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Ore Mining in the Sauerland District in Germany: Development of Industrial Mining in a Rural Setting[1]

Introduction

Ore mining requires natural deposits; these may be very large or relatively small. Broken Hill in Australia, Rio Tinto in the southwest of Spain, and Chuquicamata in the north of Chile are some prominent examples of large ore deposits. These deposits became sites for large-scale industrial mines and important mining enterprises (e.g., the Broken Hill Proprietary Company and the Rio Tinto Company). But smaller deposits can also be sites for industrial mining. During industrialization in Europe in the nineteenth century, many of these smaller ore mines supplied the growing industry not only with iron, but also with lead, zinc, copper, and other metals. In many cases—before they were squeezed out of the market by larger mines as a consequence of globalization at the end of the nineteenth century[2]—these mines were situated in rural and relatively remote regions.[3]

One example of mining in a remote rural region is the Sauerland district in Germany, a hilly region located just southeast of the Ruhr district in the west of Germany.[4] In the nineteenth century it was (and today it still is) a mostly agricultural and silvicultural region. At the same time that the coal and steel industry were transforming the Ruhr district into the most important industrial region of Germany, some ore mines in the Sauerland district were also taking part in the industrialization of central Europe as well.

1 This paper is based on my dissertation project at the university of Bonn (department of constitutional, social and economic history, doctoral adviser: Prof. Dr. Günther Schulz). It also modifies and expands (especially in relation to the environmental impacts) my unpublished paper presented on 19 September 2008 at the Advanced Seminar 2008 of ESTER (European Graduate School for Training in Economic and Social-historical Research), "Industrial History, Industrial Culture: Representations—Past, Present and Future," at Swansea University, Wales.

2 See for example Sebastian Conrad, *Globalisation and the Nation in Imperial Germany*, trans. Sorcha O'Hagan (Cambridge: Cambridge University Press, 2010) and Niels P. Petersson, "Das Kaiserreich in Prozessen ökonomischer Globalisierung," in *Das Kaiserreich transnational: Deutschland in der Welt 1871–1914*, ed. Sebastian Conrad and Jürgen Osterhammel (Göttingen: Vandenhoeck and Ruprecht, 2006).

3 A comparable example can be seen in Hallas's study of the North Yorkshire Pennines. Christine Hallas, *Rural Responses to Industrialization: The North Yorkshire Pennines 1790–1914* (Bern: Peter Lang, 1999).

4 Jan Ludwig, *Blei, Zink und Schwefelkies: Erzbergbau im Sauerland 1740–1907* (Bochum: Deutsches Bergbau Museum Bochum, 2010). My dissertation may be referred to for more information and documentation on topics discussed in this text when no other references are provided.

In pre-industrial times, the ore mines situated in the Sauerland district were mostly of local or regional importance.[5] Starting in the first half of the nineteenth century, some of these ore mines and the corresponding processing plants and smelting works developed into reasonably successful industrial mines. As a consequence of the more limited ore resources available—primarily local and relatively small deposits—these mines did not constitute a (self-contained) ore-mining district or create a predominantly industrial landscape such as in the adjacent Ruhr district. However, some of the villages and small towns in the Sauerland district developed into "isles of industrialization" during the nineteenth century as a result of ore mining. The more localized structure of the ore deposits of the Sauerland district in comparison with the large ore deposits (bonanzas) or the huge coal fields in the Ruhr district (or in other industrial regions based on coal mining) was the geological cause of this development. But industrialization was not limited to building factories, mines, processing plants, and smelting works. Changes in the local economy also generated a particular social and cultural structure in these settlements. In some cases, miners from outside the region were hired, creating a separate community of industrial workers in these villages.

Another consequence of mining is the impact on the environment, which occurs even in the case of relatively small-scale mining. In the Ramsbeck district, this resulted in a situation that is particularly interesting for research, namely the conflict between two economic interests: ore mining on the one hand, and farming on the other. Especially in "isles of industrialization," this conflict is more balanced than in large industrial regions where industry is much more dominant. Pre-industrial societies often had a traditional balance between different branches of the economy. Each branch had traditional rights concerning the use of the environment in particular. The growing mining sector had to respect these rights to avoid conflicts. But of course this wasn't completely possible.[6]

5 For more detail, see Wilfried Reininghaus and Reinhard Köhne, *Berg-, Hütten- und Hammerwerke im Herzogtum Westfalen im Mittelalter und in der Frühen Neuzeit* (Münster: Aschendorff, 2008).

6 Ulrike Gilhaus, *Schmerzenskinder der Industrie: Umweltverschmutzung, Umweltpolitik und sozialer Protest im Industriezeitalter in Westfalen 1845–1914* (Paderborn: F. Schöningh, 1995), 50f.; Ludwig, *Blei, Zink und Schwefelkies,* 132.

Mining and Smelting in Ramsbeck through the Mid-Nineteenth Century

To show such a typical conflict and especially the development of such an isle of industrialization, this paper focuses on the industrial development of Ramsbeck, a small village in the Sauerland district about one hundred kilometers away from the Ruhr district.

Ramsbeck is located south of the river Ruhr—in the area of Ramsbeck, the Ruhr is only a creek or relatively small river—and the only town (relatively) nearby likely to have been known outside of the region is Arnsberg, which had been the seat of the Prussian government of the Sauerland district since 1816. Like other parts of western Germany, the Sauerland district had become part of Prussia in 1815 as a consequence of the victory of Prussia and its allies over Napoleon Bonaparte. In their new territories, the Prussian government wanted to improve the industry and the economic capability in general so as to benefit the Prussian state. The development of mining in Ramsbeck in the early nineteenth century must be seen in view of this fact.[7]

Before the industrial development in the nineteenth century, Ramsbeck was only a small village, with small-scale ore mining for lead and silver and small smelting works. During early modern times, these smelting works had gained some importance for the territorial state, Kürköln, to which Ramsbeck then belonged. But during the eighteenth century it was of only minor importance for the region. The mines and the smelting works were therefore sold to members of the local nobility, but their attempts to develop the mining activities at Ramsbeck into a profitable business were mostly unsuccessful.[8] At the beginning of the nineteenth century, therefore, there was no economic or social structure which could be considered "proto-industrial" and upon which later industrial development could have been based. At the onset of industrialization only the deposits had been investigated to some extent.

This was the situation when the Ramsbecker Gewerkschaft started to develop the mines at Ramsbeck in 1812. The Ramsbecker Gewerkschaft was a medium-sized regional company organized according to mining law. The Ramsbecker Gewerkschaft was in some respects comparable to a stock company (the shares of a Gewerkschaft

7 See Ludwig, *Blei, Zink und Schwefelkies,* 151f., 384 for further references.
8 See Ludwig, *Blei, Zink und Schwefelkies,* 74–93.

were special mine share certificates called *Kuxen*) but more restricted by mining law and mining administration than a stock company. During the 1830s Joseph Cosack, a dynamic businessman from Arnsberg, acquired the majority of the *Kuxen* of the Ramsbecker Gewerkschaft and created long-term plans for expanding the mining activities in and around Ramsbeck. One aspect of his strategy was the improvement and the construction of new mining facilities. For example, he rebuilt the lead smelting works in 1835 because the old one wasn't state-of-the-art anymore. Another example of his activities was the construction of a second processing plant. This project offers a particularly good example of the conflict between the growing mining industry in Ramsbeck and the farmers in the neighborhood.

To understand the conflict, it is necessary to point out some technical facts about mining and of the processing of ore in particular. Ore deposits in general consist of various kinds of ore, with varying amounts of metal in relation to impurities. Some kinds of ore require only a small amount of manual preparation before they can be used in the smelting works; the majority of the ore smelted in Ramsbeck until the first half of the nineteenth century was of this type. Workers at the dumps near the adits (horizontal entrances to underground mines) crushed the ore by hand and separated the waste rock. The crushed ore was then smelted.

Other kinds of ore, in which the valuable metal is mingled more closely with the waste rock, couldn't be prepared by hand. To use this ore (called "Pocherz"), processing plants were necessary (and still remain so in operating mines today). Processing plants can be built in various technical designs; in Ramsbeck, stamp mills ("Pochwerke") were used in combination with settling ponds where the metal particles could be separated out. The first processing plant in Ramsbeck was built in 1825 and a second one in 1840. The conflict potential of the processing plants in Ramsbeck was the sewage which streamed out into the creek. Because the crushing mills needed hydropower and water from the ponds to work, the processing plants were situated on the Valme, the small creek which flows through the Ramsbeck valley.

Conflicts between farming on the one hand and mining (or industry in general) on the other may be based on the question of energy. This was a problem especially when it was not possible to supply the growing demand for energy with steam engines, with the result that all economic branches depended on the limited resource of hydropower. In

Ramsbeck this wasn't the problem, because only a few mills existed in the Valme valley.[9] Instead of grain farming (with their accompanying demand for flour mills, which need hydropower to work), the valleys around Ramsbeck were used for dairy farming. The dairy farmers weren't interested in water energy in this case, but in clean (one might also say "unleaded," since lead was one of the primary water pollutants produced by the mines) water to irrigate their meadows. Therefore the Ramsbecker Gewerkschaft had to keep periods of inactivity (called "Stillstandszeiten") when the meadows were being irrigated. Unfortunately for the mining operation, the periods of inactivity of the two processing plants weren't the same. The older processing plant had to keep a period of inactivity during April and June, the newer one from 15 April to 15 June. So the Ramsbecker Gewerkschaft couldn't prepare the ore at a constant rate because there were times when neither of the processing plants were in operation. This created a significant obstacle to supplying the smelting works steadily with prepared ore.[10]

The argument for this restricted operating license was the fact that the farming interests were strong enough to assert their traditional claims. The mining industry in Ramsbeck, which was still in its infancy at the time, was expected to prevent any environmental impact—at least in theory. In reality, however, by the 1840s the environmental impact was already quite high. Indeed, downstream from the mills the environmental impact in the Ramsbeck valley was greater than in many areas in the Ruhr district during the same period, and the Valme was one of the significantly polluted waters in Westphalia at this time.[11]

The concession made by the processing plants of limiting their periods of operation is just one example of the restrictions to which the early industrial mining industry in Ramsbeck were subject. Cosack was not only the majority shareholder of the Ramsbecker Gewerkschaft but also their commercial manager. He had plans for installing an industrial cluster in Ramsbeck which would be his property alone. With the aid of a complex strategy he tried to squeeze out the other shareholders of the Ramsbecker Gewerkschaft.[12] But their interests, combined with the restrictive mining laws, hindered

9 Before the second processing plant was built, one opponent to the project voiced the concern that mills would no longer have enough water energy once the processing plant was in operation. The mining administration overruled this objection by arguing that this fear was unfounded. See Ludwig *Blei, Zink und Schwefelkies,* 131 and Gilhaus, *Schmerzenskinder der Industrie*, 45.

10 Gilhaus, *Schmerzenskinder der Industrie,* 35f., 39; Ludwig, Blei, *Zink und Schwefelkies,* 129–32.

11 Gilhaus, *Schmerzenskinder der Industrie*, 76f.; Ludwig, *Blei, Zink und Schwefelkies,* 132.

12 I have examined Cosack's strategies in more detail in Ludwig, *Blei, Zink und Schwefelkies*, 135–42.

him in realizing his complete strategy. It wasn't until 1851 that the restrictive mining law was replaced by new regulations that favored the mine owners.[13] As a result of these circumstances, Cosack prepared Ramsbeck for the industrial take-off but failed to make it a reality in the 1840s.

The Investment of a New Company and the "California in the Sauerland" in the 1850s

But the mining activities were developed enough that from the 1840s onwards foreign entrepreneurs and stock corporations became interested in the ore deposits of Ramsbeck. The general industrial take-off in central Europe generated a rapidly growing demand for lead and zinc; Ramsbeck had deposits containing both. Zinc became an important raw material in the middle of the nineteenth century as techniques requiring zinc were developed to galvanize steel and to protect steam engines from rust corrosion. Before this technical development, zinc ore had no important role in Ramsbeck and only became relevant from around 1850 onwards.[14]

The enterprises that were interested in Ramsbeck were mostly financed by investors from France and Belgium, a typical situation for the western German mining sector at this time of early industrialization.[15] The Ramsbecker Gewerkschaft and several smaller companies operated lead and zinc mines in Ramsbeck for a number of years, until the "AG für Bergbau und Zinkfabrikation zu Stolberg" (Stolberg Mining and Zinc Manufacturing Company) bought the mines in 1853 and consequently changed its name to "AG für Bergbau, Blei- und Zinkfabrikation zu Stolberg und in Westphalen" (Stolberg and Westphalian Mining, Lead, and Zinc Manufacturing Company). The company was headquartered in Stolberg near Aachen in the far west of Germany at the border with the Netherlands and Belgium. It was founded by a French entrepreneur, Henri Stephan Bernard, the Marquis de Sassenay.[16]

13 Until the early 1850s, the mining sector was heavily regulated by the state ("Direktionsbergbau"). In the 1850s, the mining sector—along with economic legislation in Prussia in general—was liberalized and the administration was reduced to an inspection authority ("Inspektionsbergbau"). See Ludwig, *Blei, Zink und Schwefelkies,* 69–73 for further references to this topic.

14 See Ludwig, *Blei, Zink und Schwefelkies,* 55f., 141 (with further references).

15 See Rondo E. Cameron, *France and the Economic Development of Europe 1800–1914* (Princeton: Princeton University Press, 1961); M. Anna Victor Devos, *Kapitalverflechtungen in der Montanindustrie zwischen dem westlichen Deutschland und Belgien von etwa 1830 bis 1914* (PhD diss. University of Bonn, 1986).

16 See Devos, *Kapitalverflechtungen*, 266; Cameron, *France and the Economic Development of Europe,* 377–80 and Ludwig, *Blei, Zink und Schwefelkies,* 193–207.

The executive board hoped to make a big fortune in Ramsbeck. In part this hope was based on the prospering market of zinc and lead.[17] In addition, the deposits were thoroughly investigated and the company obtained a positive assessment from Heinrich von Dechen, a famous geologist and director of the chief mining authority. The chairman of the supervisory board, the French industrialist and financier Andre Koechlin, and the director general, the Marquis de Sassenay, advertised their goal of creating a European industrial center in and around Ramsbeck. An example of their advertising was an article in the *Journal des Chemins de Fer* on 27 August 1853. In it, de Sassenay described the industrial importance Ramsbeck could develop. The public announcements of prospective output figures were beyond all realistic calculations. The prime target of the decision makers was stock speculation; Koechlin and de Sassenay largely profited from under-the-counter sales of shares.[18]

Workers' Settlements in the Rural Landscape around Ramsbeck

Although Koechlin and de Sassenay were ultimately interested in stock speculations, they built a large number of technical facilities in Ramsbeck and in the surrounding valleys between 1853 and 1855.

As mentioned above, the processing plants depended on hydropower, so it was necessary to build them not only on the Valme in the Ramsbeck valley itself, but also in the valleys around Ramsbeck, because much more power was required than the Valme alone could provide. Because the processing plants had to be distributed along the creeks in order to have an effective incline for each waterwheel and hydraulic turbine, it was impossible to settle all the dressing workers at one location. The distances between the dressing plants were too great, and the area of Ramsbeck wasn't easily accessible: it was very laborious for workers to live in one valley and work in another one. Thus, a very small settlement consisting of only one or two houses developed next to nearly every dressing plant for the workers. These settlements might be regarded as a sort of "scattered" industrialization inside the Ramsbeck region. But there were larger settlements of up to 1,500 inhabitants,

17 In addition to the rising industrial zinc production, lead had leapt dramatically in value in western Germany at this time. See Ludwig, *Blei, Zink und Schwefelkies,* 201.

18 Ludwig, *Blei, Zink und Schwefelkies,* 203–12, 252–54; Jean Baptist Maas, *Actenmäßiger Thatbestand in der Proceßsache der Actien-Gesellschaft für Bergbau, Blei-und Zink-Fabrication zu Stolberg und in Westphalen gegen die früheren Administratoren und den früheren General-Director dieser Gesellschaft* (Cologne: Verlag Du Mond-Schauberg, 1863), 55–61.

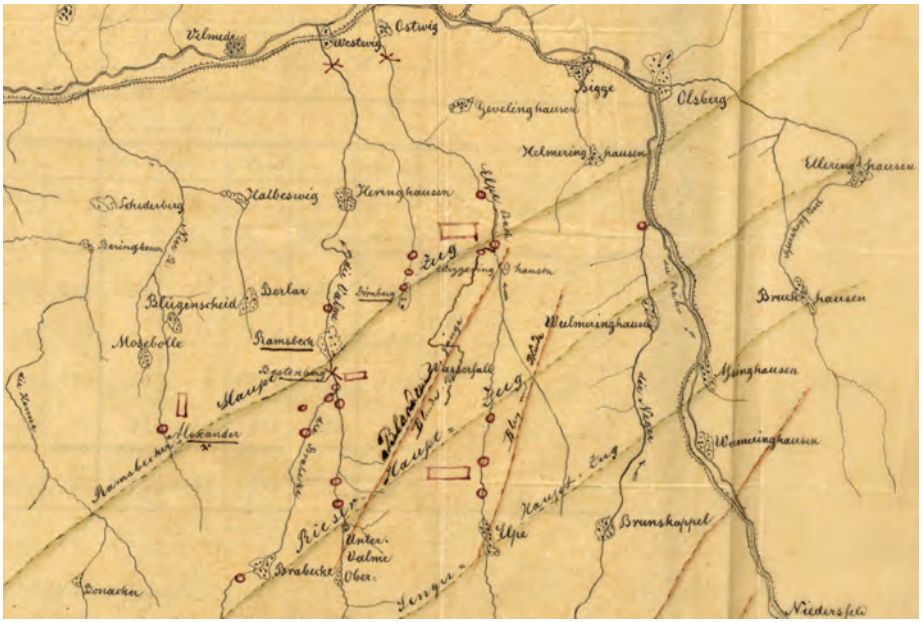

Figure 1: Map of the expansion project in the Ramsbeck district 1854/55. Ramsbeck is underlined (in the middle of the left half of this map). Projected new or enlarged lead smelting works are marked with an **X**, processing plants with an **O**. The newly built workers' settlements are marked with **□**. (Source: Landesarchiv NRW, Abteilung Rheinland, BR 0005 Nr. 7965, Bl. 354)

too. Because they often used only a few adits of each mine, the company could concentrate the miners at only a few points, and so Koechlin and de Sassenay built two major workers' settlements near Ramsbeck. They named these settlements Andreasberg (from the German spelling of Andre Koechlin) and Heinrichsdorf (after the German spelling of Henri Bernard).

In the autumn of 1854, the executive board hired foreign workers from traditional ore-mining districts in Germany because there weren't enough experienced workers in and around Ramsbeck for their ambitious expansion project. Hundreds of workers and their families came from the Harz Mountains and from Saxony, simply because they trusted the "official" promises they could read in printed advertisements. The executive board guaranteed them work for themselves as well as for their wives and children and adequate domiciles—these were traditional rights of miners in their native regions, especially in the Harz Mountains.[19] In the time that followed, however, the company was not able to fulfill any of these promises. In order to rapidly hire a huge

19 See AG für Bergbau, Blei- und Zinkfabrikation, *Nachrichten über den Bergbau zu Ramsbeck* (Clausthal, 1854); Ludwig, *Blei, Zink und Schwefelkies*, 230–41.

number of workers, the company had made promises that were too optimistic and the immigrant workers were too credulous.[20]

It is interesting that the executive officers promised that the two workers' settlements would have some characteristic elements of the traditional mining district of the Harz Mountains. For instance, they promised the immigrant workers lifelong employment and financial support when they were no longer able to work. This was comparable to traditional benefits in the Harz Mountains. Other promises of this character were that they would get food at cost from the warehouses of the company and that the new settlements would possibly develop into "Bergstädte" (mining towns that enjoyed a special status and certain privileges from the government). Hans Schönian, a former machine builder in Clausthal in the Harz Mountains, and at that time the chief technology officer in Ramsbeck, used this designation to get the attention of the miners in the Harz Mountains.[21] Additionally, the name of the settlement where the miners from the Harz Mountains were to live, Andreasberg, was almost identical to the name of a traditional mining town in the Harz Mountains, St. Andreasberg.

But the two new workers' settlements weren't really similar to mining towns of early modern times. In reality they were comparable to industrial settlements in other mining districts in remote rural regions and to "Zechensiedlungen" (miners' settlements) in the Ruhr district. In the Ruhr district, the only settlement established earlier than Andreasberg and Heinrichsdorf was Eisenheim in Oberhausen. In this regard especially, Andreasberg, a planned village built along either side of the main road, was a pioneering project.[22]

The Dream of "California in the Sauerland" 1854/55

Hans Schönian advertised the new settlements by comparing them not only with the Harz Mountains, but also with another area: California and its goldfields. California was another popular destination of emigrants at that time. In contrast to California, Schönian promised that Ramsbeck would be a safe place for immigrants.[23] This

20 Ludwig, *Blei, Zink und Schwefelkies,* 246–51.
21 Announcement about wages, cited in the *Nachrichten über den Bergbau zu Ramsbeck* published by the AG für Bergbau, Blei- und Zinkfabrikation, 10.
22 See Ludwig, *Blei, Zink und Schwefelkies,* 233–38 for further references.
23 *Nachrichten über den Bergbau zu Ramsbeck,* 6–7.

comparison with California is an example of the perception of the spectacular progress in Ramsbeck. Other public reactions were similar.

Most importantly, a journalist from a Berlin newspaper, the *National-Zeitung,* made a reference to the California Gold Rush. In January 1855 he titled an article about Ramsbeck "Kalifornien im Sauerlande" (California in the Sauerland district).[24] The article reflected the general spirit of optimism in the early 1850s, not only in Ramsbeck and the Sauerland district, but also from a European and a global point of view. This is important in order to understand why hired workers and investors in the company trusted the promises of the management. The spirit of the times favored such rush phenomena; the gold rushes in California and Australia around 1850 are well-known examples.[25]

Especially in light of the regional development, the euphoria relating to Ramsbeck was comprehensible. The industrial take-off of the economy of western Germany (Rhineland and Westphalia) began around this time. In Ramsbeck, both the investors and the miners hoped to become part of this boom. But those who stood to make a direct profit, such as the investors and the miners, weren't the only ones to trust the promises of de Sassenay and Koechlin. The local and regional authorities also took part in this development. So the public reaction to Ramsbeck was interest, especially because of the hope that an increase in mining and lead production in Ramsbeck—the zinc ore, on the other hand, was to be smelted in Dortmund in the Ruhr district—would allow the remote rural region of the Sauerland district to be developed. Success in Ramsbeck would mean the creation of a lot of additional jobs in the rural area, jobs for cart drivers and barkeepers, bakers and butchers, for example. Success would mean the possibility of attracting a railway company to connect Ramsbeck and the Sauerland district with the Ruhr district. Thus the journalist didn't see fit to criticize this development; his only criticism was directed towards laggards who wanted to hold back the spirit of the industrial times. He was enthusiastic about "the wonderful Californian development" of Ramsbeck and expressed his attitude to the industrial development several times.

24 *Berliner Nationalzeitung,* 16 January 1855. This article was also published in the *Siegener Intelligenz-Blatt,* a more regional newspaper, a few days later (Siegen is a traditional mining and smelting town south of the Sauerland district), see *Siegener Intelligenz-Blatt,* 26, 28, and 30 January 1855.

25 For examples see David Goodman, *Gold Seeking: Victoria and California in the 1850s* (Stanford, CA: Stanford University Press, 1994); J. S. Holliday, *Rush for Riches: Gold Fever and the Making of California* (Berkeley: University of California Press, 1999); and Malcolm J. Rohrbough, *Days of Gold: The California Gold Rush and the American Nation* (Berkeley: University of California Press, 1998). Another example of this zeitgeist may be the Great Exhibition in London 1851.

To awaken the interest of the newspaper readers he put his article into the form of a travel report. He opened the article with questions: "Ramsbeck? What's Ramsbeck? Where is Ramsbeck? . . . What [sort of place] might Ramsbeck be, that they need so much coal, so many potatoes and so many workers?" He thus demonstrated that Ramsbeck wasn't yet common knowledge among his readers. Sometimes he used a pictorial narrative, similar to a fairy tale: "The rich industrial life is sending a new artery into the lonely wooded valley to pull it out of the romance of abandoned castle ruins into the heart of modern commerce." At other times he gave output figures as though they were objective descriptions—although the figures he gave were exaggerated: "The company will . . . launch 900,000 cwt of lead per annum with a value of 5.4 million thaler. The previous Prussian production of lead was 120,000 cwt per annum; this company alone hopes to boost the Prussian lead production more than sixfold!"[26]

The first two citations show another aspect typical of rural regions of this time: the hope that a railway would develop the formerly remote region. Many rural regions wanted a railway connection to industrial districts, but only a few actually got one. Ramsbeck was over 40 kilometers away from the next railway station in Lippstadt, west of Paderborn, and so it was comprehensible that the journalist had never heard of Ramsbeck before or—as he reported—was unable to find it on a map. He expected a connection between Ramsbeck and other prospering areas in Westphalia (i.e., the Ruhr district) to be a consequence of the increasing mining and smelting activities in the Ramsbeck district, since a railway connection was important for developing industrial areas. Years later it became clear that there would never be an important rail route; a small industrial railway was only constructed at the end of the nineteenth century.[27]

His enthusiastic article ended with a last mention of California. From his point of view, the development in Ramsbeck was not only a "wonderful Californian development" but also directly financed by the Californian and Australian gold rushes.[28] He argued that the enormous wealth of gold—which circulated into the European economy as a consequence of these gold rushes—was searching for lucrative investments, and that Ramsbeck was one of the investments financed by this foreign capital. Indeed, it was

26 *Berliner Nationalzeitung,* 16 January 1855. Translated by the author.
27 Ramsbeck did not get a connection to the German rail network until 1897, when a narrow-gauge mine railway connected Ramsbeck with the railway station at Bestwig, seven kilometers north in the Ruhr valley (the station itself wasn't opened until 1872). See Ludwig, *Blei, Zink und Schwefelkies,* 233–38.
28 *Berliner Nationalzeitung,* 16 January 1855. Translated by the author.

Figure 2: Illustration of the "California in the Sauerland." Around 1960, unknown artist. (Source: Private ownership, Alfred Braun)

foreign capital which allowed Koechlin and de Sassenay to make such big investments in Ramsbeck. But this capital was generated by the previous economic development in France and Belgium, and not predominantly by Californian gold.

Indeed, some features of Ramsbeck are reminiscent of the Californian Gold Rush from 1848 to 1855. The kind of overhasty actions and the euphoria of the investors and miners were similar to California, although on a smaller scale. It was also comparable in that the real profits at the end weren't made by enlisted workers from far away but by local marketers and especially the speculators in the background.[29]

Awaking from the Dream—the Reality in "California in the Sauerland" 1855

Initially the Ramsbeck district was only attractive for immigrants because of the hope of getting well-paid employment at the mines and smelting works. The company therefore searched for strategies to retain their employees for the long term so that they wouldn't emigrate once again if they saw a better option somewhere else. Some options for this purpose were the promises mentioned before. Another strategy was home ownership by the workers in the Ramsbeck district. Accordingly, the workers

29 See for example Holliday, *Rush for Riches,* 69–71.

were given the opportunity to cheaply purchase the houses that they had initially rented.[30] Over the long term this strategy was extremely successful.[31]

But the first two winters were disastrous for such ambitions. The inhabitants became ill due to the drafty and damp domiciles, because the houses were built imperfectly.[32] Following the catastrophic winter of 1854/55, part of the (immigrant) workers emigrated (again). Others stayed in and around Ramsbeck and became an industrial workforce in the rural region. After the reorganization of the company in 1855—president Koechlin was forced to resign as a consequence of the failed stock speculations, and director general de Sassenay disappeared to Naples before he was put on trial—the ore mining changed from a pseudo-take-off into a real take-off, but with realistic, non-Californian dimensions, and there was a real need for the workers.

Public opinion changed after the resignation of de Sassenay and the other directors of the Ramsbeck establishment. After the regional government recognized that it was mostly a scam, they too used the comparison with California to describe the situation in Ramsbeck, but with a negative connotation. In April 1855 they denounced the "magnificence of the so-called Westphalian California" ("Herrlichkeiten des sog. Westfälischen Kaliforniens").[33]

Not only Koechlin and de Sassenay were blamed for being responsible for the disaster in Ramsbeck; the local officers of the company were blamed as well. The debate focused on Philipp von Beust, the CEO of the Ramsbeck mines, and Chief Technology Officer Hans Schönian. Both reacted to their loss of position with public statements that the rush in Ramsbeck and the following disaster hadn't been their fault.[34] For his part, von Beust accused de Sassenay, Koechlin, and a member of the supervisory board. He showed that they induced him to build such a large number of unnecessary preparation works and furnaces. He described the situation in Ramsbeck as such a catastrophe that a reader may well wonder why he didn't throw in the towel earlier. Nevertheless his

30 *Nachrichten über den Bergbau zu Ramsbeck*, 10.
31 See Ludwig, *Blei, Zink und Schwefelkies,* 280.
32 See for example Landesarchiv NRW, Abt. Westfalen, Kreis Meschede 3302.
33 Landesarchiv NRW, Abt. Rheinland, Regierung Aachen 7966, folio 121–22r.
34 Philipp von Beust, *Die Actien-Gesellschaft für Bergbau, Blei- und Zink-Fabrikation zu Stolberg und in Westphalen: Abtheilung Ramsbeck im Jahre 1854–55* (Soest, 1855); Hans Schönian, *Das Bergbau-Unternehmen zu Ramsbeck in Westphalen im Jahre 1854* (Nordhausen: Eberhardt, 1855). For some citations of their public defense statements, see Ludwig, *Blei, Zink und Schwefelkies*, 224–26.

attempt was successful: neither von Beust nor Schönian were among the accused in a later trial against the former members of the supervisory board and the director general. The prolonged lawsuit ended with a printed report which exposed the kind of stock-market speculations Koechlin and de Sassenay engaged in and the state of anarchy that had prevailed in Ramsbeck.[35]

The Real Take-off after 1855

All expectations of a colossal industrial take-off in Ramsbeck had now been destroyed. But with the new administration came a significant upturn in Ramsbeck: the ore mining activities increased for a long period and continued to be the most important local employer until the end of mining activities in Ramsbeck in 1974. In contrast to the Ruhr district nearby, the mining activities in the Sauerland district didn't create an industry-dominated economic structure and an industrial culture that spanned an entire region. Many locations like Ramsbeck only created "isles of industrialization" in a region that continued to be essentially rural.[36] Ramsbeck became a small industrial cluster with ore mines surrounded by industrial facilities as well as lead smelting works. As the map of 1872 shows (fig. 3), the village of Ramsbeck was extended with several industrial buildings. Additionally, nearly ten of the more than twenty ore-preparation facilities that were constructed prematurely during the "California in the Sauerland" rush were genuinely needed in the time after 1855 because of the real take-off then.[37]

Furthermore, Ramsbeck itself was part of a greater industrial cluster. As mentioned above, the zinc ore from Ramsbeck was smelted in Dortmund. In addition to the smelting works there, the company owned a coal mine which supplied the lead and zinc smelting works in Ramsbeck and Dortmund with coal. The facilities for producing higher-valued products such as zinc-based glass from the raw metals were located in Stolberg near the corporate head office.[38] Thus Ramsbeck mostly continued to have the status of a mono-structured mining area which supplied outside industrial areas with zinc ore and lead.

35 Maas, *Actenmäßiger Thatbestand in der Proceßsache.*
36 Cf. Georg Goes, *Arbeitermilieus in der Provinz: Geschichte der Glas- und Porzellanarbeiter im 20. Jahrhundert* (Essen: Klartext, 2001); Klaus Tenfelde, *Proletarische Provinz: Radikalisierung und Widerstand in Penzberg/Oberbayern 1900–1945* (Munich: R. Oldenbourg, 1981).
37 See Ludwig, *Blei, Zink und Schwefelkies,* 270–72.
38 See the Statues of the Aktien-Gesellschaft der Aachener Spiegelmanufaktur, 1853. Accessed at http://commerce01.doshisha.ac.jp/statuten/pdfdata1/18510122AGASM_A.pdf.

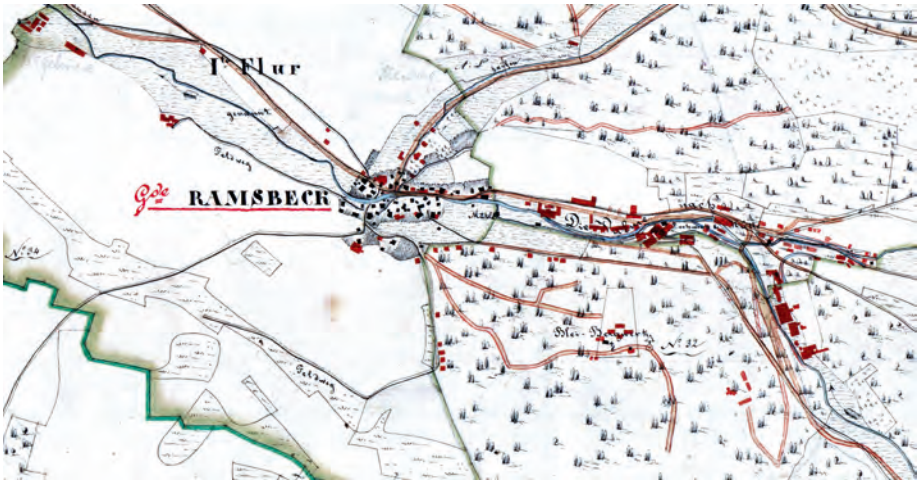

Figure 3: Map of Ramsbeck, 1872. The buildings older than 1827 are represented in black, the predominantly industrial buildings which were built from 1827 to 1872 are represented in red. (Source: Hochsauerlandkreis FD 55 Geoinformationen und Liegenschaftskataster)

The Environmental Impact since the Industrial Take-off

Nevertheless, the impact of mining activities on the landscape was even more appreciable than before in the Ramsbeck district. The meadows in the narrow valleys in particular were burdened with lead from the dressing plants to a greater extent than during the time of the Ramsbecker Gewerkschaft in the first half of the nineteenth century.

Around 1860, though, more than one thousand miners and other workers were employed in the mines, the processing plants, and the lead smelting works. Additionally, their wives and children had jobs in the preparation works.[39] Compared to the few jobs in dairy farming or forestry (and in contrast to the situation before 1850), the Ramsbeck mines became the primary employer in the area from the 1860s. As a result, the balance of power between farming and mining changed; the Ramsbeck mining district now dominated the local economy.[40]

The system of periods of inactivity during the times when the meadows were being irrigated was anachronistic now. An industrial cluster like Ramsbeck couldn't maintain this system: it would create such significant operational restrictions that the competing

39 See Ludwig, *Blei, Zink und Schwefelkies*, 269.
40 See Gilhaus, *Schmerzenskinder der Industrie*, 56, 77, and *Ludwig, Blei, Zink und Schwefelkies*, 281.

power of the whole company would be at risk. The continuity of the company and its function as the predominant local employer were strong arguments made by the company for abolishing the old system step by step. In 1857/58 the company reached an agreement that the periods of inactivity were to be harmonized for all processing plants. Following the introduction of a new Prussian mining law (the Allgemeines Berggesetz für die preußischen Staaten) in 1865, which was more liberal than previous mining regulations, the company managed to have the restrictions completely abolished.[41]

Figure 4: Photograph of measuring haystacks around 1900. The left haystack is from an unfertilized field, the right haystack from a fertilized one. (Source: Sachtleben Bergbau Verwaltungs-GmbH)

Instead of the system of periods of inactivity, another system to balance out the continual conflict between dairy farming and mining was used from that point on: the system of equalization payments. This system was based on the realization that while it wasn't possible to prevent the environmental impact anymore (it hadn't really been possible since the first processing plant was opened, but it was crucial that the mindset had changed), it was possible to offer compensation for the negative impact.[42]

The company therefore had to find out how much (financial) compensation they had to pay to the farmers. They measured the impact of lead on the meadows by measuring haystacks: one from a meadow which was watered with brook water polluted by the processing plants

41 See Gilhaus, *Schmerzenskinder der Industrie*, 57f., and Ludwig, *Blei, Zink und Schwefelkies*, 281f.
42 See Gilhaus, *Schmerzenskinder der Industrie*, 51, and Ludwig, *Blei, Zink und Schwefelkies*, 132.

and one from an "unleaded" meadow as a control. The meadow with the lead-carrying water was separated into several sections, each of which was fertilized with different quantities of fertilizer (Chilean saltpeter, lime, kainite, and others). The company then looked at the quantity of hay to see what quantity of mineral fertilizer was needed to compensate for the impact of the lead-laden water. Finally the price of the fertilizer was calculated; this sum was the annual equalization payment. To give a concrete example: in 1906 the calculated equalization payment in one case was around 360 marks.[43]

Figure 5: Picture of the south part of the Ramsbeck valley, early twentieth century. The building in the right half is the part of the smelting works of Ramsbeck where the ore was roasted ("Rösthütte"). As the picture shows, the smelting works had a high chimney, too. The smoke exhaust duct from the "Rösthütte" to the mountain on the right side can't be seen in this picture; however, it appears in the left part of figure 2 (Source: *Chronik der Familie J. Cosack*, 1913)

Legal processes between the owners of the meadows and the Ramsbeck mines with equalization payments as a result are mostly documented for the period around 1900. It is unclear whether this is just because earlier documents are lost, or because of the improved technical capabilities to measure the need for fertilizer.

Another environmental impact of the Ramsbeck mining industry was the smoke pollution from the ore roasting process, especially zinc ore: it was necessary to roast

43 The relevant sources are records of the Ramsbeck mines which are now property of the Sachtleben Bergbau Verwaltungs-GmbH. The document in which the system of measuring the haystacks and the experiments with fertilizers are described is recorded for the Sachtleben Bergbau Verwaltungs-GmbH in 2010 under the signature 1105; compare Ludwig, *Blei, Zink und Schwefelkies,* 438.

zinc ore and reduce the sulfuric parts of the ore before it was usable in the smelting works. The smoke pollution wasn't such an important area of conflict as the water pollution; nevertheless during the time of "California in the Sauerland" in the 1850s the enterprise was required to build a smoke exhaust duct from the smelting works in the Ramsbeck valley to a chimney on a mountain nearby to keep the smoke out of the valley.[44]

Conclusion

The history of mining in Ramsbeck in the nineteenth century is one example of mining in a rural environment. It shows typical aspects like the development of a small industrial cluster, as well as special phenomena like the rush phenomena of the "California in the Sauerland." Nevertheless, these phenomena should also be considered in relation to the greater historical background; the developments in Ramsbeck were simultaneous with the California Gold Rush, for example.

The development of Ramsbeck is not unique. In some aspects it was the typical response of a small, remote rural region to an external demand for raw materials. Spectacular examples like that of Ramsbeck, with exorbitant promises at the beginning and modest actual growth in comparison with the earlier hopes, may be found in a number of mining areas. It is important to situate such a development in its historical context. In the case of Ramsbeck, the contemporary reference to the Californian Gold Rush is important. This may be one way to explain why so many people—workers, journalists, the government, and some of the executive officers of the company—believed the promises they heard. By studying other locations—there are further examples in the Sauerland district—it is possible to differentiate between developments particular to Ramsbeck and general aspects of industrialization in rural environments. For example, when looking at Iserlohn, a town with a long tradition of metalworking industries in the west of the Sauerland district, it becomes clear that there was a take-off in the 1850s there too.[45] But in Iserlohn local investors were involved and prevented an irrational "Californian" rush after the fashion of Ramsbeck.

44 See Gilhaus, *Schmerzenskinder der Industrie,* 171, and Ludwig, *Blei, Zink und Schwefelkies,* 282.

45 See Wilfried Reininghaus, *Die Stadt Iserlohn und ihre Kaufleute (1770–1815)* (Dortmund: Gesellschaft für Westfälische Wirtschaftsgeschichte, 1995); Rolf Klostermann, *Der Bergbau in Iserlohn in der zweiten Hälfte des 19. Jahrhunderts* (Schacht-Audorf: Köller, 1996); Ludwig, *Blei, Zink und Schwefelkies;* Landesarchiv NRW, Abt. Westfalen, Regierung Arnsberg 1113.

From an environmental perspective, too, Ramsbeck shows some typical aspects of the mining industry in rural regions in the nineteenth century. Lead and zinc ore mining had significant impacts on the environment, with the degree of impact dependent on the mining technique. Thus, substantial conflicts arose throughout the nineteenth century and isolated the miners from the farming population. This phenomenon is not present in every rural region with lead production. There are other examples where miners and farmers were closely linked and miners often took up dairy farming as an additional occupation.[46]

But in the case of Ramsbeck miners and farmers were two different groups and the conflict couldn't be solved this way. Both the mining industry and the dairy farmers needed the water of the brooks for their economic interests: The processing plants needed water as an energy source and to separate the metal parts of the ore, while the dairy farmers irrigated their meadows with brook water. Because it was impossible to keep the water in the processing plants clean using the techniques available at the time, and because the dairy farmers needed clean water, this conflict couldn't be solved while taking both interests into account. The environmental impact was unavoidable and the crucial question was how to deal with it.

The development of Ramsbeck shows a general change of mindset regarding the environmental impacts during the industrialization process. The conflict between mining and farming therefore had two stages in Ramsbeck: The pre- and early industrial stage, and the stage following the take-off around 1860.

In the first half of the nineteenth century, the mining sector of Ramsbeck was part of a group of economic interests which had to respect the traditional rights of the other sectors. The mines had to avoid causing a significant impact, especially on the meadows, by limiting their operation in certain places. Periods of inactivity of the processing plants were (in theory) designed to allow dairy farming to irrigate the meadows as before.

By the late nineteenth century, this system was no longer practical; the pollution of the brooks was too great. The farmers received an equalization payment, calculated using the price of fertilizer required to compensate for the impact of the lead-carrying water of the brooks. This aspect may be seen from a more abstract perspective: It

46 Cf. Hallas, *Rural Responses to Industrialization*, 83–149.

became obvious that the environmental impact of the industry couldn't be prevented completely; it was only possible to reduce and compensate for the impact. And the example of Ramsbeck shows one way to measure the environmental impact and give pollution a price.