and those that are gradually working to increase the amount of scrap.[2] Thus, the salvaging of scrap also increased at an incredible rate throughout the 20th century.

Historically, scrap has been a part of the waste business, a largely hidden but crucial sector in the margins of the Finnish industrial economy. However, historical research has given relatively little attention to the actions taken by the industry and private waste companies to save resources and reduce the amount of waste and costs. The reason that the waste and recycling business has remained in the shadows is mainly its image as well as people's lack of familiarity with it. First, people's attitudes towards waste and those persons – many times members of minorities – who earned their living from discarded products

[1] Kati Toivanen is a doctoral researcher at the University of Helsinki. The research and writing of this article was supported by Liikesivistysrahasto (Foundation for Economic Education). The author would also like to thank two anonymous reviewers for their constructive and supportive feedback to improve the article.

[2] Globally, iron ore is the main raw materials used by the steel industry. However, in some cases recycled steel, scrap iron and metals have gained the status of being the primary raw material for steel factories. For instance, in Finland 97% of what is produced at the Imatra Steel Factory (Ovako AB, Nippon Steel Corporation) comes from scrap. At the SSAB Steel Corporation Finland Raahe factory, the share of mainly domestic recycled steel being produced has for a long time varied from 20 to 30%, with the aim being to at least double the amount of scrap in the next few years (Ovako Sustainability report 2021; SSAB Annual Report 2022; *Uusiouutiset* November 11th, 2019.

have been generally negative. The attitudes expressed in different societies were formed by different cultural, economic, and social forces.[3] Scrap dealers have, much like Jewish second-hand merchants in Helsinki in the early 20th century, faced prejudice and resentment, but in the case of scrap dealers the stigma was not only because of the entrepreneurs' background but also due to people's negative ideas about waste.[4] Second, as Geoffrey Jones points out, "no one called themselves a green entrepreneur until the 1990s, or even later."[5] While early entrepreneurs entered the scrap business with financial interests in mind, in retrospect they can be seen as pioneers of the so-called green entrepreneurship movement. In trying to find a means to make living, they, often quite accidentally, managed to contribute to the wellbeing of the environment.[6]

Prior research has suggested that before the First World War, only rags, used by the paper industry, had been systematically collected in Finland, and only "some" scrap was used in steel production.[7] However, even though rags do have a special status among the most important and oldest of recycled waste raw materials, scrap salvage was likewise business-based and systematic after the turn of the 20th century, and it exceeded the collection of rags in volume on a domestic scale quite quickly.

In this article, I examine the establishment of the Finnish scrap business as a systematic profession for collecting and sorting scrap iron and metals and transporting them from and delivering them to the iron and steel industry as well as engineering works, from around 1900 until 1930. I have chosen this time period for two reasons. First, by the turn of the century the technology and business environment had developed enough that scrap dealers also began to appear in official records and become traceable. Second, the business environment for waste material began to change significantly after the depression of the early 1930s. In the late 1930s, before the start of the Second World War, scrap dealers faced tighter regulations. My focus in this article is on two themes: the demand for and size of the new profession, and the status of entrepreneurs. The article addresses three crucial questions: Who were the first Finnish scrap dealers? How did they succeed? How did scrap materials circulate in the early 20th Century?

During the research period, Finland went from being an autonomous grand duchy in the Russian Empire to an independent state. The population of the country grew in only 30 years from 2 million at the end of 1880s to around 3 million by 1910. Finland experienced an industrial boom, the so-called first period of industrialization, with the growth of the sawmill industry and development of the smaller engineering industry. After the social and economic crisis of World War I and a civil war, it began to integrate with Western markets. The last decade of the research period is generally marked by company co-operation and cartelization.[8] As I will demonstrate, the business of waste raw materials was no exception.

[3] On waste, the business of waste and its invisibility, and people's attitudes towards waste in history, see, for example, Zimring 2009; Jones 2017; Pritchard & Zimring 2020, Denton & Weber 2021; Douglas 2002 (1966); Strasser 1999.

[4] On Jewish people in second-hand business, see Ekholm 2019; Nevalainen 2016.

[5] Jones 2017, 13.

[6] See Jones 2017. Jones refers to the waste business as an "accidentally sustainable" business model.

[7] Aalto 1968; an unpublished history of the wastepaper intermediary Paperinkeräys Oy, Paperinkeräys Oy company archive, Helsinki. Henry Nygård (2016) also refers to Aalto's study in his comprehensive history of municipal waste management.

[8] See Fellman, 2008, 139–166.

The economic and technological environment both changed significantly, pushing each other forward. New technology created new and more efficient production methods, leading to broader possibilities for trading and manufacturing, which then further stimulated economic activity. The changes led to a demand for new regulations and more liberties for businesses to be able to expand. Thus, the gradual liberalizing of trade and business activities from the 1850s to 1870s, together with several important reforms, made entrepreneurship a more attractive and real option for wider segments of the population.[9] When it came to family businesses in general, which most of the pioneering scrap businesses were as well, the era between 1860 and 1920 witnessed huge quantitative growth.[10]

In the first section of this article, I lay the groundwork for the birth of the new profession by looking at the tremendous technological development taking place in the steel industry in the late 19th and early 20th centuries and how it affected the demand for scrap. This development was crucial for the emergence of private scrap companies. In the following section, I discuss the different forms of the scrap business based on a comprehensive study done by Carl A. Zimring. I also track a few of the first Finnish entrepreneurs taking their chances in a business that did not interest many. In the third section, I trace the waste material process and take a brief look at how it circulated from industry to industry as well as to the scrap business and back again to industry. In the fourth section, I present the first steel industry-owned purchasing company and how and why it operated as an intermediary between industry and scrap dealers. The chapter explores both the business and economic developments of the profession during the 1920s. I conclude by summarizing some key factors influencing how a special form of "green entrepreneurship" was born in Finland.

Extensive archives exist on the waste business, but often they are scattered or contained within the archival holdings of other businesses or organizations. My sources for this article include the archives of the industrial operator *Oy Fiskars Ab*, which used much scrap material, and the less numerous, but still informative, documents of the first steel industry-owned purchasing company, *Aktiebolaget Järnbruksförnödenheter (JBF)*.[11]

Scrap dealers are difficult to track down in the archives. I have made use of the Finnish Patent and Registration Office's (Patentti- ja Rekisterihallitus, PRH) official trade registers in the Finnish National Archives. They, however, are mainly helpful in cases where the register number or at least the accurate name of the company is already known. Sometimes decades-old companies have been dissolved and founded again several times under different names, which in some cases makes them more difficult to trace. The extensive register magazines published by the business register, digitalized by the National Library of Finland, include the register numbers of individual companies but not always the business sector; for instance, a scrap dealer may only be mentioned as a merchant, which makes that company invisible for the purposes of this study.[12] The substantial number of different trade, professional and address calendars or directories for finding and identifying

[9] Fellman 2008, 146–147.

[10] Vainio-Korhonen 2022, 19. Internationally, too, one essential feature of the waste business has been that the enterprises were usually small-sized family businesses; see Denton & Weber 2022, 861.

[11] The Fiskars historical archive, including the documents considering JBF, are open for research purposes and located and stored by the company itself in the village of Fiskars, in southern Finland.

[12] It was not mandatory before the 1890s to file a notice regarding the termination of one's company. PRH also has an extensive internet database, Virre (virre.prh.fi/), which can be quite helpful but is still rather limited in terms of searching for companies.

early waste and scrap businesses is one of the most important source collections.[13] The private archives of *The Finnish Scrap Dealers' Association* have helped me to trace some early companies,[14] and relevant sources on entrepreneurship can also be found in the Helsinki City Archives. For some specific topics, I have been able to utilize interviews that I conducted with entrepreneurs in 2019. Though the memories and experiences of individuals may be subjective, they still can offer interesting inside views on and special professional knowledge of the business and in many cases offer highly coherent descriptions of business practices.[15]

Finally, in tracing the history of the waste raw materials business, I have gone through an extensive number of official statistics, such as the industrial statistics on production and raw materials and trading statistic on imports and exports from the 1880s to the 1930. These printed collections of statistics have made it possible to collect an original set of data on the most important waste materials and analyze their usage and significance.[16]

As Wuokko, Jensen-Eriksen and Kuorelahti have put it, business history "examines economic forces at the level of practical actors" and typically uses data triangulation.[17] In practice, I combine scattered and, in some ways, limited sources using case studies on small and medium-sized companies, the archives of large industrial enterprises and politically connected benefit organisations as well as statistical material. I cross-read and compare the source material to construct a picture of a specific, still largely unknown, group of entrepreneurs operating in a marginal business field in the twentieth century and how they related to their social and economic environment. In the process, I suggest a way to do research on marginalized and "forgotten" businesses.

The rise of steel and machinery

Iron and steel were produced in several different ways in Finland in the 19th century.[18] The iron industry was mainly divided into the southern and western parts of Finland and the eastern provinces of Kuopio and Viipuri. The southern and western ironworks mostly used, and were dependent upon, imported Swedish iron ore and pig iron as their raw material, and the products were mainly exported to the Baltic region. In the east, where the Finnish iron industry grew rapidly in the early 19th century, companies relied for many decades on

[13] National Library of Finland, digitalized collections, digi.kansalliskirjasto.fi/search. I use the words "calendar" and "directory" according to the original sources. Even though I might in a certain case refer to a certain year's volume, I have consulted all the calendars and directories (if they have several volumes), like Finnish Business Calendar 1925–1942, and so forth.

[14] The association was founded only in 1940, which makes it more relevant for my later research.

[15] Thirty-eight interviews with scrap dealers and other actors related to the business, which are specifically useful for the research on the latter half of the 20th century, but in some cases they even serve the research done on earlier decades.

[16] For the statistics, see Doria.fi, https://www.doria.fi/handle/10024/90251; a collection published by the National Library of Finland. The statistics are based on information gathered from different industries by the Senate's Trade and Industrial Board (Kauppa- ja Teollisuushallitus), and the original documents collected from companies can be found in the Trade and Industrial Board's archive in the National Archive (from 1880s to 1908) and in The Statistics Finland's Archive (from 1909 onwards).

[17] Wuokko, Jensen-Eriksen & Kuorelahti 2022, 164, 175.

[18] Laine 1950, passim., for example 99–128. Laine describes the different iron and steelmaking processes in precise detail. A concise description can also be found in Duncan Burn's work *The Structure of British Industry* (1958).

domestic lake and bog ore in their production operations and had a reliable market in the St. Petersburg area.[19]

Contemporaries were quite aware of the value of scrap. For example, in the 1820s, while seeking a way out of dependency on Swedish iron ore and pig iron and mapping Finland's own possible raw material reserves, many companies had seriously considered the possibility of melting old guns and canons, that is to say, scrap iron.[20] In fact, scrap was always used if it was available, and if the producing methods were suitable. In the 1880s, local scrap iron was used in Pori engineering works when manufacturing bar iron and iron nails. In the small Hämekoski ironworks, small tools and building products, such as hoes, axes, nails, and hinges, were made from scrap that the factory obtained from the Suomenlinna fortress. Scrap was also imported from St. Petersburg for much ironwork in the 1850s.[21] For example, in 1884 firms imported around 2,300 tons of scrap from Russia, but only approximately 117 tons from elsewhere. Finnish firms imported more than 22,000 tons of cast iron and scrap, making the share of scrap at the time roughly 10% of all imports.[22]

The introduction of the dome furnace was an important technical advance for Finnish foundries since it allowed them to re-melt pig iron after it had been made in a blast furnace. Scrap could be added to the raw material pool as well. The first dome furnace in Finland was built in 1823 for the foundry at Finlayson's Tampere factory. However, the share of scrap as raw material at foundries remained low.[23] The use of it gradually increased, though, and by the 1920s foundries (together with engineering works) were using from 5,000 to almost 10,000 tons of scrap every year.[24]

Table 1. Import and export of scrap, 1860–1910, in tons

	1861	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910
Import	5,117	n/a	n/a	n/a	n/a	n/a	484	161	40	131	154
Export	1,134	n/a	73	29	1,199	211	598	173	15	0.6	1,401

Sources: Official Statistics of Finland, Foreign Trade statistics 1860–1910. The table only partially shows the extent of the annual variation in imports and exports. For example, the average annual export of scrap between 1871 and 1875 was almost 520 tons, and earlier, between 1866 and 1870, it had been almost 115 tons, even though the table shows much smaller quantities for 1870 and 1875. Some import numbers cannot be separated from other iron or are not specified in the statistics at all.

[19] Paloheimo 2012, 153, 159, 161, 163. Paloheimo (2012, 150–167) also summarizes quite well the earlier research done on the iron industry's development in Finland. See also Ahvenainen 2005, 52-63.

[20] Kalleinen 2019, 82–86.

[21] Laine 1952, 460, 492–493; Laine 1948, 422–423, 428–429. The comprehensive work *Suomen Vuoritoimi I-III*, by Eevert Laine, is still valid research on the development of Finnish ironworks and engineering works in the 19th century.

[22] Industrial Statistics 1, 1884. The Industrial Statistics did not always specify the amount of imported scrap. See also *Table 1*.

[23] Kuutsa & Viitala 2020, 45, 52, 79. For instance, the Högfors foundry produced almost 3,000 tons of castings between 1890 and 1894 and a little more than 8,000 tons between 1895 and 1899. Foreign and domestic pig iron were the main raw materials, while the share of scrap only reached a few hundred tons during the decade: in the years 1890–1894, the share of pig iron used as raw material at Högfors was around 3,000 tons, while the share of scrap was less than 150 tons. In 1895–1899, the numbers were around 8,000 tons for pig iron and less than 300 tons for scrap. On the development of foundry technology, see, for example, Berglund 1989. On Finnish foundries, see Piha 2018.

[24] Industrial Statistics 37–47, 1920–1930, Official Statistics of Finland (OSF), National Library (NL).

The Finnish iron industry, specifically when using lake and bog ore, was largely dependent on Russian markets and vulnerable to price fluctuations and changes in customs policies. The developments in the industry fluctuated between huge increases in demand, and thus production, in the 1850s and drastic decreases in the number of mines in the 1860s, then to new upswings and overproduction in the 1870s, which led to the closing of many production facilities. Even though production briefly recovered, the 1880s saw a gradual decline in demand once again. From the 1910s onwards, the Finnish iron industry focused on feeding the growing domestic engineering works. The main raw material for ironworks at the time was foreign pig iron and scrap.[25]

Table 2. The industrial use of scrap, 1886–1915, in tons

1886	1891	1895	1898	1901	1906	1912	1915
2,600	4,500	7,000	5,000	8,800	3,200	18,500	25,600

Sources: The Official Statistics of Finland (OSF), Industrial Statistics 3–32, 1886–1915. The table is indicative when it comes to the years before 1912. The statistical methods varied and information on how they were prepared was not always readily available. The years have been selected partly based on where the most reliable information was available and to enable some comparison: the use of scrap sometimes varied greatly from year to year, and it is not always easy to distinguish the proportion of scrap out of all the raw material in the statistics. In addition, the scrap melted in the Siemens-Martin furnaces was not always separated from the other iron melted in them, which occasionally makes estimations difficult. The total amounts melted using the Martin method have many times been much higher than with other melting methods. For instance, in 1902 in Taalintehdas alone, almost 7,000 tons of "pig and wrought iron and their scrap" were melted in the Martin furnace, while much less was melted using other methods.

Significant technical improvements impacted the steel-making industry in the 19th century, such as the Bessemer process, developed by the Englishman Henry Bessemer in the 1850s.[26] However, the Bessemer process was not very useful for treating scrap iron since higher temperatures were needed to remove impurities when melting the scrap. In fact, the method did not even reach the more remote ironworks in Finland due to the novelty of the puddling method being used at the time and the fact that the Bessemer method was likewise not suitable for processing the lake and bog iron ore, which contained phosphorus.[27] Another invention did though revolutionize the industry, forever changing the steel-making process – and the use of scrap as raw material – both in Finland and worldwide. Emile and Pierre Martin, from France, decided to use a new regenerator invented by Friedrich and Wilhelm Siemens to heat the open-hearth furnace, causing it to reach much higher temperatures. The method was called the Siemens-Martin method, and it made it

[25] The ironworks using lake and bog ore faced serious difficulties from the mid-1880s onwards, when the customs duties changed between Russia and Finland. By the beginning of the 20th century, the era of using lake and bog ore gradually came to an end due to technological developments. See Heikkinen & Hoffman 1982, 70–76; Paloheimo 2012, 163.

[26] The Bessemer process allowed for high enough temperatures capable of burning off the carbon from the iron, improving the steel cast for coarser building materials, such as railway rails. The quality was not consistent enough for finer steel alloys and machinery parts though, which is why the puddling method, invented in the 18th century, was still necessary. See Laine 1950, 455; Heikkinen & Hoffman 1982, 73–74.

[27] Zimring 2009, 23; Heikkinen & Hoffman 1982, 73–74.

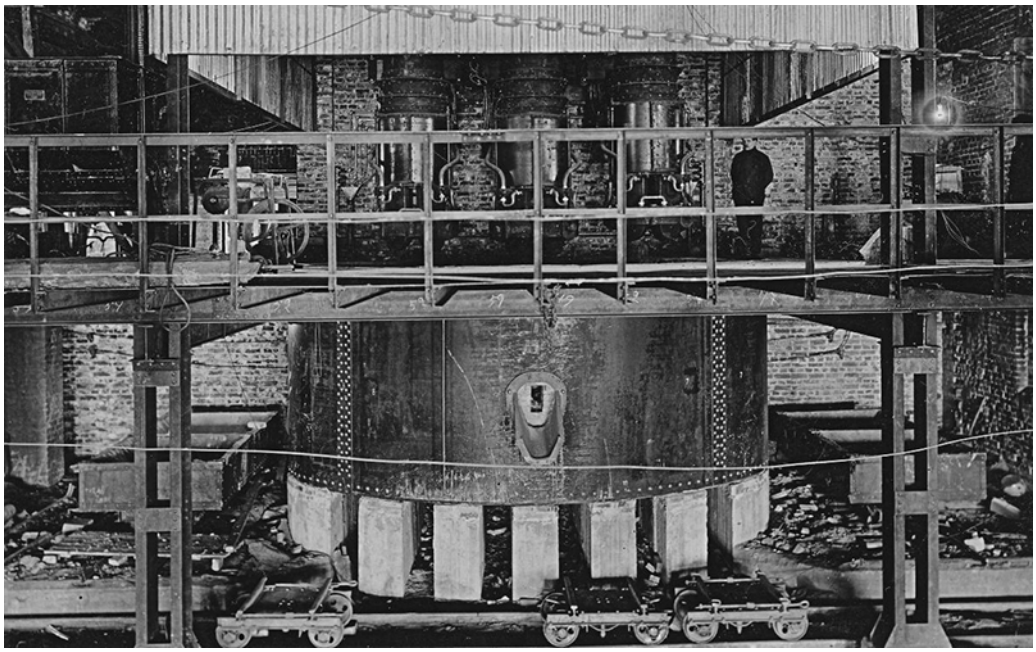

Figure 1. Source: Imatra Museums. CC BY 4.0. The electric arc oven at Elektrometallurgiska Ab, Vuoksenniska, Imatra, most likely from the 1920s. The scrap was put into the oven, shown at the bottom of the picture. The electric current then caused an arc of more than 3,000 degrees Celsius, melting the scrap raw material.

possible to produce a much finer and better-quality iron. Even a mixture of pig iron and scrap iron resulted in a good quality steel with the Martin method. Steel making became a mass production operation.[28]

The Martin method was indeed a positive development for steel making in Finland. Much by-product scrap was just lying around in the ironworks yards. For example, in 1890 the amount of wrought-iron scrap obtained as a by-product reached 360 tons, and the Martin process itself produced 130 tons of scrap worth remelting.[29] Finland's first Martin oven was completed in southern Finland, at Taalintehdas, in 1879, and it could hold 8,000 kilograms of iron and scrap. The second Martin oven was built in Värtsilä, near Kuopio, in 1885, but the company was not able to find enough scrap to fill the oven. They began investigating whether pig iron could replace the wrought-iron scrap, though. The third Martin-oven was built in 1888 in southern Finland, at the Åminnefors steel plate and saw blade factory.[30] In the 1890s, approximately 40 percent of iron in Finland was produced using the Siemens-Martin method, and by the beginning years of the 20th century more than 70 percent was being produced using the method.[31]

[28] Laine 1950, 453–458; Heikkinen & Hoffman 1982, 57, 73–74; Nisser 2011, 102–103.

[29] Industrial Statistics 7, 1890.

[30] Laine 1950, 456–457; Laine 1948, 423, 429.

[31] Heikkinen & Hoffman 1982, 74. From the 1890s onwards, all the other iron and steelmaking methods

The quantities of scrap utilized in the Finnish iron and steel industry remained modest at the turn of the century. However, a look at steel production in 1895 reveals scrap's growing importance and new possibilities for its use: factories were using more than 5,000 tons of scrap, compared to 3,000 tons of pig iron, to produce 8,000 tons of steel.[32] During World War I, Finland had around 20 iron factories, but many of them ceased operations during the next decade. The early 1900s also saw another significant invention, electric arc ovens, which could be charged completely with scrap. This invention in turn increased the building of new scrap iron smelters. For example, in 1921 Ab Wärtsilä Oy built a smelter in Hämekoski using electric power for smelting high-quality scrap. The scrap was brought from various parts of Finland, and it consisted of everything from large parts of ships to small lathe chips.[33] As a result, the domestic scrap business grew steadily during the 1920s.

New business opportunities

As a means of livelihood, waste has had two faces, the one associated with poverty and marginalization and the other with better economic prospects. As Sara Pritchard and Carl Zimring have put it, though working with other people's discarded waste has for a long time exposed the most vulnerable people in society to environmental and health issues, it has also created business opportunities for many.[34]

The new waste business sector began growing at a modest scale, though. Scrap dealing had low entry threshold. It did not require substantial investment because a person could start even with just a sack or a wheelbarrow. Collecting and sorting was done manually, and for the first decades of the 20th century the most important tools for breaking larger pieces into smaller pieces were a hammer and torch. If a person already had a yard where they lived, they could collect and store waste materials there. This fact, coupled with the general "cultural unease," as Carl Zimring puts it, that most of the population felt towards waste, for example in the United States, made the scrap business a real option for immigrants.[35] Though the industrial production and population size of Finland was certainly much smaller than in the United States, Finland also had a group of people existing on the margins of society who were willing to take their chances as entrepreneurs in the waste business since the barriers of entry were similarly low for them.

In addition to the above-mentioned technological innovations and increasing raw material needs, institutional reforms made in the latter part of the 19th century were groundbreaking for Finnish entrepreneurship and business life in general, and the birth of the scrap business as well. The most important measures in terms of liberalizing trade and business were the abolition of the guild system and the freedom to establish steam sawmills. Company law reforms, such as the Company Acts of 1864 and 1895 and the Bankruptcy

started to decline. For example, the puddling method had been used to produce half of all iron in the 1890s, but by the beginning of the 1900s it was being used to produce only one-fourth of all iron.

[32] Industrial Statistics 12 & 13, 1895.

[33] Puustinen 2013, 124; Ahvenainen & Kuusterä 1982, 247; Burn 1958, 263. The next important technological inventions in the melting process were introduced after the Second World War.

[34] Pritchard & Zimring 2020, 86.

[35] Zimring 2009, 57.

Act of 1868, were also important.[36] The new regulations for trade and business life allowed everyone to earn their living as entrepreneurs, including, as of 1879, even those who were not official citizens of Finland.[37]

The gradual increase in consumption was another opportunity for the waste business.[38] During the years in question, Finland did not have a municipal waste management system that handled such discards as rags, metals, and paper, and the amount of this type of waste generated by households was increasing, but still rather small at the time.[39] The situation was similar in Stockholm, Sweden, where waste management officials did not think that treating discarded waste was economically productive enough to salvage such waste materials and to sell them for industrial re-use, because the city was still so small.[40] However, the scrap business had already by the early 1900s become established in Sweden, meaning that valuable waste materials could be sold to factories there.[41] This was the case in Finland as well, where scrap dealers could see a market niche arising as a result of changing consumption patterns and thus traded both with private consumers and larger industries, with the latter being their primary customer in terms of scale.

The scrap business has had actors on many different levels. Focusing on the United States, Carl A. Zimring has divided the actors into five different groups. Collectors (*keräilijät*) were individuals, often women or even children, who scavenged through other people's waste to find something reusable but easy to carry. They sold or exchanged any items of worth to peddlers (*kulkukauppiaat*), who were usually grown men equipped with sacks or pushcarts or even horse-drawn carriages.[42] Passing peddlers were a common sight in rural Finnish society as well. According to Antti Häkkinen, on a societal level industrialization and urbanization contributed to the phenomenon. Peddlers, or the "rag-and-bone-men," were often from different ethnic groups and existed in the margins of society. The phenomenon was associated with negative descriptive words, such as "filthy" or "dangerous." However, the rag-and-bone-men in fact played an important role in raw material circulation since they collected rags for the paper industry, and sometimes the discarded goods carried in wheelbarrows, sacks, or horse-drawn carriages may even have been the beginnings of a more permanent, long-term, and even successful business.[43]

The last three groups represent the actual scrap business, which is the subject of this article. Zimring terms the groups dealers, processors (I use the Finnish word *romukaup-*

[36] Fellman 2008, 146–147.

[37] Häkkinen & Tervonen 2008, 20–21; Mikkola 1985, 211–214.

[38] On the increase in and development of consumption patterns in the early 1900s, see, for example, Ruuskanen & Valkonen 2021.

[39] On the development of Finnish waste management from 1830 to 1930, see Nygård 2004. Finnish cities independently followed Swedish cities when planning their sanitation services and waste management models. The 1927 Public Health Act made municipalities responsible for overseeing waste.

[40] Sjöstrand 2014, for example 45–46.

[41] Sjöstrand 2014, 107, 134; Nygård 2016, 47. For example, when the first incinerator was built in the locality of Lövsta, in Stockholm, some sorting was done, and the sorted metals and rags could be sold to scrap dealers.

[42] Zimring 2009, 52–53, 55.

[43] Häkkinen 2005, 225–262. Häkkinen (p. 249) writes that many businesses in Finland have begun this modestly. See also Nevalainen (2016) for a general discussion of the business activities of people from East Karelia in Finland; on the importance of rag-and-bone men to material circulation, see p. 22; on how peddling led to more permanent business, see pp. 169–208; on Tatar peddlers in late nineteenth-century Finland, see for example, Wassholm 2020.

Figure 2. Source: Photographer: Vilho Pauro 1929, Hyvinkää City Musem. CC BY-NC-ND 4.0. Sometimes the collecting of waste materials led to permanent involvement in the scrap business. The scrap dealer in the picture had received a tailcoat and top hat from the gentlemen of the town of Hyvinkää. His cart contains scrap metal.

piaat for both), and brokers (*välittäjät/tukkurit*). The dealers and processors differed from collectors and peddlers most visibly in that they had a permanent base of operations – a yard, shop, and/or warehouse – for the business, and they traded in larger volumes. Their clients included the smallest actors, ranging from scavengers to peddlers, other scrap dealers, and sometimes even big industrial operators. Some of the entrepreneurs also processed the scrap they bought, for example by cutting and shaping the bigger scrap to a desired size and model specified by the industrial buyer. To become more efficient and faster, processors invested in tools and machines over the years.[44]

Brokers held the highest position in the scrap business. According to Zimring, they differed from other scrap dealers mainly in that they had direct connections to other industries, and they operated on a larger scale. Their buyers, representatives of the foundry and steel industry, informed the broker of their needs and the broker then contacted several scrap dealers to be able to deliver what was ordered. If needed, the brokers also processed the material that they purchased.[45]

Several of the scrap businesses operating in the 1920s had already been founded between 1895 and 1910, proving it was possible to succeed in the business for decades. They included such scrap businesses as E. Haitto and K.V. Ruuti, both located in Tampere

[44] Zimring 2009, 53, 55.
[45] Ibid. 53.

and still operating at the end of 1930s,[46] and *Emil Österman,* a rag and scrap business located in Helsinki that had been officially registered in December of 1896. Österman, however, employed different strategies in the scrap business. He had many business partners. In 1907, the company that he had founded continued under the name *Skrothandelsbolaget Österman & Lind*, with Österman's business partner Arvid Lind. Just a couple of years later, in 1909, Österman resigned and the company continued as *Skrothandelsbolaget Arvid Lind*.[47] However, Emil Wilhelm Österman had also been a business partner with Juho Theodor Soini, from Tampere, in the company *Rauta- ja Romu-Kauppayhtiö* since 1907. The company ceased operations in 1909.[48] Despite experiencing difficulties and changes, the scrap company E. Österman was still in operation in the 1920s and 1930s, later run by Jarl Österman.[49]

Scrap dealers were usually men. Evidence does exist, however, of women actively taking part in the scrap business in Finland from its earliest years. One example is the now more than 120-year-old family business *Rautasoini Oy*, in the town of Tampere, where Hilma Soini took care of three sons and a scrap business under her husband's name, *J. Th. Soini*.[50] The scrap dealer Petter Barkoff's wife, Jevdokia, appears as a co-owner of the company *P. Barkoff & Co.* in the 1910s,[51] while Erika Kallio owned *Helsingin Romukauppa* 1911–1917,[52] Fanny Lepikkö owned *Siltasaaren Rauta- ja Romuliike* from 1922 to 1930 in Helsinki,[53] and Sofia Josefina Lannér owned a scrap business in the western Finnish town of Pori in the 1910s.[54]

One of the first waste businesses in Finland was owned by the Barkoff family. After the War of Finland in 1809–1809, it was common for entrepreneurs with a Russian background to arrive in the new Grand Duchy of Finland together with several brothers. This explains why the companies involved in trading often had the same names. The profession, or the business, often passed down from father to son.[55] Some families used marriage with a Finn as a strategy to better integrate into Finnish society, while at the same time often maintaining their own culture, language, and religion.[56] The Barkoffs, who were Greek Orthodox, are

[46] Trade register, dissolved companies, Eb:915 & Eb:940, Finnish Patent- and Registration Office (PRH), National Archive (NA); Finnish Trade Calendar, Suomen Kauppakalenteri 1929; Finnish Business Calendar, Suomen Liikekalenteri 1938.

[47] Trade register, dissolved companies, Eb:142, PRH, NA; Registertidning för Varumärken no. 45, 1897, 15, Emil Österman; Registertidning för Varumärken no. 312, 1907, 1, Skrothandelsbolaget Österman & Lind; Registertidning för Varumärken no. 396, 1909, 731, Skrothandelsbolaget Arvid Lind.

[48] Trade register, dissolved companies, Eb:547, PRH, NA; Registertidning för Varumärken no. 314, 1907, 101, Rauta- ja Romu-Kauppayhtiö; Registertidning för Varumärken no. 377, 1909, 52.

[49] Finnish Trade Calendar, Suomen Kauppakalenteri 1929, Finnish Business Calendar, Suomen Liikekalenteri 1938, Directory of the Finnish Economy, Suomen talouselämän hakemisto I 1937.

[50] Trade register, dissolved companies, Eb:268, PRH, NA; Registertidning för Varumärken no. 159, 1900, 11, J. Th. Soini. Company was registered in 1900.

[51] Trade register, dissolved companies, Eb:739 & Eb:1044, PRH, NA; Registertidning för Varumärken no. 388, 1909, 12, P. Barkoff & Co.

[52] Trade register, dissolved companies, Eb:821, PRH, NA; Finnish Trade and Industrial Calendar, Suomen Kauppa- ja Teollisuuskalenteri, 1917, 342; Registertidning för Varumärken no. 450, 1911, 19, Helsingin Romukauppa; Registertidning för Varumärken no. 671, 1917, 6.

[53] Trade register, dissolved companies, Eb:1508, PRH, NA.

[54] Finnish Trade and Industrial Calendar, Suomen Kauppa- ja Teollisuuskalenteri, 1917, 342; Registertidning för Varumärken no. 268, 1905, 81, S.J. Lannér.

[55] Hakala 2002, 32–33.

[56] See Paloheimo 2012, 87–88. Paloheimo both contributes to and provides a substantial overview of prior research on the development of foreign-born business actors' political and economic rights in the early nineteenth century.

Figure 3. Source: Private collection/Ilkka Eronen. Urho Kivirinta's scrap yard in Hämeenlinna, Hämeensaari, in 1926. The small girl in the white dress is Lempi Kivirinta; she later became a scrap dealer like her father, who had first started in the business in 1917. Even though the waste business was quite male dominated, some women did enter the business sector as entrepreneurs and business partners.

a good example of people from a minority group entering an undesirable business field and succeeding quite well both as traders and industrialists, integrating into Finnish society but also maintaining their own cultural identity through active participation in the Russian community. The scrap dealer Georg Barkoff owned a bone meal factory, which already in the 1870s utilized the bones that his Helsinki-based company salvaged.[57] He was married to a Finnish woman named Maria Ahlfors. One of their sons, Alexander, became an educated artist who travelled around the Mediterranean Sea and settled in Greece in the 1920s.[58]

The family business was quite successful, but it also faced difficult times in the in the late 19th and early 20th centuries. In 1879, Georg Barkoff did not pay any taxes, which suggests

[57] Barkoff received the right to establish a bonemeal factory in 1872. He rented land for his business from the city of Helsinki, and the rental affairs were discussed in the city council in, for example, the 1870s and 1880s. Records of the Magistrate, December 12th, 1872, Ca:195, Magistrate; City Council, September 1st, 1882, Eb:7, City Council reports, Helsinki City Archive.

[58] Reitala 1997: Alexander Barkoff. National Biography online publication.

Figure 4a. Source: Photographer: Signe Brander, 1908. Helsinki City Museum. CC BY 4.0. Barkoff's bonemeal factory on the outskirts of Helsinki in the year 1908. The Barkoff family business salvaged and recycled many waste materials. Their scrap yard, at the corner of Simonkatu and Annankatu in Helsinki, was even called a "magnificent sight" full of scrap that was "constantly sorted" before the wooden houses were demolished in the mid-1920s (as remembered by Väinö Tanner, Helsingin Sanomat November 23rd, 1967).

Figure 4b. Source: Photographer: Signe Brander, 1909, Helsinki City Museum. CC BY 4.0. Petter Barkoff's family scrap business yard in Helsinki, pictured in the year 1909. The Barkoffs traded for rags, bones, and metals, all of which were valuable waste raw materials. Storing the material, however, was a challenge. Barkoff's business companion and wife, Jevdokia, was not allowed to the handle rags and bones lying around the yard since they could be "harmful" to other people in the densely populated neighborhood – rags and bones smelled and invited flies, and they were potentially dangerous to people's health.

that he had not succeeded or else that he had temporarily ceased business operations.[59] In 1882, however, at the Moscow Industrial Exhibition, Barkoff's bone meal won an honorary diploma for its quality. The company also sold scrap copper to the Mint of Finland for coin making during the years 1888–1892. In 1894, a fire broke out in the basement of Barkoff's office, where rags were stored.[60] The business had to deal with several lawsuits and the threat of bankruptcy in 1894, causing one of his sons, Petter Barkoff, from the town of Turku, to announce that his business had nothing to do with G. Barkoff's business. However, the threat of G. Barkoff's impending bankruptcy was soon resolved due to creditors withdrawing their claim.[61] His son, Petter Barkoff, educated in St. Petersburg in business economics, himself entered the scrap business, too.[62] Some merchants and professional groups of Russian origin were also the target of boycotts in the early 20th century as a protest against Russia's unification efforts. In some fields, business leaders even made efforts to change the Russians into Finns. However, Russians were primarily involved in professions that traditionally Finns did not want to do.[63] The waste business was dirty and hard work, not likely a profession that would have been very attractive to Finns.

Georg Barkoff died in August 1899, in Helsinki, at the Deaconess Institute, and the death of the "well-known iron and scrap dealer" who had "for long owned a major scrap business" was reported in the newspapers.[64] His widow, Maria Barkoff, continued the family business at least on paper for the next ten years,[65] until their son, Ivan Barkoff, assumed responsibility for the company in 1909.[66] In 1916, he even established a foundry, *Arkadia Metallgjuteri*.[67] Barkoff also acted as chairman of the board and the managing director of a sawmill business, *Oy Temintaipaleen puunjalostus Ab*, founded in 1912, until to at least the 1930s.[68] Just like their father, who had been a spokesman for the petty bourgeoisie in society, his sons were active members of the community. Petter held positions of trust both in the Russian Association and the church, and Ivan was a founding member of the Helsinki Russian Merchant Association.[69] Ivan Barkoff, hailed as "pioneering" by fellow dealers,[70] was involved with the scrap business until his death in 1947, after which his daughters,

[59] Perälä 1970, 80–81.

[60] *Uusi Suometar* August 9th, 1882; *Östra Finland* April 17th, 1893; *Uusi Suometar* May 9th, 1894.

[61] *Åbo Underrättelser* January 3rd & January 8th, 1894.

[62] Petter Barkoff's company was dissolved and founded again several times: Trade register, dissolved companies, Eb:152, Eb:739, Eb:1044, PRH, NA; *Hufvudstadsbladet* January 25th, 1926, Petter Barkoff's 60th birthday inscription. The inscription mentions that Petter Barkoff had continued with his father's scrap business. However, according to the PRH archive it was Ivan who continued under the name of G. Barkoff. On the other hand, Petter Barkoff also moved his business from Turku to Helsinki closer to other family-owned companies and was in the scrap business for many years.

[63] See, for example, Hänninen 2023, 113–123.

[64] *Uusi Suometar* August 6th, 1899; *Hufvudstadsbladet* August 5th, 1899.

[65] Trade register, dissolved companies, Eb:27, PRH, NA; Industrial Board's Register Magazine for Trademarks no 130, January 26th, 1900, 428.

[66] Trade register, dissolved companies, Eb:768, PRH, NA.

[67] Trade register, dissolved companies, Eb:1019, PRH, NA.

[68] Finnish Timber and Paper Calendar 1926, 1928 and 1930, National Library (NL).

[69] Leinonen 2002, 116–117; Records of the Magistrate, March 14th, 1868, Ca:186, Magistrate, Helsinki City Archive; *Hufvudstadsbladet* January 25th, 1926, Petter Barkoff's 60th birthday inscription.

[70] Annual report 1947, The Finnish Scrap Dealers' Association's Archive.

Katarina and Margareta Barkoff, took over the business.[71] The decades-long story of the Barkoff family's involvement in the waste business indicates that even with a marginal background, engaged in a marginal business, it was possible to succeed and become a respected member of Finnish business life – in a way, moving out of margins.

How did scrap circulate?

Scrap emerged as a byproduct wherever iron and steel were produced or processed further, such as in industries that used iron and different metals as raw material or places where products and the related components wore out and were discarded.[72] The Finnish metal industry in the early 20th century, including steel factories, foundries, and engineering works, produced scrap iron and metals as a byproduct that they then recycled themselves or else used another firm's facilities or a scrap company. For example, Fiskars ironworks in southern Finland received scrap from Mariefors ironworks and Billnäs ironworks, among others, as well as from several independent scrap companies.[73] Whether a firm was able to melt and refine scrap for iron and metal production depended on the technology being used and what it produced.

Old iron and metals can be found in many areas of private life, too. Farmers and private households used machines, tools, and everyday commodities made of iron and metals. After the products were no longer useful, the families exchanged them for other commodities with peddlers or sold them directly to scrap dealers. The decision depended very much on the location. Some Finnish towns had had a scrap business already at the turn of the 20th century.[74] Peddlers sold their items to scrap dealers, who then sold them to larger scrap companies or brokers or else made direct contract with a factory. The army or transportation and construction industries were also suppliers of scrap. The Finnish state railways and shipyards, for instance, became customers for both private scrap dealer companies and ironworks. Shipyard and railroad scrap was, however, often too large to handle, but this gradually changed in the 20th century, as scrap companies found it easier to invest in tools themselves.[75] Different industrial operators also held auctions for scrap dealers to find and process useless but recyclable raw material.[76]

[71] Trade register, dissolved companies, Eb:768 & Eb:2301, PRH, NA. It is not certain how long the company continued to operate after Ivan's death since no announcement of dissolvement was ever made and PRH removed the company from its register in July 1981. The Barkoffs were, however, in the waste business for at least 70 years.

[72] Burn 1958, 275.

[73] Scrap Journals, Aa:50, Åminnefors archive, Fiskars historical archive.

[74] In addition to Helsinki and Tampere, the early trade and industrial directories and the address and business directories of both cities show that entrepreneurs were operating in at least Viipuri, Pori, Tammisaari, and Kuopio and possibly in a few other places as well, like Turku and Lahti.

[75] Scrap Journals, Aa:50, Åminnefors archive, Fiskars historical archive; interview with Arto Kokko February 1st, 2019.

[76] Auctions were regularly announced in newspapers. For example, *Uusi Suomi*, July 14th, 1923; *Aamulehti*, May 6th, 1926. The tradition of holding auctions, dating back many decades already at that point, is also frequently mentioned by former and present-day entrepreneurs; interviews with entrepreneurs, 2019.

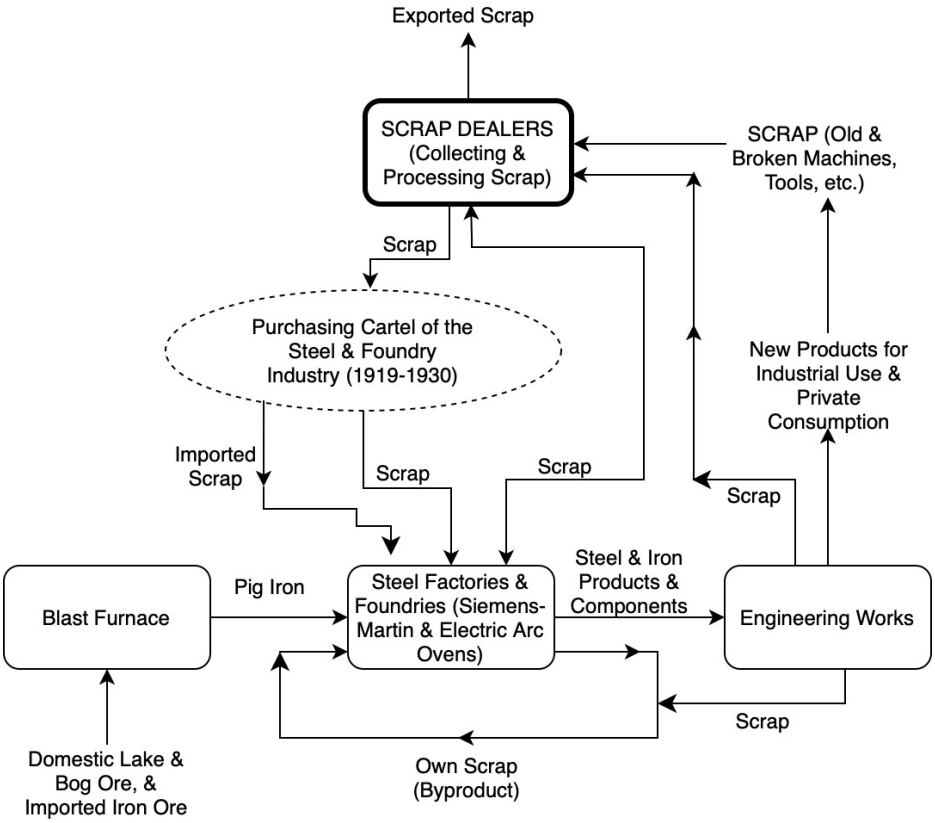

Figure 5. Flows of scrap in the early twentieth-century Finland. Picture drawn by the author based on the archival materials used for this article. However, even if scrap could not be used in blast furnaces in larger quantities, the melting processes sometimes produced small amounts of scrap as a byproduct, which was then melted with iron ores. The steel and foundry industry also imported scrap before the advent of the first purchasing cartel; but the cartel handled the importing of all raw material after 1919.

Towards the end of the research period, several actors in the Finnish scrap business begun operating like brokers (*tukkurit*). They travelled longer distances to buy larger amounts of scrap and other waste and delivered the material to paper or steel factories. For instance, *Karjalan Lumppu- ja Romuliike* (founded by the young Jewish cellist Donuard Kuschakoff, with the company now known as *Kuusakoski Oy*) in Vyborg apparently handled deliveries with horse-drawn carriages for the first years of the business. However, in 1927 the company acquired a small Ford Model T truck and three years later a slightly larger Chevrolet truck.[77] Other scrap businesses also had trucks already in the early 1920s, such as *Riihimäen Romuliike*, which rented the truck to private people and other merchants as well.[78] Boats, ships, and railways were also used for transportation when possible or necessary.[79]

Kustaa Eklund's company *Romukauppa Koivuniemi*,[80] founded in the mid-1910s, regularly supplied scrap to Fiskars ironworks in the 1920s and later. The company collected scrap from at least 20 different localities in southern Finland and supplied it to Fiskars.[81] As the business grew, the brokers did not even see the scrap they bought from smaller dealers because the scrap was delivered in their name, but by the smaller company, straight to the industrial buyer.[82] Whereas many scrap businesses also traded with private consumers, some companies only traded with other scrap dealers and industrial operators.[83]

The amount of scrap supplied by entrepreneurs to Fiskars varied, but it was mostly on a modest scale. Smirnoff's scrap company in Porvoo supplied 15.5 tons of scrap in December of 1921. In the same month, K.E. Salama, from Järvenpää, supplied only 221 kilograms. Sometimes companies supplied scrap to larger firms several times a month, such as *Ab Petter Barkoff Oy*, from Helsinki, who in May 1921 supplied more than 32 tons of scrap. As an independent operator, the company, along with some others, eventually stopped supplying Fiskars. They later supplied scrap through *Oy Rautatarvike Järnbruksförnödenheter Ab*, the first Finnish industry-owned intermediary between scrap companies and the scrap-using industry.[84]

[77] Trade register, dissolved companies, Eb:1626, PRH, NA; Lajunen & Hämäläinen 1994, 12; on Donuard Kuschakoff's son, Victor Kuusakoski, see Möttönen 2017. Unfortunately, Kuusakoski Oy apparently lost their early archives as a result of the bombings during World War II.

[78] *Riihimäen Sanomat*, October 4th, 1924; for more information on trucks and their prevalence in Finland, see, for example, Pentti, Mikko & Mäkinen, Ville 2012–2024. Luettelo Suomen moottoriajoneuvoista ennen vuotta 1922. Mobilia. (A list of Finland's motor vehicles before year 1922).

[79] Lajunen & Hämäläinen 1994, 12. See also the section on *emerging co-operation and cartels*.

[80] Kustaa Eklund used this name for his company for a long time, but it was later, in the 1940s, changed to Salon Romuliike. Trade register, dissolved companies, Eb:956 & Eb:2707, PRH, NA. Eklunds were big and famous in scrap business for many generations even after the first two companies.

[81] Scrap Journals, Aa:50, Åminnefors archive, Fiskars historical archive.

[82] These business practices were sometimes explained in newspapers to wider public, too. *Salon Sanomat* January 20th, 1938.

[83] *Uusi Suomi*, December 14th, 1924, Oy Stannum Ab.

[84] Scrap Journals, Aa:50, Åminnefors archive, Fiskars historical archive; More about Oy Rautatarvike Järnbruksförndenheter Ab in section *"Emerging co-operation and cartels"*.

Figure 6. Source: Photographer: Signe Brander, 1912. Helsinki City Museum CC BY 4.0. Erika Kallio's scrap business, Helsingin Romukauppa, pictured in 1912 on Siltasaarenkatu 7, in the Hakaniemi neighborhood of Helsinki, where the Hakaniemi marketplace is currently located. Engineering works were also located in the Hakaniemi area, which was good for scrap companies.

Emerging co-operation and cartels

The more extensive period of industrialization in Finland began during the first decades of the 20th century.[85] If anything good came out of World War I, it was that it resulted in a positive change for the development of the Finnish engineering industry, which had previously mainly just operated domestically. Nearly all items produced in Finland were exported to Russia between 1915 and 1917.[86] Iron and metals were strategically important raw materials. Thus, for example, officials banned the export of scrap metals from the Grand Duchy of Finland beginning in 1915.[87]

[85] Ojala, Roitto & Karonen 2018, 187.

[86] Kuisma 2015, 161; see also Fellman 2008, 154.

[87] Regulation concerning the State of War No. 22, January 31st, 1915, and List of Products under Export Ban No. 33, July 1st, 1915, No. 73, November 31st, 1915, & No. 40, August 31st, 1915; collection of decrees (issued in the Grand Duchy of Finland), National Library, NL.

With production growing so rapidly, a new iron factory, *Elektrometallurgiska Aktiebolaget*, was established in Vuoksenniska. The factory based its production mostly on scrap iron, but it had to halt production for a few months during the Finnish civil war in the spring of 1918.[88] Nevertheless, the founding of Elektrometallurgiska was certainly promising for the scrap business that was slowly taking shape at the time. In general, the amount of scrap used in Finnish industry during the years of World War I (1914–1918) mostly increased compared to earlier years. As Jorma Ahvenainen has written, it is often crises and changes in society that lead to an increase in the number of small entrepreneurs.[89] The Finnish trade, industry, business, and professional directories show a clear increase in the number of scrap businesses from the mid-1910s to the late 1920s. At least 20 scrap businesses existed in Helsinki alone at the time, many of them only founded in the 1920s. The new businesses also began to cover an area that included more than just the largest cities.[90]

Table 3. The use of domestic and foreign scrap during World War I, 1914–1918, in tons

	1914	1915	1916	1917	1918
domestic	21,894	25,633	26,443	21,762	16,115
foreign	17	1,376	3,412	5,325	0.5
in total	21,917	27,009	29,855	27,087	16,115.05

Sources: Official Statistics of Finland, Industrial statistics 31–35, 1914–1918. The share of scrap in relation to the rest of the raw material depended on the technique and the producer, but sometimes also the way in which the statistics were compiled determines what information can be obtained. Thus, the share of scrap raw material in general could vary from 3% to over 50%, and sometimes, in the case of electric arc ovens, even the majority of raw material was scrap. However, for example in the year 1915, the share of scrap in relation to other raw material was approximately 37%. How much of this scrap circulated through scrap dealers, however, cannot be estimated for the purposes of this article.

The turbulent years of the First World War led to the collapse of empires and the birth of new states. Finland went through a devastating civil war. Contemporary economic actors were quite concerned about the future of the country and its business life. Finland's financial independence needed to be protected as well. As a solution, the government established a Trade and Industry Commission on the Senate's orders on April 16th, 1918. The commission was tasked with monitoring and controlling all production and trade, including the granting of import and export licenses, the use of stored resources and commodities, and the overseeing of all domestic production operations. It also favored cartels. Members of the commission were prominent representatives of business life in general.[91]

[88] Koskinen 2016, 54–55.

[89] Ahvenainen 1994, 52.

[90] For example, Finnish Trade Calendar, Suomen Kauppakalenteri 1929. The precise number of companies cannot be stated. However, the number grew from a few dozen in 1915 to around a hundred by 1930. The number of companies also varied from year to year, depending on many factors. Not all the companies can even be traced.

[91] Lamberg 1999, 23–24; Aunesluoma 2011, 26–28.

The commission encouraged new domestic innovation to satisfy different production and raw material needs, and waste materials played a role in such activities. For example, lacquer and cork were made from birch bark, and sticklebacks and fish waste was used to manufacture oil.[92] In 1921, the government gradually ended the regulation of foreign trade and stopped regulating prices.[93] After that, Finnish scrap dealers, no matter how hard they worked, could not keep up with industry's hunger for raw material. The salvaging of domestic scrap increased but so did the demand.

Table 4. The use of domestic and foreign scrap in Finland between 1919 and 1929, in tons

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
domestic	23,600	14,300	27,500	21,000	23,100	30,900	32,500	28,900	24,400	39,800	35,500
foreign	1,000	1,100	400	7,600	9,000	9,000	8,400	12,700	25	600	700

Sources: Official Statistics of Finland, Industrial statistics 36–46, 1919–1929. Figures have been rounded up or down to the nearest hundred. When it comes to the percentage of scrap (in relation to all raw material) used in the melting ovens, the numbers varied. For instance, scrap accounted for approximately 44% of all raw material (iron ores and pig iron) in 1920, more than 58% in 1925, and approximately 56% in 1929.

Table 5. The export and import of scrap iron between 1920 and 1930, in tons

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
export	996	159	457	160	215	229	171	1,523	4,424	5,116	2,440
import	4,777	568	12,114	2,223	10,325	9,444	16,611	1,456	1,300	691	535

Sources: Official Statistics of Finland, Foreign Trade 1920–1930. The figures do not, for instance, include copper or tin scrap because it is not possible to determine how much of the metal being exported was indeed scrap since it was combined in the statistics with raw metals. However, the amount of exported and imported metal varied during the decade from a few hundred to half a million tons. This variation suggests that scrap dealers probably were well compensated for exporting metal scrap as well since such scrap was more valuable than ordinary scrap iron.

The statistics on the importing and exporting of scrap tell the story of a business that fluctuated quite dramatically. The annual amount of imports and exports varied enormously. For example, at the beginning of the 1920s almost 5,000 tons of material was imported, a number that dropped to a few hundred tons the next year and then jumped to a new record of more than 12,000 tons the following year. It only took two years before a new record of more than 16,600 tons of imported scrap was achieved in 1925. It is thus no wonder that almost all the material that Finnish scrap dealers could salvage was purchased by the domestic industry. Compared to, for example, the rag trade, the scrap trade was more irregular. It is also important to remember that scrap could be stored almost indefinitely,

[92] Siltala 2022, 150–151.

[93] Aunesluoma 2011, 31.

and therefore it was sometimes in the best interests of those in the metal industry to import more scrap than they immediately needed.[94] When it comes to the importing and exporting of waste materials, changes affecting the transport infrastructure must also be considered. After Finland's independence, foreign trade in general shifted even more from east to west, and therefore, from railways to the sea, which resulted in a need for more and better ships. The Finnish merchant fleet experienced a fundamental technological restructuring from the 1920s onwards, and wooden sailing ships were gradually replaced by steel-hulled motor vessels.[95] Finland also faced winter shipping challenges, and the securing of merchant shipping became a priority in maritime policies.[96]

Increasing amounts especially of wastepaper, rags, bones, and other animal parts as well as regenerated rubber and rubber waste were also exported and imported. Many scrap dealers handled and traded many of the above-mentioned materials depending on the company's location or the availability of the materials. The exporting of rags even overtook the exporting of scrap in 1924–1926, but then the scrap business experienced a rocket-like expansion in scrap exports from 1927 onwards. This expansion combined with the occasional health-related issues and restrictions[97] affecting rag business might have pushed some entrepreneurs towards specializing in scrap iron and metals instead of other waste materials.[98]

It was in the best interest of those in the metal industry to secure enough raw material for everyone and influence the prices. Thus, they joined together. The first Finnish metal industry-owned purchasing company for scrap, *Oy Rautatarvike Järnbruksförnödenheter Ab*, was founded in 1919 by three prominent companies, Taalintehdas Oy, Oy Fiskars Ab, and Ab Wärtsilä Oy, meeting in the office of The Finnish Metal Industry Association, which had also just been founded in 1918. The purpose of the Järnbruksförnödenheter purchasing company was to improve the procurement of raw material for its owners. With the help of the joint purchasing company, the metal industry was able to reduce competition among scrap companies and affect price levels.[99] The Swedish scrap-using steel industries had founded a purchasing company with the same name, *Järnbruksförnödenheter* (JBF), just two years earlier in 1917, which also aimed to influence the scrap markets. In Sweden, a new law for regulating the scrap and rag markets was introduced in 1918.[100] Finland, however, was in

[94] Foreign Trade 1920–1930, 1 A: 40 – 1 A: 50, (OSF), National Library (NL).

[95] See Kaukiainen 2008, 354–396; 371; Sahari 2018, 73.

[96] On the development of the shipbuilding industry within societal, technopolitical systems in Finland in 1918–1954, see Sahari 2018.

[97] Entrepreneurs faced difficulties and restrictions imposed by the city's health authorities with respect to storing bones and rags and trade in general due to possible health risks and the unpleasantness they caused for the neighborhood. See Records of the registry office, Ca:336, 1914, Helsinki City Archives; Health and Nursing Care 1, 1910, 30–31, Helsinki City Statistics I & Health and Nursing Care 2, 1911, 19-20, Helsinki City Statistics II, Helsinki City Archive.

[98] Foreign Trade 1919–1930, (OSF), National Library (NL); see also Tables 3 & 4 in this article. For example, in 1929 companies exported almost 370 tons of rags and slightly more than 5,000 tons of scrap, but wastepaper exports totaled more than 24,000 tons. Finland was also a steady importer (from 2,000 to nearly 5,000 tons a year) of rags throughout the 1920s because the salvage of domestic rags could not fulfil the needs of the industry, which included only rags, not industrial wool or cotton waste. Rags were also listed as one of most important imported raw materials in the latter part of the 1920s.

[99] Stadgar och Protocoll December 29th, 1919, HI:4, AB Järnbruksförnödenheter 1920–1930, Fiskars archive, Fiskars historical archive.

[100] Sjöstrand 2014, 107.

the midst of fighting a civil war at the time, but immediately afterwards the situation in the newly independent country began to stabilize, and the Finnish metal industry thereby tried to influence legislation concerning the scrap business.[101]

Scrap dealers also attempted to operate together. This action was related to the temporary orders issued by the Senate and the newly founded Trade and Industry Commission in 1918, namely that all metals and related scrap would be confiscated and any trading in or transporting of them was prohibited.[102] The next year *Kauppalehti* wrote a piece about how scrap dealers had reacted to the orders *"quite grudgingly."*[103] Indeed, at the end of 1918 the scrap businesses in Helsinki invited other scrap businesses from all over Finland to discuss the regulations set by The Trade and Industry Commission.[104] Together, the scrap dealers founded *Romukauppiaiden Oy – Skrothandlarnas Ab*. It was *"a company - - - that included all the prominent scrap companies in our country."*[105] The purpose of the company was to promote the collection and purchasing of scrap and to gather all the scrap and waste materials that the government had ordered confiscated, process the materials in a factory-like manner, and then trade them.[106]

Despite the attempts at regulating the scrap trade, however, scrap could easily be exported throughout the 1920s. The demand was such that if the prices did not satisfy the dealers, they were free to sell it abroad, but the exporting of scrap remained much lower than the importing of it until 1927.[107] While scrap exports increased moderately in the first half of the 1920s, it was in the importing of scrap that experienced the most stunning growth around the mid-1920s.[108] In 1927, more than 700 tons of scrap was imported to Finland from Germany. However, almost 340 tons of it was exported to Germany as well. The next year, almost the same amount, more than 820 tons of scrap was both exported to and imported from Germany.[109] The numbers might be indicative of the fact that scrap dealers got better prices selling abroad than to the domestic industry. In general, most of the scrap imported by the metal industry originated from Russia, Estonia (until the mid-1920s), Latvia, and Germany. Scrap dealers exported scrap principally to Germany, Sweden, Danzig, Latvia, or the Netherlands. Sometimes, when dealers exported only a small amount of scrap, like in 1921 and 1930, the destination was Germany.[110]

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[101] Skrothandel lagförslag 1919, Hn:1, Skrot och råvaror, Fiskars archive, Fiskars historical archive.

[102] The Collection of Decrees for Finland, Suomen Asetuskokoelma no. 112, September 13th, 1918 & no. 143, October 29th, 1918, National Library. The decrees were annulled in 1919: The Collection of Decrees for Finland, Suomen Asetuskokoelma no. 17, February 14th & no. 131, October 24th, 1919, National Library; Lamberg 1999, 23–24.

[103] *Kauppalehti* May 7th, 1919.

[104] *Helsingin Sanomat* October 8th, 1918.

[105] Original: "Yhtiö - - - käsittää kaikki maassamme toimivat huomatuimmat romukauppaliikkeet," *Kauppalehti* November 20th, 1918. There is, however, not much more information yet on the joint company.

[106] *Romukauppiaiden Oy* was not a professional interest organization, such as *The Finnish Scrap Dealers' Association* or the scrap dealers' own cartel-like intermediary, *Romu Keskus Oy*, with which the dealers hoped to have more say in price negotiations, both founded in 1940; Founding documents, Romukeskus Oy archive & The Finnish Scrap Dealers' Association archive.

[107] See *Table 5* and its reference.

[108] Foreign Trade 1919–1930, 1 A :39 – 1 A: 50, (OSF), National Library (NL).

[109] Foreign Trade 1927, 1 A: 47, (OSF), National Library (NL).

[110] Foreign Trade 1920–1930, 1 A 40 – 1 A: 50, (OSF), National Library (NL).

Järnbruksförnödenheter wished to include as many scrap businesses as possible for delivery. It even guided factories not to make individual contracts with dealers, but instead to instruct the dealers to act through Järnbruksförnödenheter.[111] As Järnbruksförnödenheter tried to control the dealers in this manner, *Suomen Teollisuus*, a journal published by The Finnish Industry Association, wrote about the "Scrap issue" in 1929, emphasizing the importance of a more controlled trade with export restrictions and bans: Finland should be following the examples of other countries, like Germany, where the government had realized how important it is to secure one's own raw material.[112]

The first purchasing company, Järnbruksförnödenheter, ceased operations on December 31st, 1930. The decision was due to an announcement by Taalintehdas Oy earlier in September that it was unwilling to continue co-operating. The Järnbruksförnödenheter company board did not find it reasonable to continue without Taalintehdas.[113] The industry, Taalintehdas included, was nonetheless determined to continue pursuing their common interests in the near future. A new purchasing company, *Oy Romurauta Ab*, was founded in 1937.[114]

Conclusions: Groundwork for green entrepreneurship in the margins of the industrial economy

This article has examined the roots of the Finnish recycling business through a close study of scrap dealers, an undervalued and mostly hidden group of entrepreneurs. The results show the significance of scrap for the Finnish metal industry in the early 20th century. Multi-staged technological developments in the iron and steel industry's melting technology in the latter part of the 19th century and the first decades of the 20th century gradually enabled and resulted in the large-scale exploitation of scrap iron and metals, which was decisive for the birth of a new profession, the scrap business. The beginning stages of the scrap business in Finland had similar features as in many other countries: The barriers of entry were quite low, and the business offered the possibility of income for minority groups, such as Russian immigrants or Jews. Although many of the first successful scrap businesses in Finland were founded by minorities, the business was not completely run by them. The first businesses were founded in the biggest towns and close to industries relying heavily on scrap.

[111] Correspondence, Järnbruksförnödenheter to Fiskars, January 4th, 1922, Fa:221 Fiskars archive, Fiskars historical archive.

[112] "Romurautakysymys. Sen kansainvälinen merkitys" ("The question of scrap and its international significance") in *Suomen Teollisuus – Finlands Industri* no. 18, September 16th, 1929, 295–296, writer not identified. Several historians have quite recently written about how the European countries began to implement policies to safeguard (waste) raw material resources already during World War I, but even more so just before WWII. For a more precise list, see Denton & Weber 2022.

[113] Stadgar och Protokoll, November 5th, 1930, Hl:4, Järnbruksförnödenheter, 1920–1930, Fiskars archive, Fiskars historical archive.

[114] Documents and articles of association, Oy Romurauta Ab, Osuuskunta Teollisuuden Romu archive, Central Archives for Finnish Business Records (ELKA); an un-published description of *Oy Romurauta Ab*, written by Keijo Luukkonen, former CEO of Romurauta Oy in the 1970s, The Finnish Scrap Dealers' Associations archive. Oy Romurauta Ab was founded by all the former owners of Järnbruksförnödenheter, including Taalintehdas Oy, as well as a new participant, Vuoksenniska Oy.

The scrap business was the result of industrialization and the modern market economy, which led to the creation of several new industrial communities and professions.[115] Paradoxically enough, wartime is usually good business for the waste trades. When the Russian Empire participated in the First World War, it boosted the Finnish metal industry and thus the scrap business. The number of scrap entrepreneurs began increasing in the mid-1910s. The civil war began right after Finland had declared its independence. in December 1917, briefly crippling certain business operations, but once it was over, then the waste trade and scrap business experienced unprecedented growth in the 1920s.

However, scrap dealers could not change the realities of a small country. The metal industry needed to import scrap as well. Scrap dealers might not have always been able to collect enough scrap to cover the needs of the domestic industry, but they were also quite willing to sell it abroad at better prices. The use of salvaged scrap gradually exceeded the volume of rags during the research period due to both new raw material inventions for the paper industry and the growing importance of the metal industry. However, the first generations of Finnish scrap dealers actively salvaged other waste materials as well, such as rags, bones, rubber, wastepaper, horse ropes, and so forth. The comprehensive salvage activities also proved significant for recycling.

The cartelization of business life was widespread in Finland, and it extended early to the waste trades as well. The iron and steel industry founded a cartel to secure their raw material needs at reasonable prices. Scrap dealers also sought to maintain their independence. They resisted strict restrictions but were not yet sufficiently united or ready to form an organization to work for their collective interests or did not feel a real need for it. At the same time, the entrepreneurs were struggling with other challenges related to their stigmatized profession. Some were, however, able to acquire fame and respect in business life, even if they came from marginalized groups.

The growth in the waste trade faced setbacks due to the economic depression at the turn of the 1930s. Even though both the importing and exporting of scrap decreased, the use of domestic scrap remained fairly high. The extent to which the high number of bankruptcies impacted those involved in the scrap business in the aftermath of the depression remains an interesting question. In some cases, entrepreneurs established a new business in the same field even several times. This proves the flexibility of the business itself and is evidence of the fact that the future looked bright regardless of short-term problems. The next decade saw yet again a steady increase in the trade of scrap and other waste, with occasionally even drastic growth, but changes were lurking just around the corner. Scrap dealers faced a new purchasing cartel owned by the metal industry and the threat of tighter regulations of their business. Scrap and scrap dealers had proved their worth, but they were forced to start thinking about uniting for self-defense purposes. A decade later, a worldwide crisis focused attention on the scrap business like never before.

The circular economy and green entrepreneurship are particularly relevant and valued concepts in today's business life, often referred to as "new ways" as opposed to "old and bad ways" of doing business, making it even more important to highlight the preceding actions and business models that have contributed to the circulation of materials and saving virgin raw materials. I argue that scrap dealers were pioneers in what we now define as recycling and the circular economy. Though maybe not intentionally, in practice they helped minimize the harmful impacts of business on the natural environment. The results of my

[115] Ojala, Roitto, & Karonen, 187.

article also contribute to research on small and medium-sized enterprises and the role of ethnic or religious minorities in business life. This is a highly relevant topic since in many parts of today's world minorities and marginalized, often poor, people are contributing to the salvaging of waste and recycling.

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