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Archeologia industriale: ancora una disciplina di frontiera?

Industrial Archaeology: still a frontier discipline?

A cura di
Aldo Castellano
e Luca Mocarelli

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The Ruhr Industrial Cultural Landscape. History, new use and significance

Il paesaggio culturale industriale della Ruhr. Storia, nuovi usi e significati

MARITA PFEIFFER
Stiftung Industriedenkmalpflege und Geschichtskulturl
marita-pfeiffer@t-online.de

NORBERT TEMPEL
Westphalian State Museum of Industry | TICCIH German National Committee
norbert.tempel@gmz.de

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ABSTRACT
The text discusses the industrial cultural landscape of the Ruhr region, highlighting its historical transformation, current use, and significance. The preservation of these landscapes, now obsolete due to economic, social, and cultural changes, presents significant challenges for owners, local authorities, and society as a whole. The basis for conservation is the recognition of the social value of industrial heritage and its importance for future generations.
According to the Faro Convention of 2005, places of memory are not static but dynamic, to be considered as palimpsests in continuous change. The text also emphasizes the ecological importance of preserving built heritage, noting that the renaturalization of the industrial landscape should not compromise its historical integrity.
The Ruhr region, once the heart of the European coal and steel industry, has undergone a profound structural change since the late 1950s. However, thanks to urban renewal projects like the IBA Emscher Park, many industrial sites have been transformed into public, cultural, and residential spaces, while preserving their historical integrity.
In summary, the text underscores how the conservation and enhancement of the Ruhr's industrial heritage have led to significant social and ecological outcomes, serving as an international model for the sustainable management of industrial heritage.

KEYWORDS
Industrial Heritage
Cultural landscape
Renaturalization
Conservation
Sustainable management

The protection of industrial landscapes that have become obsolete due to economic, social and cultural changes confronts owners, local authorities, entire regions and societies with great challenges. The continued existence of these landscapes depends on urban planning and monument preservation concepts, renaturalisation measures, marketing strategies, financial resources and - last but not least - the interests of the owners and the public. The first precondition for preservation is recognizing and defining the social value of the industrial heritage and its significance - also for future generations. Without this knowledge, carrying out demolitions and destroying all traces of industrial activities in the landscape means erasing the history of the industrial age from the map or from the city plan. On the other hand, knowledge of history provides diverse and creative possibilities for the continuous inclusion of tangible and intangible heritage in new developments[1].

According to the Faro Convention, the *Framework Convention on the Value of the Cultural Heritage of Society*, passed by the Council of Europe in 2005[2], the places and landscapes of memory once created are not static, but dynamic; they cannot be «institutionalised in a kind of master narrative (..)"[3]; rather, they are "to be understood as palimpsests (...) like texts that have been overwritten several times and are constantly being overwritten»[4].

In addition - and in times of climate change more urgently than ever - the preservation of this built heritage also makes sense for ecological reasons. As early as the 1990s, scientists at the conference *Das Denkmal als Altlast?*[5] argued in favor of a "repair society" and a "culture of preservation" with a model «that links structural development with issues of maintaining energy, resources and buildings»[6]. They considered it «very likely that the society of tomorrow (i.e. our current society; authors' note) will no longer be able to afford an extensive replacement of the built environment for ecological and economic reasons»[7].

Since the 1990s, concepts for the conversion of industrial buildings have been developed in Germany, particularly in the Ruhr region, to take account of ecological requirements. Comprehensive renaturalisation projects in a landscape that had been shaped and reshaped on a large scale by the coal and steel industry for centuries have also accompanied the structural change. However, the fact that renaturation measures can also threaten the built heritage was already explained by David Blackbourne in 2006 in his highly acclaimed book *The conquest of Nature*[8].

Overall, a careful balancing of the sometimes strongly divergent interests of preservation and renewal is required. The industrial cultural landscape of the Ruhr region and the underlying transformational achievements of recent decades demonstrate that this can lead to considerable results - socially, ecologically and economically[9].

1. The Ruhr Industrial Landscape in the 1920s. Aerial view of the Gutehoffnungshütte Steelworks at Oberhausen (Photo: RVR).

2. Typical situation in the Ruhr region: industry and housing estates are close together - like the "Hüttenheim" settlement next to the HKM steelworks in the south of Duisburg. In the background is the Rhine, an important transport artery for the coal and steel industry (Photo: Hans Blossoy).

The Ruhr region: a brief introduction

The Ruhr coal basin had rich deposits of coking coal, which enabled the rapid rise of the iron and steel industry based on the coke blast furnace process. The region is named after the Ruhr river in the south of the area, where mining once began. Over a period of 150 years, a total of 10 billion tons of coal were mined and at times 500,000 miners were employed in the pits (Fig. 1-4). Since the 1850s, the Ruhr area has developed into the largest coal and steel production region in Europe. A dense network of public railway lines was built, which was supplemented by industrial goods railways (Fig 5). The state also built a network of canals (Fig 6) connecting the Ruhr with the Rhine, Weser and Elbe, and the North Sea. The industrial area on the Ruhr thus benefited from its favorable location at the crossing point of the major European west-east and south-north transport corridors. Due to the massive migration of workers to this previously rural region, the population grew rapidly. It increased twelvefold from the beginning of the 19th century (220,000) to the beginning of the 20th century (2.6 million), reaching a peak of 5.7 million in 1967. The decline of the coal and steel industry from the late 1950s onwards led to the closure of many large industrial plants. In a state of decay, they contributed to the poor image of the Ruhr region. City councils and even the trade unions wanted to remove the sites of hard labor and pollution from the landscape as quickly as possible.
And yet there was resistance - initially in academic circles - to the hasty demolition plans. Social history, the history of technology, industrial archaeology and the preservation of technical monuments were introduced in Germany in the 1970s, particularly in the Ruhr region, where a number of universities and colleges have been founded since the mid-1960s. In addition, there are more than 50 research institutes, some of which have been located in the Ruhr area for more than 100 years and are closely associated with the phase of high industrialization[10]. Together with the universities, they now form "one of the densest and most diverse knowledge landscapes in the world in the Ruhr region"[11].
In the 1970s, industrial archaeologists began to network internationally and learn from each other. The 2nd Ticcih conference was held in Bochum as early as 1975 [Ticcih-The International Committee for the Conservation of the Industrial Heritage]. In the same year, the first European Architectural Heritage Year (Eahy) proved to be an important catalyst for recognizing the benefits of heritage conservation for urban planning and society. Industrial buildings moved into the spotlight. Remarkably, this happened at the same time as the environmental movement ("conservationists") emerged.
Today, at the end of the coal age, the Ruhr region is internationally recognized for:

- a pioneering role in industrial culture,
- scientific research into industrial and labor history,
- the preservation of large industrial sites as monuments and museums,
- the appropriate reutilization of industrial monuments,
- the conversion of large industrial areas into parks (while preserving old structures),
- the preservation and modernization of dozens of workers' housing estates in line with heritage requirements,
- the high level of identification of local people with their industrial history and
- successful tourism marketing through the Route of Industrial Heritage.

For more than 50 years, the heritage of the industrial age in North Rhine-Westphalia (NRW) has been inventoried, researched and maintained. For decades, the focus was on individual industrial facilities such as factories, collieries, coking plants, smelting works or transport structures and their history. In the 1990s, as part of the International Building Exhibition (IBA) Emscher Park, the NRW state government initiated a period of reutilization under the motto "new beginnings instead of demolition". Large-scale industrial facilities were transformed into public spaces, revitalized by culture, education, leisure, sport, housing and commerce. Examples of this include the Meidericher Hütte in Duisburg (Fig. 7-8), the Zollverein colliery and coking plant in Essen, World Heritage Site since 2001 (Fig. 9), the Hansa coking plant in Dortmund and - last but not least - the Gasometer in Oberhausen (Fig. 10), a former gas storage tank that was converted into an architecturally spectacular exhibition hall in the 1990s and has attracted more than

eight million visitors to date. In addition, offices, showrooms, shops, fitness studios, diving centers, restaurants, studios for artists and photographers, spaces for theatre, music, film and, last but not least, flats in the form of lofts still bear witness to the diversity of uses.
The *Route of Industrial Heritage*, which was opened in 1999 and has been successively expanded, has become a Europe-wide model, covering a 400-kilometre touristic circuit with 27 anchor points (industrial monuments), 17 prominent industrial landscape viewpoints and 13 settlements of the industrial age in the Ruhr region, as well as offering numerous thematic routes[12]. As the operator, the Ruhr Regional Association and its partner institutions will celebrate the 25th anniversary of the successful touristic route in 2024.

3. Preserved and roofed archaeological excavation of the 1st blast furnace in the Ruhr area, now part of the Rhineland Industrial Museum. The St. Antony Ironworks was one of the roots of the later Gutehoffnungshütte Group (Photo: LVR-Industriemuseum).

4. In the second half of the 19th century, Malakow towers became widely visible testimonies to underground coal mining. Of the once more than 100 examples, 13 have survived as monuments, such as here at the Hanover Colliery of the Westphalian Industrial Museum (Photo: LWL-Industriemuseen).

5. The first railway bridges over the Rhine were provided with fortifications. These monumental towers of the first Duisburg-Hochfeld railway bridge have been preserved on the west bank of the Rhine (Photo: Norbert Tempel).

Industrial Heritage shaping an entire region to this day

Since the middle of the 19th century, the Ruhr landscape had been radically reshaped by industry from south to north over a period of more than 150 years. In contrast to other old industrial areas, the landscape zones that had become obsolete for industry were not abandoned in the course of this development, but rather re-evaluated and «integrated into the functional unity of the industrial cultural landscape of the Ruhr region»[13]. Industrial buildings, collieries, coking plants and iron and steel works, long since decommissioned and changed in their use, now characterize this landscape in an incomparable way. Due to their large number, their distribution and density in the area, but also due to their typologies and chronological sequence, the surviving mining sites in the Ruhr area are still vivid testimonies to the fact that the Ruhr area has successively developed into the largest coal mining region on the European continent since 1870. The prototypical collieries, such as Zollern (Fig. 11-13) and Zollverein, were far ahead of the British or American coal mines; at their time they were the largest and most advanced collieries in the world.
The immense importance of the production of coke for the production of pig iron - here, too, the Ruhr region has been a leader on the European mainland since 1870 - is still demonstrated today by the Hansa coking plant in Dortmund (1928) (Fig. 14 a/b) and the Zollverein coking plant in Essen (1958) (Fig. 15), if only on account of their large dimensions. There is also significant physical evidence of the fact that the region has been the largest steel producer in Europe since 1900 (and still is very important today). The Meiderich blast furnace works in the Duisburg-Nord Landscape Park (Fig.16-17), the Jahrhunderthalle in Bochum or the Henrichshütte in Hattingen (Fig. 18) symbolize the production of iron and steel on a large scale.

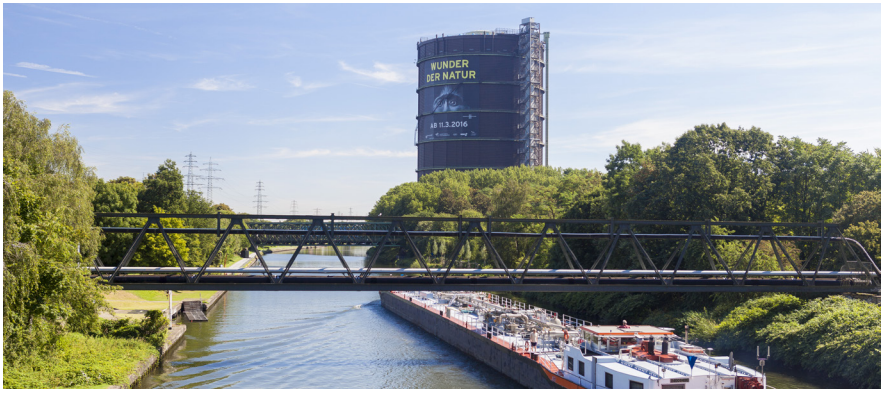
6. The Rhine-Herne Canal and the Emscher run parallel in Oberhausen. The Gutehoffnungshütte gas holder has been transformed into an extraordinary exhibition venue, with the roof offering panoramic views of the industrial landscape (Photo: Hans Blossey).

7. The Meidrich ironworks is artificially illuminated at night (Photo: LaPaDu).

8. The area oft he Meiderich iron works, transformed into an open landscape park, is well accepted by the public (Photo: LaPaDu).

9. The Zollverein colliery with its striking headframe above Shaft 12 has been inscribed on the UNESCO World Heritage List (Photo: LaPaDu).

The industrial housing settlements of the Ruhr region are also of enormous importance. The architectural and urban planning quality and diversity and the large number and scale of housing settlements for miners, iron and steel workers and railway workers are significant evidence of the intensive recruitment of workers from outside the region due to the immense demand in all areas of industry in the Ruhr region (Fig. 19-21).
A precondition for the functioning of the integrated economy of coal, coke, iron and steel was the large-scale industrial transport network, the density of which was unique in Europe in the period from 1850 to 1960: the Ruhr, which was the busiest waterway in Germany until the 1860s, made it possible to transport coal to the Rhine at low cost. The locks and the coal harbours of the 18th and 19th centuries still make this function of the Ruhr tangible (Fig. 22). The Rhine with its large inland ports (e.g. Duisburg and Ruhrort harbours) also played a key role in the transport network of the Ruhr region as the most important transnational transport artery in Europe (Fig. 23-24), transporting coal and coke and importing iron ore, initially from the Lahn-Dill region and later from Lorraine, Spain and Sweden, among others. In the course of industrialisation, a dense network of railway lines developed from the middle of the 19th century: Cologne-Minden Railway (1847), Bergisch-Märkische Railway (1848; 1860-62), Rhenish Railway (1866-1874), Ruhr Valley Railway (1874) and numerous industrial railways, e.g. the so-called Ore Railway (1914; 1929), and various colliery and port railways (Fig. 25). As transport capacities by rail soon reached their limits, canals were built: the Dortmund-Ems Canal (1899), the Rhine-Herne Canal (1906-1914), the Wesel-Datteln Canal (1931) and the Datteln-Hamm Canal (1914/1933). These transport routes were fed by the River Lippe, which had a key function for the entire West German canal system (Fig. 26-27).
The positive and negative relief of the Ruhr landscape in the form of spoil tips and polders is a visible and striking reminder of coal mining. The extracted coal has long since been utilized and is only tangible in the form of surviving figures and extraction quantities. The mined tailings, on the other hand, have been left behind in the form of huge heaps. Of the more than 130 spoil tips, for example the voluminous heaps Haniel (Fig. 28 a/b), Hoheward and Scholven in particular symbolise the large-scale extraction of coal. Up to 50 per cent of the extracted material was so-called tailings, stones that had to be sorted out in the collieries' coal washes. Alongside the preserved collieries, the spoil tips are the most striking visible signs of the former large-scale coal mining in the region.
As a negative relief in the landscape, the world's largest mining-related polders deserve attention; the extensive subsidences, some of which are up to 25 metres deep, are a sign of the serious impact of coal mining on the landscape, which reached ever greater depths from 1870 onwards with the beginning of deep mining. They were caused by burst cavities after the seams had been mined. The subsidence prevented the natural drainage of the River Emscher, into which industrial wastewater and urban wastewater were discharged uncontrolled until the turn of the century. Because the river and its tributaries were no longer able to follow the natural gradient, severe flooding occurred on a regular basis, leading to swamping and putrefaction and thus to the spread of life-threatening epidemics (cholera and typhoid fever).

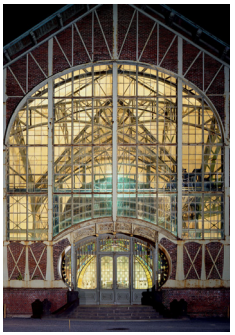


10. A network of canals supplemented the railway lines in the Ruhr region, facilitated traffic with the international waterway Rhine and enabled cheap bulk goods transport. Here the Rhine-Herne Canal at the Oberhausen gasholder (Photo: Sascha Kreklau).

Early recognized: the advantages of a joint regional planning

The industrial cultural landscape of the Ruhr area not only reflects the changes to the landscape caused by industry, but also symbolizes a planned approach to environmental problems in the form of very early and far-sighted ecological water and wastewater management on a regional scale. The relocation of the Emscher riverbed into a new open sewer (1906-1910) with numerous pumping stations and sewage treatment plants (Fig 29) significantly improved living conditions in the Ruhr region. The cooperation of local authorities and industrial companies in the Emschergenossenschaft[14], founded in 1899, enabled further industrial developments and the survival of the people in the region. The outstanding engineering achievements in civil engineering, structural engineering and hydraulic engineering that were carried out throughout the region, e.g. in the form of high dykes that characterize the landscape, and technically and architecturally high-quality pumping stations and sewage treatment plants, are still visible today and are mostly still in operation.
Equally progressive and organized as a cooperative was the Ruhrverband, founded in 1913, which ensured the supply of water to industry, agriculture and private households in the Ruhr region[15]. The development of comprehensive regional planning with regional green corridors as fresh air corridors in a densely populated area, whose industry brought prosperity to the people but left them with hardly any air to breathe, was also forward-looking and exemplary on a global scale. The idea had already been developed in the 1910s by the technical councillor of the city of Essen, Robert Schmidt, who, in his later role as director of the Ruhr Coal District Settlement Association, founded in 1920, initiated the further planning and realization of the green corridors that still exist today[16].

11. The Zollern 2/4 colliery was built around 1900 in a sophisticated architectural style. Today, it houses the headquarters of the Westphalian Industrial Museum (now: LWL-Industriemuseen), including workshops and depots (Photo: LWL-Industriemuseen).



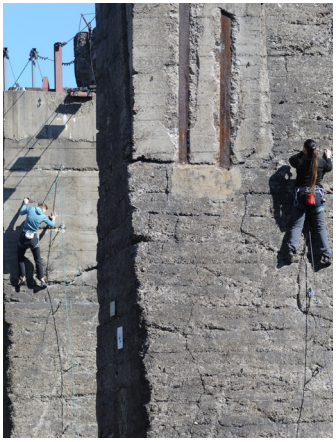
12. The Zollern 2/4 colliery's machine hall with the first electric hoisting machine at a main shaft was built as a steel framework structure with brick infill and decorated with Art Nouveau elements (Photo: LWL-Industriemuseen).

13. Many of the original machines have been preserved on site in the Zollern 2/4 colliery's machine hall (Photo: LWL-Industriemuseen).

14. The coke oven batteries of the Hansa Coking Plant, Dortmund, one of the most impressive parts of the monument, are often used for spectacular events (Photo l. Werner Hannappel, photo r. Markus Bollen).

15. The Ferris wheel installed at the Zollverein coking plant during the International Building Exhibition is to be dismantled in future (Photo: Thomas Willemsen).

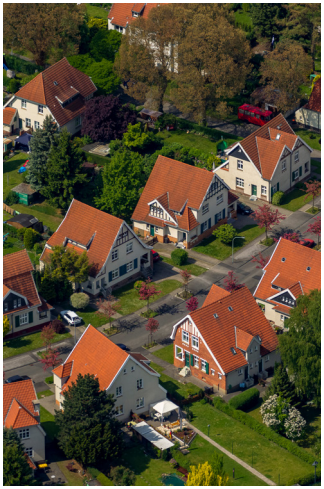
16. The Duisburg-Nord Landscape Park on the site of the Meidericher Hütte can be visited 24/7 and offers a wide range of experiences (Photo: Baoquan Song).



17. The former ore bunkers of the Meidericher Hütte provide opportunities for many leisure activities, such as diving in a former gas tank or climbing (pictured) (Photo: DSC).

18. The Henrichshütte blast furnace works in Hattingen on the banks of the Ruhr was preserved as a monument after its closure in 1987. It is one of the five sites of the Westphalian Industrial Museum (now: LWL-Industriemuseen) in the Ruhr region (Photo: LWL-Industriemuseen).

19. Krupp settlement "Margarethenhöhe" at Essen (Photo: Reinold Budde).



20. The Settlement of the Teutoburgia Coal Mine is one of the first in Germany which was built in the spirit of an English garden city with winding streets, „picturesque" groups of houses, green areas and gardens (Photo: Hans Blossey).

A network for the preservation of industrial heritage

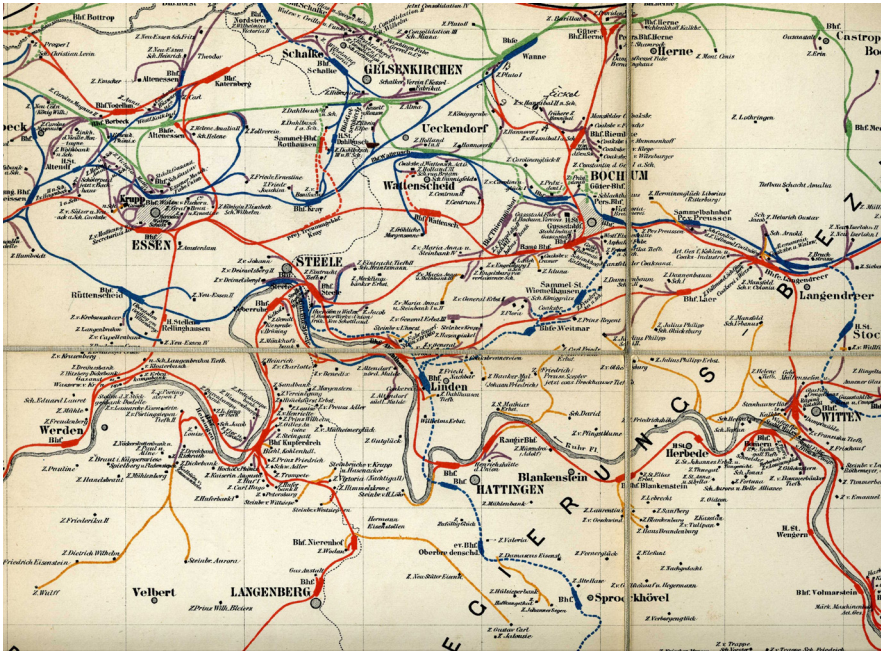
The industrial cultural landscape of the Ruhr region with its collieries, steelworks, coking plants, settlements, slag heaps, polders and green corridors - together with transport routes in the form of rivers, canals and railway lines - embodies a completely networked system of large-scale interconnected economy and the organization of space in the phase of high industrialisation. The fact that all these elements that constitute the industrial cultural landscape still have a right to exist in a highly dynamic, urban agglomeration with a population of 5 million people is due not only to the political will to preserve and utilize the industrial heritage, but also to the work of various associations, institutions, foundations, clubs and initiatives.
In the Ruhr region, the use of industrial heritage has long since become part of everyday life; the story of how the numerous industrial plants that fell into disuse from the 1960s/70s onwards are often told in the region and - with good reason - not without pride[17]: Like no other region in the world, the Ruhr has, since the decline of mining, cultivated the sustainable management of its industrial heritage in a quality and dimension that is still considered a model for many countries (e.g. France, Poland, the Czech Republic, the USA, Japan, China, etc.).
One of the main reasons for dealing with the remains of industry was a rethink in the areas of urban planning, urban redevelopment and the preservation of listed buildings. As initially in England and the USA in the 1960s/70s, industrial buildings were also recognized as spatial reserves in Germany. In North Rhine-Westphalia in particular, such concepts were taken up and - again on a large scale - developed on a larger scale. Since the end of the 1960s, the continuous financial stimulus packages adopted to manage structural change have systematically integrated the industrial heritage into regional and urban development goals.[18] The restoration and conversion of industrial heritage sites were financed with urban development funds from the state of North Rhine-Westphalia[19]. The institutionalization of the preservation of industrial monuments in the two regional associations of Westphalia-Lippe (1973) and Rhineland (1974) and finally the first nationwide incorporation of the "development of working and production conditions" in the Monument Protection Law of the State of North Rhine-Westphalia (1980) were essential preconditions for a qualified approach to industrial heritage.
However, civic initiatives such as those for the preservation of the Zollern colliery in Dortmund (1969) or the Eisenheim workers' settlement in Oberhausen (late 1960s) also played a decisive role. To this day, many voluntary organizations bear responsibility for

21. Villa Hügel, the residence of the industrial magnate Krupp (Photo: Reinhold Budde).

22. A number of preserved locks bear witness to the once lively shipping traffic on the River Ruhr (Photo: RVR).

23. The Rhine - central life artery of the Ruhr industry (Photo: Hans Blossey).

24. Europe's largest inland harbour developed at the confluence of the Ruhr and Rhine (Photo: Hans Blossey).



25. 1880 Railway Map of the central area of the Ruhr Area. Colours indicate the various private railway companies .Photo: Slg Dahm).

the cultural heritage of the Ruhr region as owners or operators of industrial monuments. The founding of the Westphalian Industrial Museum (1979)[20] and the Rhenish Industrial Museum (1984)[21] with a total of 14 museum sites at authentic locations was also fundamental in terms of preserving, researching and communicating the industrial history of the state of North Rhine-Westphalia.
A milestone was set by the International Building Exhibition (Iba) Emscherpark with its managing director Karl Ganser from 1989-1999, which launched a programme to accompany the structural change from heavy industry to a service and information society. The Iba realized a variety of innovative urban development projects with high planning standards and a creative spirit. The Duisburg-Nord Landscape Park with the Meiderich blast furnace works and the Oberhausen gasometer, which has been converted into a unique exhibition hall (Fig. 30), are examples of the IBA's contribution to the preservation and conversion of industrial buildings.
The establishment of non-profit foundations by the State of North Rhine-Westphalia followed on from this. Together with the mining company Ruhrkohle AG (now RAG Aktiengesellschaft), the state established the Foundation for the Preservation of Industrial Monuments and Historical Culture[22] in 1995 as a public-private partnership. The Foundation, which is unique in Germany, has the task of preserving high-ranking industrial monuments in NRW that are threatened with demolition, conserving them, researching them and putting them to new uses. It currently has twelve sites in its care and is open to transferring the monuments entrusted to it into new, responsible hands if suitable owners can be found.
In addition, the state of North Rhine-Westphalia and the city of Essen founded the Zollverein Foundation in 1998. It is responsible for the preservation and utilization of the Zollverein Coal Mine and Coking Plant industrial complex, which has been a Unesco World Heritage Site since 2001. The above-mentioned Route of Industrial Heritage, which is run by the Ruhr Regional Association (RVR), also attracts international attention and is one of the region's flagship repertoires with its 27 anchor points. It was and is a trendsetter for industrial routes not only in Germany; the European Route of Industrial Heritage (Erih) was also inspired by it.
The fact that the anchor points of the Route of Industrial Heritage can now be reached not only by bus, train or car, but also by bike, is also thanks to regional planning and the expansion of a dense network of cycle paths by the RVR. By converting disused railway lines into cycle paths (Fig. 31), the historic transport routes can still be experienced and are part of a forward-looking mobility system. This planning, which respects the historical structures and functional links, also represents a high quality in terms of the cultural landscape heritage that can be experienced.
Remarkable - also by international standards - are not only the innovative conversions of large-scale monuments, but also the way in which the landscape spaces and structures once created by the coal and steel industry are treated. Striking examples of this are the staging of slag heaps with works of art and the conversion of disused industrial areas into parks (Fig. 32). These conversions have led to a very lively approach to the industrial heritage in the Ruhr area, which enables new value creation and affiliations on the basis of the old.

Renaturalisation of an industrial landscape

The conversion and renaturalisation of the Emscher river are unique in Europe[23]. With its rich history of engineering and hydraulic engineering and the joint efforts of the cities of the Ruhr region since the founding of the Emschergenossenschaft in 1899, the Emscher system is an essential part of the industrial cultural landscape of the Ruhr region. The Ruhr area should actually have been named after the Emscher, as it is the central river that runs through the middle of the Ruhr area from west to east, while the Ruhr describes the southern edge, comparable to the Lippe in the north. In contrast to the Ruhr, however, the Emscher did not promise much good in the 19th century. By 1865, coal mining, which had gradually migrated northwards from the Ruhr, had already reached the Emscher zone. The rapidly expanding coal and steel industry and the explosion in population figures led to major problems in the area of water supply and, in

particular, wastewater disposal. The wastewater from industry and the urban population could hardly be managed. Large-scale terrain deformation caused by mining was a major problem. The extensive mining of hard coal in so-called deep mining left its mark not only underground, but also above ground in the form of subsidence, which could be up to 20 meters deep. This subsidence had a direct impact on the water system because the water flow was disrupted.
Underground sewers could not be built due to the expected continued subsidences. In order to solve the wastewater problem and ensure protection against flooding, the Emschergenossenschaft decided to straighten, deepen and embank the Emscher from Dortmund to the Rhine and convert it into an above-ground open sewer using concrete invert shells. Rainwater, wastewater and mine water from the mines were drained into the sewer, which was built from 1906. The construction of more than 200 pumping stations, which are still in operation today, was also essential in order to raise the water in the area of the mine subsidence and the groundwater.
By the 1990s, almost all the coal mines and most of the steelworks had disappeared from the Emscher area. Mining had moved northwards and the subsidence had largely subsided. What remained were a total of 328 kilometers of concreted open sewers, which caused severe odor nuisance.
The ongoing structural change led to a radical rethink. Starting in the 1990s, the stinking Emscher was to be transformed into a "blue" river over a period of around 30 years through a near-natural transformation. The old system of open wastewater drainage was gradually abandoned and the wastewater was fed to the treatment plants in underground sewers. The watercourses freed from wastewater were rebuilt and ecologically improved.
With a total investment of 4.5 billion euros for the ecological improvement of around

26. The Henrichenburg Ship Lift was the most impressive structure in the course of the Dortmund-Ems Canal, preserved by the Westphalian Industrial Museum. The upper bassin with a shipyard harbours a fleet of historic ships, some maintained in running order (Photo: LWL-Industriemuseen).

27. Over the course of 90 years, four parallel descending structures were built in Henrichenburg, including the old Ship-Lift on the left. Three of the structures are no longer in operation and are listed buildings (Photo: WSV) Photo: LWL-Industriemuseen).

28. Mining spoil tips, like the Haniel tip, were turned into recreational areas and viewing points, often with artistic interventions (Photo: RVR).

29. The Old Emscher Pumping Station in a contemporary picture, is still in operation today (Photo: Emschergenossenschaft).

30. The Oberhausen Gasholder provides a unique space for exhibitions and venues (Photo: Gasometer Oberhausen GmbH/Volz).

350 km of watercourses, a new living and natural space was created in a high-density urban area. The inter-generational project was largely completed in 2023. The Emscher has been "deconstructed" and - depending on the local situation - has been given back a more or less natural bed. Previously fenced-off areas have been transformed into floodplain landscapes and nature reserves. The course of the river will be drained and the wastewater will be collected and discharged in completely new underground canals (over a distance of 51 kilometers) next to the Emscher. In response to climate change, large-scale landscaping structures have been created, such as flood retention basins, which can hold more than 1.1 million cubic meters of water during heavy rainfall events and protect numerous towns along the Emscher from flooding. Only in some minor areas the Emscher is still an open canal today. This also applies to many of the river's tributaries. In this way, the former industrial use of the river is still visible, at least in some areas.
In view of the advancing climate change, the Emschergenossenschaft, together with 16 cities along the Emscher, has now launched a new infrastructure project with the future initiative *Klima.Werk*[24]. Urban planning and water management are closely linked in order to better cope with extreme weather conditions such as heavy rain and heat in the

future. The aim is to create "blue-green sponge cities" that absorb rainwater from public and private areas, use and store it or release it into the groundwater. The Hansa coking plant in Dortmund proves that even industrial monuments can play a pioneering role. Here, an area of 172,000 square meters was decoupled from wastewater. The rainwater that accumulates on the sealed surfaces and roofs is collected in above-ground drains and stored in the renovated concrete basins of the historic cooling towers, from where it is fed underground into the renaturalized Emscher (Fig. 33).
The *Klima.Werk* is scheduled for completion in 2040. Due to these new developments, the Ruhr and Emscher agglomeration will provide better living conditions for the local people and continue to attract international attention.

31. Cycle paths on former railway lines connect the industrial heritage sites and offer perhaps the best opportunity to experience the Ruhr Industrial Cultural Landscape (Photo: RVR).

32. Westpark and „Jahrhunderthalle" (Century Hall) on the site of the "Bochumer Verein" cast steel works. Guided tour for a group of Israeli monument specialists, 2023 (Photo: Norbert Tempel).

33. A renaturalised section of the old Emscher in Duisburg near the Landscape Park(Photo: DSC).

1 In 2007, 139 significant cultural landscape areas were demarcated and described for the state of North Rhine-Westphalia as part of the report by the landscape associations on the update of the North Rhine-Westphalia State Development Plan (LEP NW). From the point of view of conserving cultural landscape development, these 139 significant cultural landscape areas form an extended pool of areas for a sustainable planning approach to the historic cultural landscape in North Rhine-Westphalia and should be given a reserved character in state planning. The value-determining features of the significant cultural landscape areas are briefly summarised and characterised for the scale level of state planning. For the Ruhr cultural landscape area see https://www.kuladig.de/Objektansicht/SWB-245732 -in German only- (last consultation: February 2024).

2 Cfr. Barbara Welzel, *Choreography of cultural participation. Huckarde: Kokerei Hansa und Sankt Urbanus*, in the publication of the same name, edited by Christopher Kreutchen, Julius Reinders, Barbara Welzel in «Dortmunder Schriften zur Kunst/Kataloge und Essays», vol. 62, BoD - Books on Demand, Norderstedt 2023, p. 50; C. Kreutchen, J. Reinders, B.Welzel (eds.), *Choreografien Kultureller Teilhabe: Huckarde: Kokerei Hansa und St. Urbanus*, in «Dortmunder Schriften zur Kunst/Kataloge und Essays», vol. 62, BoD - Books on Demand, Norderstedt 2023; Council of Europe, *Framework Convention on the Value of Cultural Heritage for Society* (Faro Convention): https://rm.coe.int/1680083746 (last consultation: February 2024). The Convention, which came into force in 2011, has so far been signed by 28 countries; Germany is not one of them.

3 Stefan Berger, Joana Seiffert, Joana, *Erinnerungsorte: Chancen, Grenzen und Perspektiven eines Erfolgskonzepts in den Kulturwissenschaften*, Veröffentlichungen des Instituts für soziale Bewegungen, Klartexte Schriftenreihe A 57, Band 59, p. 33.

4 Ibidem.

5 Uta Hassler, Michael Petzet in, *Das Denkmal als Altlast? Auf dem Weg in die Reparaturgesellschaft*; Icomos German National Committee of the Federal Republic of Germany, Icomos-Heft XXI,1996, p. 3.

6 Ibidem.

7 Ibidem.

8 David Blackbourn, *The Conquest of Nature. Water, Landscape, and the Making of Modern Germany*, W. W. Norton & Company, New York-Londona 2006 (originally published in Great Britain under the title *The Conquest of Nature. Water and the Making of Modern German Landscape*).

9 In 2010, the idea of proposing the *Ruhr Industrial Cultural Landscape* for the German Tentative List for the update of the Unesco World Heritage List was born. A cooperation group consisting of various institutions and associations from the Ruhr region and the state of North Rhine-Westphalia drew up a proposal, which was, however, rejected by the state government of North Rhine-Westphalia in 2021, much to the disappointment of the cooperation group. A brief overview on the proposal can be found in the brochure *The Ruhr Industrial Landscape (2017/2018)* https://www.industriedenkmal-Stiftung.de/fileadmin/user_upload/PDFs/Welterbe_en_web_kleiner.pdf (last consultation: January2024).

10 E.g. the Max Planck Institute for Coal Research, specializing in chemical research on catalysis; and the Leibniz Institute for Economic Research (RWI); today responsible for monitoring the Kyoto Protocol in the area of CO2 reduction in Germany).

11 Jens Adamksi, Stefan Berger, Stefan Goch, Helmut Maier, Daniel Schmid (eds.), *Research, culture and education: Wissenschaft im Ruhrgebiet zwischen Hochindustrialisierung und Wissensgesellschaft,* Schriftenreihe des Instituts für Stadtgeschichte - Beiträge, vol. 22, Essen 2020.

12 See also https://www.route-industriekultur.ruhr/ (last consultation: January 2024).

13 Hans Werner Wehling, *Approaches to the Industrial Cultural Landscape of the Ruhr Area*, in Ursula Mehrfeld, Marita Pfeiffer, Sigrid Brandt, *Industrielle Kulturlandschaften im Welterbe-Kontextedited*, (Internationale Tagung von Icomos Deutschland und Ticcih Deutschland, Dortmund 26th-27th February 2015), Hendrik Bäßler verlag, Berlin 2016 pp. 88-103.

14 See also Emschergenossenschaft (ed.) *100 Years of Water Management*, Bottrop 1999.

15 See also Ruhrverband (ed.): *Zeit am Fluss. 100 Jahre Ruhrverband*, Klartext-Verlagsges, Essen 2013.

16 See also Karola Geiß-Netthöfel, Dietere Nellen, Wolfgang Sonne, *Vom Ruhrgebiet zur Metropole Ruhr,* SVR KVR RVR 1920-2020, Regionalverband Ruhr (RVR), De Gruyter, Berlin 2020.

17 See most recently Christoph Zöpel, *Vom Ruhrgebiet der Rüstungsschmieden im Zweiten Weltkrieg zum Welterbe Industrielle Kulturlandschaft Ruhrgebiet,* in «Rheinische Heimatpflege», 58th vol. 2, 2021, pp. 83-100.

18 State Government of North Rhine-Westphalia: North Rhine-Westphalia Programme 1975, Düsseldorf 1970.

19 These include, among others: Ruhr Development Programme 1968-1973; NRW-Programme 1970-1975, Ruhr Action Programme 1979-1984; Future Initiative Coal and Steel Region 1987; International Building Exhibition Emscher Park 1989-1999; European Capital of Culture RUHR.2010; funds from the European Regional Development Fund (ERDF-Fund). This also includes the Ruhr Action Programme with the Ruhr Property Fund (1980), which was managed in trust by the State Development Corporation (LEG) in order to develop derelict industrial sites.

20 Today: LWL-Industriemuseen/Westphalian State Museum for Industrial Culture, www.lwl-industriekultur.de/en/ (last consultation: February 2024).

21 Today: LVR-Industriemuseum/Rhenish Industrial Museum, www.industriemuseum.lvr.de/en/startseite.html (last consultation: February 2024).

22 https://www.industriedenkmal-stiftung.de/en/foundation/foundation (last consultation: February 2024).

23 See most recently Uli Paetzel, Dieter Nellen, Stefan Siedentrop, (eds.), *Emscher 20 | 21+. The new Emscher is coming. Socio-ecological conversion of a regional urban landscape,* Jovis, Essen 2022.

24 See also https://www.klima-werk.de/ (last consultation: February 2024).

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