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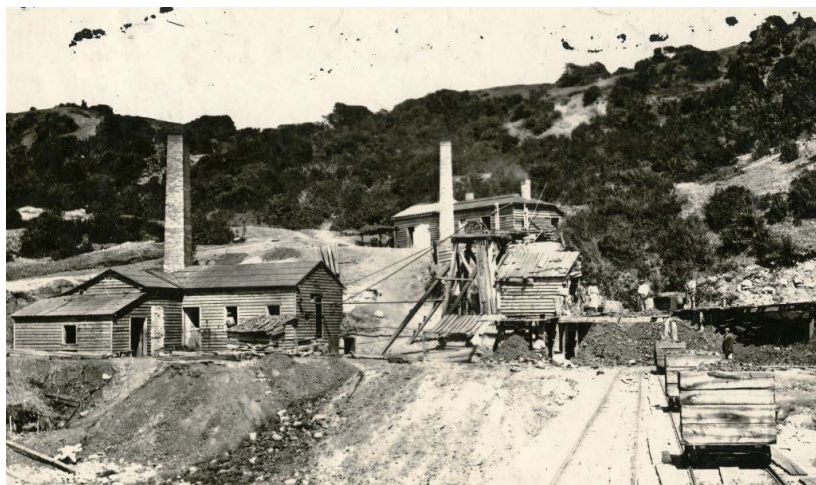
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Mining coal such as the Pique Lotilla mine formed part of the cultural change of indigenous cultures effected by industrialization in Chile, which is examined on [page 20](#) (1876. ENACAR photographic record)

TICCIH PRESIDENT'S COLUMN

Miles Oglethorpe

Many of us have been yearning for the moment when we can attend a conference in person rather than virtually on a computer. Meeting someone online is not the same as meeting them in-the-flesh, so it is not surprising that those gathering in Rome on 8 June at the first annual conference in over two years of AIPAI, the Italian association for industrial heritage, did so with a heightened sense of anticipation and not a few nerves.

So, I am delighted to report that the conference exceeded my expectations, and I suspect, those of many other delegates. It was exhilarating to encounter new people, meet those I had only ever previously 'met' online, and to be able to take advantage of unexpected interactions. This, I had partially forgotten, is what conferences are all about, and I am anticipating what our Montreal congress in August will also deliver. I can't wait to get to Quebec and immerse myself in what is shaping up to be a fantastic [programme](#).

As for the AIPAI conference in Rome, it was tremendous to be able to meet so many old friends, and to marvel at the amazing work that is being carried out in Italy, which is undoubtedly one of the world's centres of excellence for industrial heritage. To reinforce this point, we were treated to a day in the extraordinary town of Tivoli and were also able to visit not only the fabulous Centrale Montemartini former power station (museum of Roman sculpture), but also the truly spectacular Rome Gas Works nearby, which has recently been opened to the public by ENI.

We are also indebted to Professor Edoardo Curra for engineering the in-

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TICCIH PRESIDENT'S COLUMN

section of a half-day session at the end of the conference devoted to the potential creation of TICCIH Europe. Most readers will be aware of this initiative, and we appreciate the feedback that many members submitted in answer to our call for contributions, all of which has been most helpful. In the end, we attracted over 50 on-line and in-person attendees, which was very encouraging. The mood of the meeting was very supportive of the idea, especially as it is intended to work with and to help existing industrial heritage organisations in Europe. We have some work still to do to make this happen, but we have made progress and identified some key people who are in a position to help take it forward.



Delegates of the APAI congress were treated to a fantastic sunset at the former Rome gasworks.

So, a huge thank you to my hosts in Rome for inviting me and allowing to run this session, and congratulations on holding such a brilliant conference. I look forward to seeing many of you in Montreal!

Opinions expressed in the Bulletin are the authors', and do not necessarily reflect those of TICCIH. Photographs are the authors' unless stated otherwise.

TICCIH

President: Dr. Miles Oglethorpe
Historic Environment Scotland
Longmore House, Edinburgh EH9 1SH, Scotland
e: mkglethorpe@icloud.com, t: +44 01316688611

Secretary General: Prof. Dr. Marion Steiner
Pontificia Universidad Católica de Valparaíso, Chile
e: secretary@ticcih.org

Editor: Articles and news of recent and future events should be sent to the Editor, James Douet, C. Bruc, 176, 2. 4., Barcelona 08037, Spain, e: editor@ticcih.org

TICCIH Membership: Daniel Schneider, e: ticcih@mtu.edu
TICCIH Website: Daniel Schneider, e: ticcih@mtu.edu

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TICCIH is the world organization on Industrial Heritage, promoting its research, recording, conservation and dissemination and education on industrial heritage. It holds a triennial conference and organises interim conferences on particular themes. Individual membership levels range from \$10 to \$40 (USD), corporate membership is \$65, and student membership levels range from \$5 to \$10.

There is an online membership form on www.ticcih.org

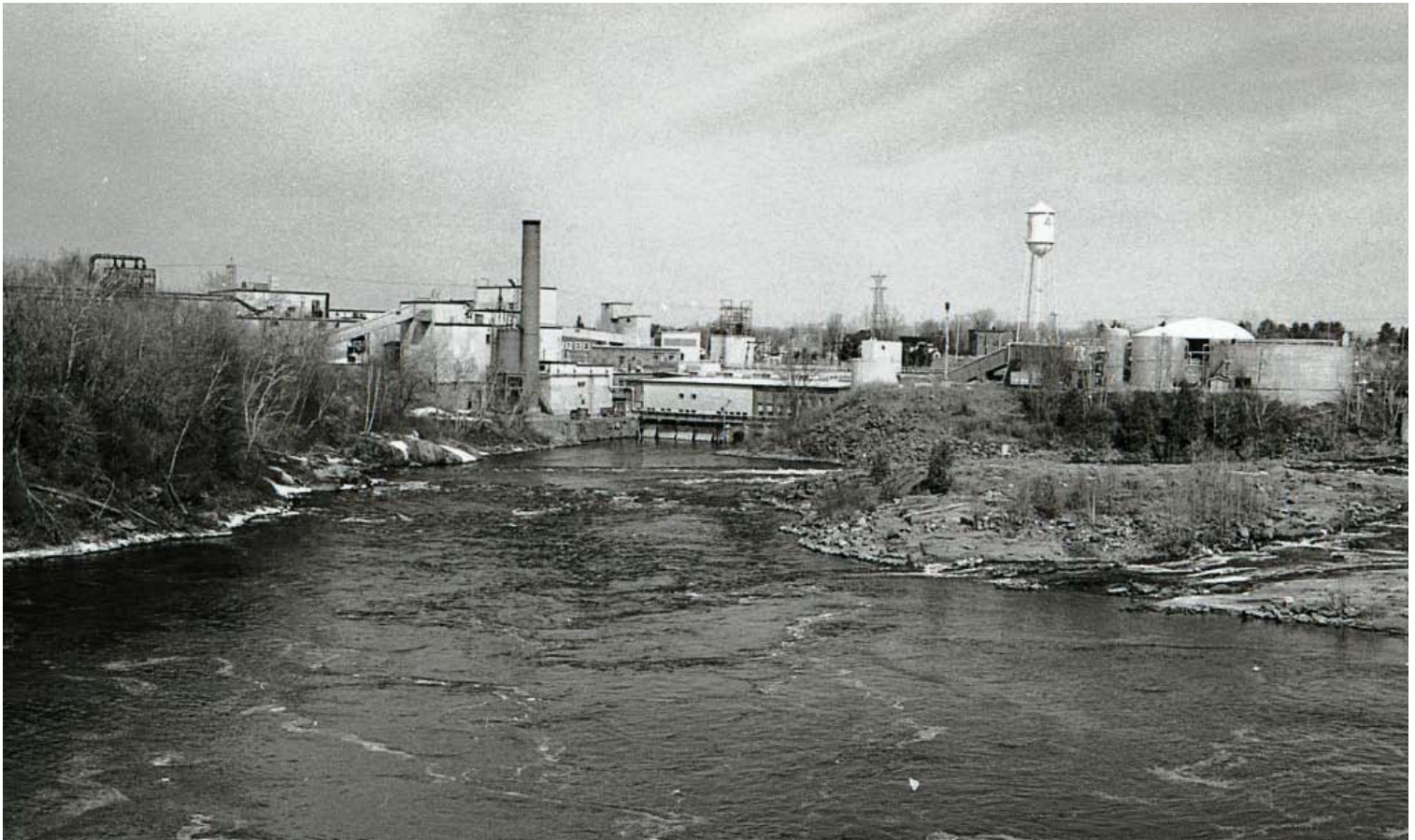
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The former Weyerhaeuser Paper Mill in Sturgeon Falls, Ontario, before its demolition. (David Lewis)

CANADA

DEINDUSTRIALIZATION, FORCED FORGETTING AND THE CHANGING PLACE OF INDUSTRIAL HERITAGE IN CANADA

Steven High, Professor of History, Concordia University

Deindustrialization is a socio-economic, cultural and political process that leaves working-class communities devastated. Not only do the mines, mills and factories close, but nearby residential areas are hollowed out as stores, schools, union halls, pubs, post offices, even churches, begin to close. Often, anyone who can leave does so, leaving the poorest behind.

There is considerable physical and cultural erasure in industrial ruination. Locally, industrial buildings are left to rot or are torn down leaving fenced-in lots of contaminated land. Nationally and internationally, there is a parallel process of working-class invisibilization in our new “post-industrial” world. Yet everything around us is made somewhere.

This erasure extends to documentary history itself, as departing companies shred old factory records or ship them out to destinations unknown. Let me offer an example. Sturgeon Falls is a small town in my home region of Northern Ontario, here in Canada. When its paper mill closed in 2002, after more than a century of production, the departing company (which only owned the mill for the last three years) shredded a century’s worth of production records. Some of my interviewees spoke of the dozens of boxes, with records going back to the 1920s or earlier, that were stored in a small building at the base of mill’s water tower. In many ways, the mill’s history was the town’s history. When the company brought in a shredding van (yes, they do exist), protesting community members were able to turn it back at the front gate. But it returned and the records were shredded.

These kinds of corporate acts of historical vandalism are commonplace. It is one of the reasons why so few production records make it into public archives, at least in North America.

This is what we have come to.

In the *Destruction of Memory*, Robert Bevan talks about this process as one of “forced forgetting,” and I think he is absolutely right.



Montreal's Redpath Sugar closed in 1979 and was converted into condos in 2000. (David Lewis)

Deindustrialization is a slow violence which is normalized to such an extent in our everyday lives that it is not even recognized as violence at all. The hurt and pain of those most directly affected is thus privatized.

Of course, industrial workers resist this historical erasure. In Sturgeon Falls, many interviewees secreted away a file here or a box there from their closing plant. I was frankly amazed by what working people had in their basements. My book, *One Job Town*, on the Sturgeon Falls mill closure would have been impossible without these grassroots acts of salvage and working people's willingness to be interviewed. The stories they shared with me were often telling.

Hubert Gervais, for example, told me how he had approached the mill manager in the dying days of the paper mill to see if the company would allow the donation of a box of old mill newsletters to the local museum. Believe it or not, he was refused permission: the box and its contents were company property. But another staff member overheard the exchange and quietly asked Hubert to drive

his car up to the loading dock at the end of the day, where the historical contraband was promptly handed over. It is now in the local museum.

Grassroots heritage efforts to preserve the vestiges of the industrial past often come from the same defiant refusal to be forcibly forgotten. Local efforts to preserve something of their former workplaces often emerge in the days and weeks following the industrial closure. Most of these efforts fail. I remember when my father, a railway worker, tried to convince my hometown of Thunder Bay (which sits on-top of Lake Superior) to save the round-house which was slated for demolition. A shy nervous man, he even presented to city council: such was his determination. But his appeal was met with little more than a shrug. The round-house is now only a memory.

In truth, almost none of Canada's industrial heritage has been preserved as full-fledged heritage sites. I think this has something to do with the fact that manufacturing was never central to Canadian or

Québec national identities. Historically, we tended to see ourselves as a resource hinterland, a country of “hewers of wood and drawers of water.”

There are exceptions of course.

Federal heritage designation, which results in a plaque, requires that the history of a site be anchored in Canada’s national history. Industrial heritage activists have therefore had to lean into other Canadian stereotypes. The 2007 designation of the Starr Manufacturing Company in Dartmouth, Nova Scotia, was therefore nationally significant because it was a major manufacturer of ice skates. What could be more Canadian, eh? Then there is the designation that same year of a leading producer and exporter of maple products in Quebec because the maple tree is “the symbol of the end of the Canadian winter.” We also see the designation of the “first” butter factory, the “first” cheese factory, and so on. Almost all of these pioneer firsts are located in rural areas and small towns.

Let me ground this discussion in Montreal, as TICCIH is meeting here.

Like many “global” cities around the world, Montreal’s industrial past has been largely obliterated. Some aestheticized remains have been “preserved” as high-end condominiums along the Lachine Canal which runs through the Southwest of the city such as Dominion Textile and Imperial Tobacco (Saint-Henri), the Steel Company of Canada (Little Burgundy), Belding-Corticelli, Redpath Sugar and Sherwin Williams (Point Saint-Charles) as well as Lowney’s Chocolates and Windsor Station (Griffintown). Or as arts spaces of one kind or another, such as Usine C. Batiment 7, part of a former CN Railway Shop, has been converted into an autonomous community centre, complete with a cooperative tavern (highly recommended) in Point Saint Charles. Some ruined fragments have also been preserved, most impressively the former Angus Railway Shops in the city’s East End.

A few long abandoned industrial structures remain, most notably the giant Silo 5 grain elevator at the mouth of the Lachine Canal in the Old Port. It is a good example of what I call the deindustrial sublime, for those drawn to ruin-gazing.

Otherwise, industrial heritage interpretation in Montreal is largely confined to three sites, each with its own historical trajectory and purpose. Here we see the influence of Québec’s unique place in North America:

1. **The Lachine Canal National Historic Site (1977)** operated by Parks Canada runs through one of the most heavily (formerly) industrialized areas in Canada, said to be the birthplace of Canada’s industrial revolution. The national park was created in 1977 after years of debate about what to do with the closed shipping canal. The election of a sovereigntist government in Quebec for the first time pushed the federal government to take this initiative, symbolically planting the Canadian flag in the heart of Montreal. At first, its mandate was centred on industrial heritage – offering a symbolic balm to scarred working class districts – but its mission has shifted in recent years to be being an urban leisure park. Its industrial heritage interpretation is limited to a series of interpretative panels, nothing more: with the focus being on a birthplace of industry narrative in the distant past.
2. **The Ecomusée du Fier Monde (1980)**, founded by members of a cooperative housing group, and located in a former public bath, interprets the history of the old working-class neighbourhood of the Centre-Sud. It originated in the international movement started in deindustrializing Le Creusot, France. Unlike an older generation of industrial museums in Great Britain and the United States, the écomusée did not seek to commemorate the “birthplace of industry,” but rather to validate the local heritage of a deindustrializing place. Montreal’s Ecomusée was thus dedicated to representing a proud neighbourhood and saw itself as “a site of combat” in the face of aggressive urban renewal projects in the neighbourhood. The neighbourhood is now highly gentrified, complicating its work.
3. **Montreal’s Quartier Ephemère/ Darling Foundry (1993)** originates in Europe’s “Art Factory” movement of the 1970s and 1980s, when counter-culture youth occupied inspiring spaces to collaborate and perform. Former factories were readily available. Its founder in Montreal, who had been part of a similar effort in 1980s Paris, was recruited to Montreal by

Industrial Heritage Reloaded

Le patrimoine industriel rechargé

TICCIH 2022
MONTREAL



the Québec government to lead this initiative, part of the wider rebranding of the district as the “Cité Multimedia.”

There are of course other industrial heritage actors in the city such as the Musée des ondes Emile Berliner, located in the former RCA factory in Saint-Henri, the Association québécoise pour le patrimoine industriel (AQPI), which brings together heritage activists from across the province, and the community-based Centre d'histoire et d'archives du travail (CHAT), which preserves the records of trade unions. Professor Lucie Morisset, Canada Research Chair in Urban Heritage at the Université du Québec à Montréal (UQAM), has also led a long-term research project on industrial heritage, as have I at Concordia's Centre for Oral History and Digital Storytelling. You might check out our memory-based audio-walks of the Lachine Canal and Saint-Henri.

Montreal's industrial heritage is also inscribed in other ways. Trade unionist Madeleine Parent now has a park named after her, and has Charles “Joe Beef” McKiernan, a nineteenth-century tavern owner and working-class hero who supported striking canal workers. He famously had a bear pit in the middle of his taverns with real bears. There is also an exclusive high-end restaurant named after

him which says much about the ways industrial and working-class history can be co-opted and commercialized. The incorporation of industrial heritage preservation in gentrification is also evident in the recent final report of a city public consultation over industrial heritage in the city, which identified 89 sites worthy of preservation – but, once again, it is an impoverished notion of preservation.

Unfortunately, these grassroots efforts pale are overshadowed by the ability of real estate developers to co-opt industrial heritage, or rather its aesthetics, in wider gentrification processes that end up displacing working people from where they live. In some cases, developers have wrapped themselves in the cloak of industrial heritage to overcome neighbourhood resistance to more high-end condominiums. Too often, built-heritage spokespersons are complicit in this – focusing on preserving the industrial building at any cost rather than the working-class community that once worked there. We need to ask ourselves some hard questions.

Steven High is the author of many books on deindustrialization, including *Deindustrializing Montreal: Entangled Histories of Race, Residence and Class* (2022).

WORLDWIDE

CANADA

RECLAIMING AN EXTRACTIVE / LANDFILL LANDSCAPE

Susan Ross, Carleton University, Ottawa

The Miron limestone and cement quarry and works in Montreal's St Michel neighbourhood operated from the 1940s through the 1980s. From 1968 it also served as a dump and landfill site, renamed the Complexe Environnemental Saint Michel in 2000, and was renamed Frédéric Back Park in 2016 after the Oscar-winning director of *L'Homme qui plantait les arbres* (*The Man Who Planted Trees*, 1987). This site is a study in material and symbolic appropriations, of ongoing processes of extraction and consumption of urban land, labour and communities, and the possibilities for reclamation and repair.

Imagine an immense limestone crater spanning some 192 hectares in area, reaching 70 m in depth, and which is gradually being reclaimed for public uses following its transformation of over 100 years as an expanding geological cut, including four decades as a putrid open wound in the working-class neighbourhood. Its most prominent vertical landmarks, two chimneys from the cement works, were torn down in front of a crowd of over 50,000 citizens in 1988. The landfill gradually closed about a decade later and

has now been repurposed to capture the biogas emitted from the waste below. This renewable energy is made available to the city and adjacent sites, and made visible in the surface landscape adapted to recreate a habitat friendlier to living creatures.

A chronology of the site and area provides overview of the many phases of development:

- By the late 1600s: lime kilns are observed near Montée St. Michel
- 1912: Carrière Labesse begins exploitation of the site for limestone
- 1947: Miron brothers consolidate several smaller extraction sites to create Miron & Frères
- 1950: Cement production begins, eventually employing 200, with a fleet of 800 trucks
- 1940s-1980s: Ville St Michel in full development: population increases 10-fold with two main waves of immigration from Italy and Portugal, then Haiti and northern Africa
- 1968: Miron & Frères begin to use parts of the site as a garbage dump



As big as Mount Royal, Montreal's new urban park in the former Miron quarry and landfill.

- 1984: Ville de Montréal takes over the site
- 1988: Demolition of two chimney associated with the plant
- 1995: Construction begins of the Gazmont biogas power station
- 2000: Complexe Environnemental Saint Michel opens
- 2004: TOHU, a performance centre for the circus arts opens, with the Cirque du soleil headquarters and École nationale du Cirque, forming the Centre des arts du cirque.
- 2009: Taz interior skatepark opens
- 2014: Construction begins of the Stade de Soccer de Montréal
- 2016: Site renamed after Frédéric Back
- 2017: Anamnèse I+I by artist Alain-Martin Richard in collaboration with local communities

The island of Montreal was once home to multiple quarries, related to different eras of the city's development. First for extracted stone, and then manufactured cement were embedded in the historic built environment. The cement from Miron is part of the concrete used to build the city's Gare Central, Hôpital St. Justine, Place Ville Marie complex, the St Lawrence Seaway, and Complexe Desjardins amongst many others iconic structures of modern Montreal.

The closure of the quarries ended an era of extractive destruction and challenging labour conditions. Still, the next stage brought even less regard for the urban environments that surround these huge open pits, as they were identified as 'sinks' for urban wastes, from domestic garbage and snow collected from city streets to soils and other materials excavated from construction sites. Such waste landscapes initially took advantage of



The former landfill landscape with inspection spheres revealing the biogas capture wells below.

the vast pits but also exploited the lack of environmental regulations to dump the unwanted discards of urban development and consumption.

Montreal's history of green spaces is closely connected with its quarries, including the iconic landscapes built both on former sites of excavation (such as the Jardin Botanique), or with excavated materials (such as Expo 67's Ile Ste-Hélène). The process of turning the Miron quarry/landfill site into a landscape oriented to ecological remediation began under the city's 'green mayor' Pierre Bourque (1994 to 2001), whose earlier career had included directing the maintenance and development at both these and other historic landscapes. But the Miron site's destiny is at least as much that of neighbouring citizens who have long had to battle to reclaim a healthier environment, even when the closure of the site's industrial functions meant economic loss. This story of labour, protest and community is now told as part of the park's art works and interpretation panels.

In 2022, the Park/Enviro-Centre boldly integrates active waste management with restorative recreational green space. The wide-open

space of the former quarry is further re-framed along the pit's upper perimeter by a ring of cultural and sports facilities showcasing Montreal's passion for circus, soccer, and skateboarding. As Anne Whiston Spirn has argued (*The Language of Landscape*, 1998), telling paradoxical landscape stories can be a necessary strategy to address former industrial sites in urban areas — but how far can interpretation help reconcile physical complexity and awkward adjacencies, or mitigate risks and futures associated with still active sites? Despite its expanding and evolving purposes, the giant crater — a virtually inverted Mount Royal in scale — remains an element of discontinuity in the urban landscape, one whose uses both serve and challenge the neighbourhoods that continue to grow around it.

Landscape scholar Susan Herrington has argued for a new type of picturesque landscape to help describe how to look critically and creatively at post-industrial landscapes ("Framed Again," *Landscape Journal*, 2006); certainly, this new type of park merges the familiar with intriguing strangeness. The most photogenic elements of the site's current use are the spherical inspection stations for monitoring the biogas being 'captured' in over 300 wells

below the park, extracting new energy from the deep layers of organic waste in the landfill. This gas began to be exploited by the Gazmont company ca. 1996. Said to provide enough power for 10,000 households per year, this supply has been estimated to be depleted in 25 years. In the not-too-distant future one can easily imagine these space-age reminders of the hidden man-made geological layers, as new artefacts of industrial archaeology, technical sculptures increasingly overgrown by vegetation planted to repair the site.

Naming the park after Frédéric Back, a famous filmmaker/environmentalist, is in the tradition of city branding, but in 2022, naming any park after settler Canadians — of global or local importance — should indeed be questioned. The original process of extraction, begun here as early as during the 17th century, has been part of the ongoing project of colonization, in taking land violently, extracting and using its gifts, then re-taking it again as part of both repairing past damage and promoting greener types of extraction. A project to rename such a large part of the city should engage in the process of recognition of the city and wider region's Indigenous rights holders. Such a process is already underway at Montreal's Mount Royal Park, where one of the summits was renamed to honour the Haudenosaunee territory. If in scale, ambition, and complexity the Parc Frédéric-Back is the city's new Mount Royal, there is also much to learn from the many challenges that Parc Mont Royal's protection has faced as its popularity has grown. Of course, name changes are mainly symbolic, but they can help signal a path forward to more substantive, and hopefully systemic change.

Further Reading

This site is discussed widely in the press and local blogs, and interpreted through academic analysis, mostly in French. This is just a sample of longer studies and sources of information:

- Anamnese I + I. [Art Public de Montreal](#).
- Brassard, Pierre. 2018. "[Les légendaires carrières de St Michel](#)." Arrondissement.com
- Gazmont Carbon and Energy. [Biothermica](#).
- Jolivet, Violaine and Marie-Noëlle Carré. 2017. "Métabolisme urbain et quartiers péricentraux dans la métropolisation. L'exemple du quartier de Saint-Michel à Montréal." [Cybergeo: European Journal of Geography, Aménagement, Urbanisme, document 816](#).
- [Radio Canada article](#) with links to two archival film reports on the Miron quarry.
- Tischer, Stefan. 2008. "Stratégies paysagères de transformation pour les anciennes carrières. La carrière Miron de Montréal au Canada." [Workshop Tunisie: Invention paysagère des carrières de Mahdia](#). Montréal : Presses de l'Université de Montréal.
- [Tohu site history](#)

SIERRA LEONE

A SUSTAINABLE FUTURE FOR RAILWAY HERITAGE

Abdul Karim Kamara, Education & Outreach Officer, Sierra Leone National Railway Museum

In the Sierra Leone National Railway Museum (SLNRM), we are concerned not only about the conservation of the tangible heritage but also the social aspects of industrial heritage with special reference to Railway Heritage Preservation, which is a very young branch in the heritage family in our country. As one of the most revolutionary inventions of the 19th century, the railway shaped the world perhaps more than any other technological achievement. Across borders, it revolutionized movement in space and was an important engine of industrialization. Closely interconnected with technical advances and constantly changing the economic, social and cultural processes, it continues to drive change in much of the world even today.

The closure of the railway in 1975 is much regretted by the people of Sierra Leone, and many former railway communities have effectively been cut off from the rest of the country and robbed of their main livelihood.

In March 2020 the Sierra Leone National Railway Museum, with support from the Friends of the Sierra Leone National Railway Museum (FoSLNRM), commemorated the 45th Anniversary of the closure of the Sierra Leone Railway (SLR) and celebrated the 15th anniversary of the opening of the SLNRM.

Bauya Station, being the only extant facility that still maintains the majority of its infrastructure, was declared as protected cultural property of the Government of Sierra Leone, together with the former carriage workshop at Cline Town, which now houses the SLNRM, which is the only building in Sierra Leone still being used for railway purposes.

On 10th March 2021, the same Tuesday as the declaration, the first Railway Heritage Club was launched in St. Peter's Junior Secondary School in Bauya, a school which was established in the railway



Bauya, formerly the location of the busy railway junction, where the branch to the north met the main line, some 64 miles from the capital, Freetown.

works compound in the heart of Bauya Junction. The aims of the School Heritage Club were to:

- develop the railway heritage school club as the pilot for other schools nationwide, in order to ensure the long-term protection and sustainability of both the tangible and intangible heritage
- meet the need for an increase in marketing and awareness raising for domestic tourism
- support the cultural and economic development of the local community.

The first activity of the Railway Heritage Club was to explain the history of the Sierra Leone Railway from its construction in 1896 to closure in 1975, which they presented to the local community and invited guests at the declaration ceremony. Follow-up activity was halted by the outbreak of the Coronavirus pandemic shortly after the Railway Heritage club was established, but eventually in July 2021 an Education and Outreach Cultural/Railway Heritage School Programme was organized.

The three-day event, from Thursday 15th to Saturday 17th July 2021, entailed a rich programme of activities designed to educate members of the St. Peter's Junior Secondary School Railway Heritage Club about the importance of the railway in Sierra Leone during the colonial era and some historical facts of Bauya and its environs, to ensure the long-term sustainability of heritage protection with

special reference to the Bauya Railway Station. The main objective of the event was to train 50 Outreach members of the St. Peter's Junior Secondary School Railway Heritage Club including Community members and volunteers of Bauya Township and its environs. Training was conducted in order to carry-out community engagement activities.

The programme brought on board 50 participants and 10 Community Stakeholders from St. Peter's Junior Secondary School and the Bauya Township and the participants gained strengthened knowledge and understanding of what is a museum and how it operates.

Through the tours of the railway compound and meeting with members of the community who remember the railway in operation, the Facilitators also gained new knowledge and understanding, which can be used for the further development of the Railway Heritage Club and the National Railway Museum.

The initial programme was a great success, and it was agreed that, to retain the interest on the young members, it was important to develop a strategy for sustainability, which includes the election of an Executive Committee to oversee the management of the School Heritage Club and to ensure continued activity and continued regular engagement of club members, SLNRM staff and community stakeholders with regular meetings, logistics and supporting materials.

Most of the members of the School Railway Heritage Club had never left the area and were interested in knowing more about

other areas that were touched by the railway. To this end, a second programme was arranged in October 2015, where a bus was hired to enable the children to visit the National Museum and the National Railway Museum in Freetown. This was a very exciting day for the young people and attracted the attention of many more youngsters who would now like to join Railway Heritage Club.

A further visit to Bauya was made in November 2021, by the Education & Outreach Officer, members of the Ministry of Tourism & Cultural Affairs and the Friends of the Sierra Leone National Railway Museum. Museum staff took a supply of paint and took the opportunity to conserve the station signs at Bauya, and to protect them from the elements with a new coat of paint. This was an important visit in signaling the continued commitment of the Museum to the conservation of the railway heritage at Bauya, which has the full support of the local community and the Paramount Chief of the District.

The SLNRM is delighted with the success of the Railway Heritage Club at Bauya and plans to follow up with the establishment of similar clubs at other schools outside Freetown, which have strong associations with the railway, including Newton, Hastings and Bo.



The meeting of the St. Peter's Junior Secondary School Railway Heritage Club.

Our children are our future, and we must ensure that they are equipped to ensure the preservation of our industrial heritage in the long term.

SPAIN AND LATIN AMERICA

AMERICAN LABORATORY OF HISTORICAL PRODUCTION LANDSCAPES

Julian Sobrino Simal and Enrique Larive López, University of Seville

The **American laboratory of historical production landscapes** (ap-lab) is an initiative sponsored by the University of Seville and the Ibero-American University Association of Postgraduate Studies AUIP. It has emerged as a collaborative platform for mediation between researchers, students, agents and citizens who research, inhabit, manage or intervene in active or obsolescent historical industrial territories in America and the Iberian Peninsula. Initially, ap-lab has the participation of 46 researchers and the support of 22 academic and research institutions and aims to offer a space for creative experimentation that allows the simultaneous transfer of applied knowledge to society.

The development that the research, protection, valorisation and activation of industrial heritage has acquired in recent decades in Latin America, in its different cultural and socioeconomic areas, is in line with what has happened in other international spheres, both at the state level and in transnational heritage protection organisations such as UNESCO and ICOMOS.

Parallel to this increased interest in the material and immaterial testimonies of the culture of work, important conceptual changes have been taking place in the very definition of heritage assets, such as the incorporation of those of the Modern Movement, of industrial heritage or of intangible heritage. This process can be synthesised in relation to new dimensions of cultural assets marked by the greater representativeness of the themes, the territorialisation of the material testimonies, overcoming the objectualisation of the assets and the extension of the chronologies of reference. This is confirmed by the new formulas for protection and management based on the interrelation and interaction of protected assets, through the design of cultural itineraries and the characterisation of cultural landscapes.

The 21st century brings new challenges for heritage research, protection and conservation. The increasingly strong links between physical and affective contexts, between natural and cultural heritage, between movable and immovable heritage, between tangible and intangible heritage, between object and context, between specialised technical management and citizen participation, between urban and rural, between local and global, between singular and generic, between concentrated and dispersed, lead us to a new heritage frontier.

All the above-mentioned circumstances are approaching this new frontier in a disorderly manner. It is therefore necessary to establish a new heritage topology that goes beyond the previous narrow

methodological and conceptual frameworks. We define this new heritage territory, a mixture and mosaic of the previous and the present, with the conceptual term of clodiversity.

Clodiversity aspires, in a first phase, to gather these intuitions that still flutter aimlessly in the confused and agitated panorama of globalised society. And they place us before the need to design an integrated approach to the various currents of thought and social demands that are being generated in our world, not only in the field of cultural heritage, but also in other fields of critical knowledge and sustainable action.

Industrial heritage offers us the possibility of thinking about heritage with new tools of a conceptual nature, methodological testing, instrumental practice and active management. With the intention of generating an active laboratory capable of becoming a scenario for trans-disciplinary action, which we highlight the complex variables that affect these spaces: the conflicts between different social models, the relationships between machines and nature; the dynamicity as a result of the constant changes that take place in them; the variability of scale; the rupture of conventional administrative boundaries; the clodiversity that exists in them; the absence of consensual characterisation indicators; the difficulties for their protection; the need to re-establish the emotional and affective connection between natures and post-industrial contexts; the complexity of tracing memories and their often contradictory, ambiguous and painful scars.

Variables that make up a dialectical territory, about the before, the now and the after of what we conventionally understand as heritage values, and which reveal the contradictions existing between users, owners, managers, companies, institutions, visitors, conservationist organisations, academics and technicians, at local, regional, national and international levels, and, all of this, from the very essence of cultural assets: from their authenticity; from their integrity; from their documentary nature; from their conflicts; from their affectivities; from their memories.

The laboratory, applab, is the result of different meetings, dissertations and drafts generated during the research stays at the Universidade Estadual Paulista “Julio de Mesquita Filho”, UNESP, Brazil, during 2013 and 2014 between researchers Julián Sobrino Simal, Enrique Larive López and Eduardo Romero de Oliveira. In them, the basic lines of a future research sub-programme are outlined, which will address the design and launch of the American Laboratory of the Historic Landscapes of Production.

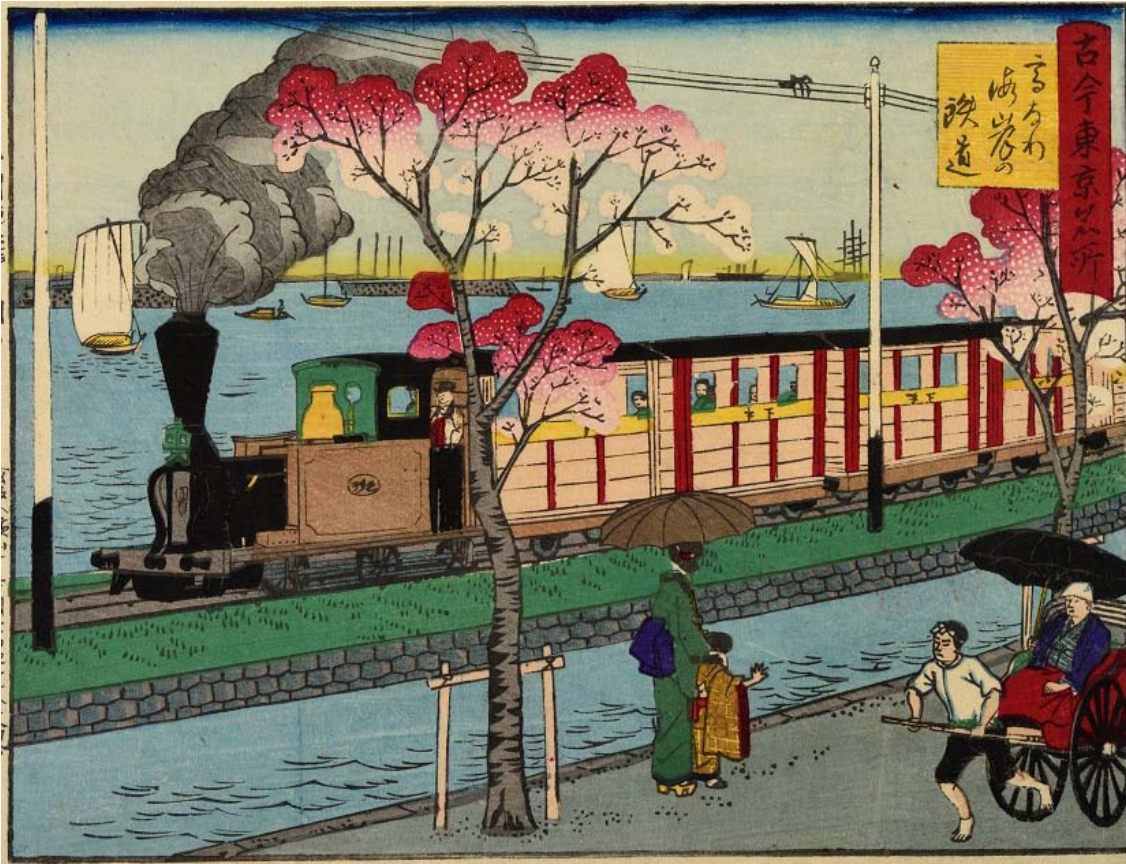
The applab aims to offer a space for creative experimentation that allows the simultaneous transfer of applied knowledge to society, with the manifest intention of improving the governance of our cultural resources from an ethical position that ensures both their harmonious enjoyment and the resolution of the challenges facing biodiversity. Its objectives are

1. To establish the organisational structure for the creation of a channel and point of exchange for researchers dedicated to the study and management of the historical landscapes of American and peninsular production.
2. To generate an observatory of historical production landscapes to promote disciplinary, methodological and instrumental synergies that converge in a collaborative process of experimentation, innovation and active management.
3. To establish an open laboratory to explore systems and instruments for creative research on historical production landscapes.
4. To offer a collaborative platform for communication and transfer where creativity and methodological and instrumental innovation can be encouraged and fostered.
5. To strengthen cooperation between American and Spanish researchers.

The applab was born as an experimental platform for mediation between research, active management and knowledge transfer. It is a catalyst between an inactive reality, a latent activity and an emerging one, in an entropic heritage context. It is an experience open to participation and discussion, which aims to bring together researchers from different territorial, academic and disciplinary contexts and to create synergies and exchanges with young researchers and postgraduate students.

The Ibero-American Research Network applab is sponsored by the University of Seville and the Ibero-American University Association of Postgraduate Studies AUIP.

Contact



An 1883 nishiki-e (print) of the Takanawa embankment by Hiroshige III showing the railroad in its earliest days. The locomotive is most likely the famous No. 1 locomotive, built in 1871 by the British Vulcan Foundry, and which is on display in the new **Railway Museum** in Saitama City.

JAPAN

EXCAVATING THE TAKANAWA RAILWAY EMBANKMENT

Dr. Toshitaka Matsuura

The first railroad line in Japan ran in 1872, five years after the new government was formed and 18 years after the country opened to the outside world. The first line was a single track line connecting Shinbashi Station, the center of the new capital city of Tokyo, to Yokohama Station, the largest trading port, a distance of 29 km with six stations. The railroad was used to transport passengers involved in trade and goods from all over the country that gathered in the capital, especially raw silk, which was the main export item at the time. Buried for a century, the embankment is now being excavated but also destroyed in the redevelopment of the former rail yard.

The construction of the railroad was financed by the government budget, and it was the first railroad in Asia to be built by ethnic capital. However, all the materials such as rails and points, steam locomotives, and passenger coaches were imported from England. In addition, several British engineers were stationed in Japan to guide the design and construction of the line. The 3ft 6in (1067mm) gauge

used by the former British Empire in its colonies and other areas was used, and it became the standard gauge for Japanese railroads in the years to come.

The railroad had a very unusual feature at the time: the track was built over the sea for 2.7 km between Shinbashi Station, the first station, and Shinagawa Station, the next station. It is not clear why the first rail line was built on an unprecedented sea dike. It is currently speculated that the new rail line was an obstacle because the coastline at that time had a highway connecting the capital to the important western Japanese cities of Osaka and Kyoto. In addition, Takanawa, the site of the construction, was a strategic transportation point where a gate was located to monitor the entry and exit of the capital from the west, and it was also a military site at the time.

Although the construction of a marine embankment for the railroad was the first such project for the Japanese, several marine gun batteries had already been constructed since the mid-1850s to protect against the invasion of foreign vessels. These batteries were constructed by filling the shallow sea with earth and surrounding it with stone walls, and they were large enough to hold several cannon. The construction site was also close to the coastline where the railroad was laid. The construction of the battery had been ongoing for about 10 years, so the civil engineers of the time had accumulated technical expertise in marine structures.

The railroad from Tokyo to Yokohama, which opened to traffic, was later named the Tokaido Line, and its extension toward Osaka, a major city in western Japan, soon began. As a result, by 1889, approximately 600 km of track connecting Tokyo and Osaka was completed. The Tokaido Line became the most important line connecting Japan's major cities, and the Takanawa embankment began to be double-tracked in 1876. In 1899, the embankment was expanded, and in 1914, the surrounding coast was reclaimed on a large scale to create the vast Shinagawa rail yard. The base was expanded several times as Japan's railroad business developed, and at its peak in the 1960s, it housed more than 1,000 railcars. While the rail yard continued to expand, the Takanawa embankment was completely buried underground after several reclamation projects, and even its exact location has faded from people's memories.

In the 2000s, the demand for rail transportation in Japan also decreased, and the sprawling rail yard in the center of a large city was no longer needed and became the subject of urban redevelopment. In 2009, construction began to reduce the size of the base and redevelop the site, and redevelopment has been underway since then. 2019 saw the sudden appearance of this Takanawa embankment. The redevelopment of the old rail yard is roughly divided into two phases. The first phase of the redevelopment of the old rail yard is currently underway, and the first phase to be discovered was a 1.3 km long embankment on the eastern half of the 2.7 km long rail yard.

The remains of the embankment that emerged were in better condition than expected, and although the top of the embankment had been cut away, the stone walls on the sides and the bridge for the boating passage were excavated in their original state. For this reason, many academic groups, including Japan Industrial Archaeology society, The Japanese Archaeological Association, and Japan ICOMOS, strongly appealed for the preservation of this site. However, the owner, JR East, never changed its policy of destroying the ruins. Based on the request from Japan, international requests were also made. First, TICCIIH President Dr Miles Oglethorpe sent a letter to all concerned appealing for the preservation of the site. In addition, in the light of the seriousness of the situation, ICOMOS issued a Heritage Alert and strongly appealed to JR East, the Japanese government, the Tokyo Metropolitan Government, and other concerned parties for preservation.

However, JR East did not comply with these demands and only preserved a small portion of the ruins and relocated artifacts, destroying the majority of the ruins. Now, those concerned with preservation are strongly requesting the full preservation of the 1.4 km of



A section of the excavated Takanawa Embankment.



The gate used by the fishermen's boats.

the second phase of construction, where development is about to begin. However, to date, JR East has shown no sign of responding to this request.

Appeal: I would like to know any other examples of tracks on the sea that were created in the 19th century, such as the Takanawa embankment. I have only found two examples in Ireland and Salt Lake, USA.



Klärwerk consists of two separate parts, one for sewage treatment and the other a sewage pumping station.

GERMANY

A JUGENDSTIL SEWAGE TREATMENT PLANT

Christoph Becker, Verein zum Erhalt des historischen Klärwerks Krefeld in Uerdingen am Rhein

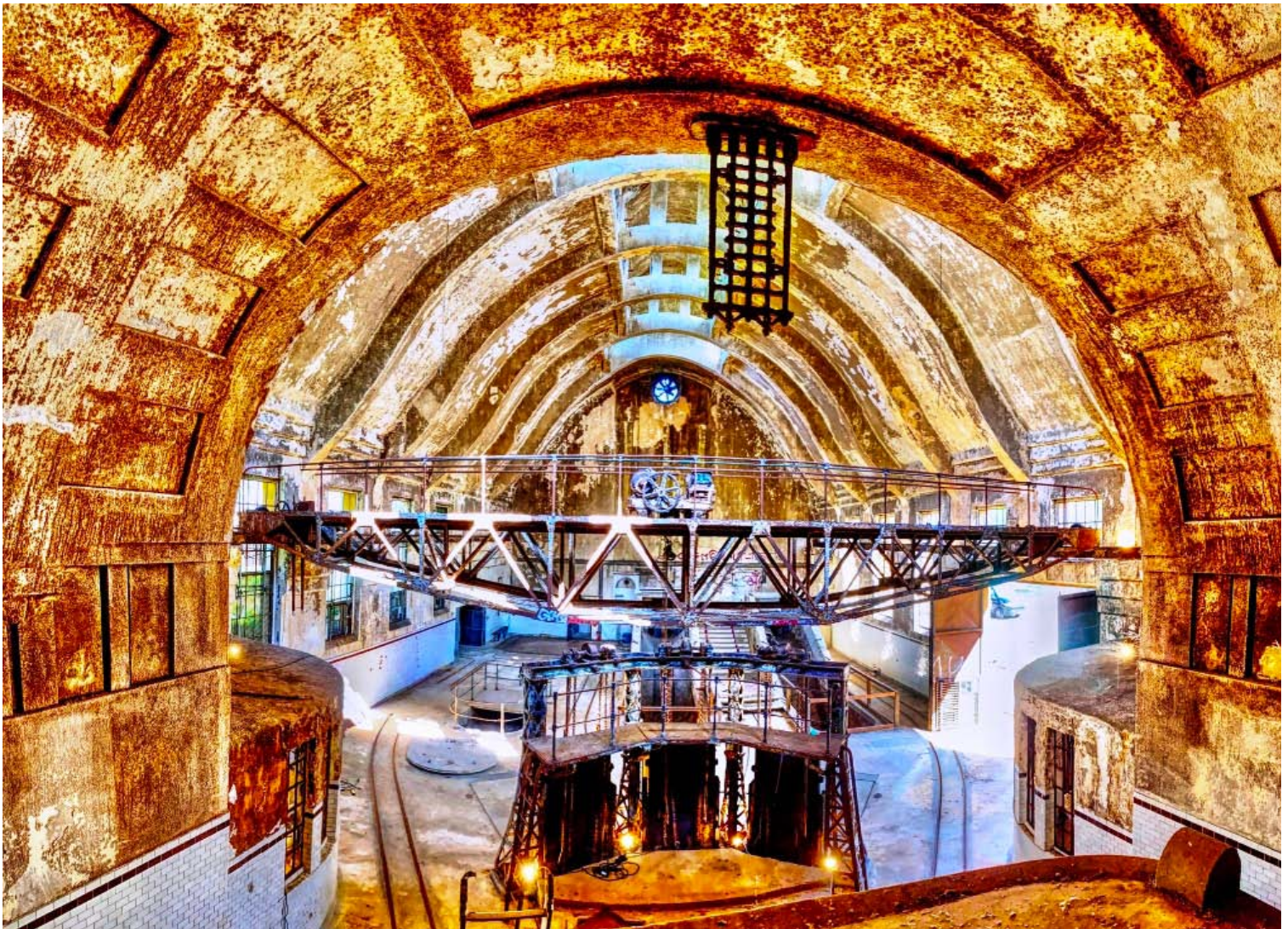
In 2014, four friends who love industrial heritage were interested in an old building in the city of **Krefeld**, near Cologne and Düsseldorf. It took four years of tough negotiations with the municipal owner before the takeover was successful.

Klärwerk was the first sewage treatment plant of Krefeld, 10km away from the river Rhine, built in 1908-9. The unknown civil engi-

neers used reinforced concrete for the supporting structure. The building is one of the first parabolic structures made of concrete that could achieve large spans without supports. The structure is similar to the Wrocław Market Hall in Poland (1906-8), but Klärwerk is made entirely of reinforced concrete, and there is no outside cladding to hide the concrete.

The building of the sewage treatment plant is designed in Jugendstil (Art Nouveau) style, with magnificent, high, light-flooded, halls, and a soft, organic roof construction. The view inside is less suggestive of a technical engineering building but conveys a sublime atmosphere as soon as you enter.

The sewage treatment was mechanical and in-house. Krefeld clearly learned from other examples like the first plant in continental Europe, Frankfurt Niederrad (preserved) and the problems with the



The stunning effect of the interior was probably intended, the complex has its own portal and viewing platform for visitors.

settling basins, and like nearby Cologne, Düsseldorf or Dresden and Hamburg. Early treatment plants in Germany (especially?) had mechanical treatment by fine rakes (Krefeld 6mm), while the biological treatment, explored in a first experimental plant about 50km away in the city of Essen (unfortunately not preserved) was never implemented at Krefeld. The plant ran until 1962.

There were no steam engines, Krefeld used electricity for the new harbour and the sewage treatment plant in high voltage three-phase current, generated at a coal mine some 25km away. Because of that, inside the building there was a transformer station, both the mechanical rotating rakes and the pumps were electrical.

Late in 1962, the sewage treatment was stopped because the Rhine was heavily polluted by industries like the huge chemical plants in Basel, Frankfurt Hoechst, Leverkusen, Dormagen, Uerdingen, and the treatment was now completely inadequate.

It took some years to build a new plant, 1980, several kilometres away. The old plant was reused as a sewage pumping station and

because of that preserved, but unfortunately it was heavily damaged by the now aggressive wastewater quality. In 2000 it was abandoned and vandalised until 2018, when the friends bought the plant from the city and started digging...

After thorough tidying up and cleaning, research into the technical installations as a form of industrial archaeology could begin. The terrazzo floor was discovered under a layer of dirt, then the tiles on the walls were cleaned, and the building was taken out of the bushes. An extremely fascinating figure soon emerged, one that had already illegally lured Lost Places photographers into the forgotten buildings in the two decades before.

To understand the functions and the building's history, and to classify the plant in the development of the wastewater treatment, many records and documents were compiled, in particular from international sources. In Krefeld, the entire city building records were destroyed during the bombing in World War II. The sewage plant itself remained almost undamaged, and the treatment continued technically unchanged until 1962 with two fine screening systems. The

clarification of the water through fine rakes or sieves, used by many cities at large rivers as in Krefeld, was already the third generation of wastewater treatment.

After the introduction of modern alluvial sewer systems, beginning in Hamburg in 1842 by William Lindley, the surface water got extensively polluted. London built an elaborate sewage system under Joseph Bazalgette which transported the metropolis' sewage in underground canals far along the Thames river to nearer the sea. But the sewage from the Paris sewer system built under Georges-Eugène Haussmann had been pumped onto agricultural irrigation fields since 1871, like in the Berlin radial sewer system built under James Hobrecht since 1871.

In 1887 near Niederrad at Frankfurt on the Main River, the first major municipal sewage treatment plant was built, which like the plant built in 1906 in Prague Bubeneč on the Vltava River, used underground sedimentation tanks as wastewater treatment. Both plants are rare examples, preserved, and registered industrial monuments.

The third stage in the development of mechanical wastewater treatment were fine rakes, which filtered the wastewater before it was fed into the river. In the sewage treatment plant in Krefeld there were two electrically driven fine sieve belt rakes, which filtered the sludge from the communal waste water with a rake spacing of 5mm, before the treated water was passed on to the river Rhine.

After wastewater treatment was discontinued in 1962, the building was used as a pumping station until 1980. In 1984 the plant was placed under monument protection, unfortunately some of the equipment had been scrapped before then, including the two rakes. Pumps were installed in their place, which unfortunately severely damaged the construction due to aggressive biogenic sewage fumes. After these pumps were switched off in 1998 and replaced,

the building stood empty and fell into oblivion despite the formal monument protection.

The next two decades saw severe vandalism and theft. The history of the sewage treatment plant faded, as did its appearance. Unfortunately, the local city council was (and is until now) not interested in the formerly own industrial heritage, although the building has now attracted national attention. Enthusiastic efforts to preserve it began in 2018. Public participation, the founding of a supporting industrial heritage association, and opening the plant as a Water Heritage site for visitors is key to long-term preservation.

Inside the building, school classes and groups can research the emergence of modern cities, sanitation, environmental impacts and sustainability. A special attraction will be the planned opening of the in-house underground sewage system. Because today the water we humans use is out of our sight and out of mind. But in times of climate change, the history of water and the cities is an important aspect for the future. In the old sewage treatment plant, which is a special piece of water culture heritage, we can think about the most important resource of mankind, our water.

Since extensive maintenance measures are necessary to stabilise the metal and concrete structures, government funding is important. But the funding was jeopardised, by water. Floods in western Germany in the summer of 2021 unfortunately claimed lives but also required extensive repairs to other heavily damaged monuments along the rivers. Fortunately, the old sewage treatment plant seems nevertheless to be eligible for funding. Over the next four years, more than a thousand broken windowpanes will be replaced, sewers uncovered, the concrete structure repaired and the corroded overhead crane preserved.

Contact

CZECH REPUBLIC

A TOPOGRAPHICAL MAP OF INDUSTRIAL ARCHITECTURE

Lukáš Beran and Jan Zikmund

The Research Centre for Industrial Heritage at the Faculty of Architecture of the Czech Technical University in Prague has for two decades been systematically mapping the industrial heritage of the Czech Republic. All the data that have been collected in the process of the centre's archive and field research are stored in an internal database that currently contains almost 19,000 entries. This database is the Research Centre's primarily working tool for further research and for applied work – for example, in the field of heri-

tage conservation and for the purpose of teaching at the Faculty of Architecture, especially in the faculty's Master's and doctoral programmes. The database is also the foundation for work on a number of interconnected projects.

One unique feature is the centre's **Industrial Topography map**, which offers a picture of industrial heritage in the Czech Republic captured in its more than 5,000 publicly accessible map entries. The map is continuously updated and developed with new information and entries, and it can even be accessed through a mobile app. The map also incorporates the contents of the dozens of topographic, general, and more narrowly specialised publications that the Research Centre has produced over its two decades of work. The database is also a starting point for a number of activities that the Research Centre organised: specialised and popular exhibitions and academic and off-site conferences.



Cotton spinning mill Friedrich Mattausch & Sohn, Benešov nad Ploučnicí, Czech Republic, designed by Séquin & Knobel in 1901. (Lukáš Beran)

In recent years, the Research Centre for Industrial Heritage has been working on the 'Industrial Architecture' research project, surveying the general principles behind the emergence of industrial buildings and sites, which are at the same time the basic principles of industrial civilisation – rationalisation, specialisation, standardisation, and the global transfer of experiences. The aim is to understand the general cultural values of such heritage. The research has therefore sought to grasp industrial structures as complex, individual works and has studied their origin and authorship.

The project has examined the design work of the specialised European design offices that determined the direction of development of industrial architecture in the Czech Republic, and the construction companies that, particularly in the field of reinforced concrete construction, in their day had reached a cutting-edge level in the country, and the project has also highlighted the scientific methods that were applied in design and architectural work. The project's findings, obtained from analyses and comparisons of an extensive body of historical technical and architectural literature and original

sources in regional and national archives and from the structures themselves, have been published in a series of books and journal articles.

One of the project's case studies, however, had to be framed within a broader geographical reach. This is focused on the work of 'the doyen of industrial construction' in Central Europe', the office of Carl Arnold Séquin-Bronner (1845–1899) and his associate – and future successor – Hilarius Knobel (1854–1921), established in Rüti near the city of Zürich, Switzerland. This office introduced advanced British methods of textile factory design and a number of their own construction innovations to continental Europe, and reportedly designed more than two hundred industrial buildings. The results of research conducted by Michael Hanak in the archives of this architectural office, a collection that is now part of the archives of the Institute for the History and Theory of Architecture at ETH in Zürich, were updated and combined with findings from other sources to produce an [on-line map](#) that can be used to share and build on current knowledge. The map makes it possible to draw

connections between individual buildings themselves and between and their current owners, users, and admirers, who have repurposed and redefined many of them in the course of time.

With this map the Research Centre for Industrial Heritage moves beyond the borders of the Czech Republic and highlights the work of specialised architectural offices all over Europe. It at the same

time shows that the history of industry and industrial heritage transcends the borders of individual modern-day states. The map thus also serves as a potential platform for other forms of international cooperation – for example, the sharing of results from research projects on industrial architecture and the concentration of data in one place where it can be continuously updated.

UK

STRATEGY FOR SAVING OLDHAM'S TEXTILE MILLS

Michael Nevell, Ironbridge Gorge Museum Trust

Oldham Council in Lancashire, England, published in March 2022 its **Mills Strategy**, which sets out how the area's historic textile buildings can play an important part in the future of the borough. The study, one of the first of its kind in the country, was commissioned by Oldham Council and Historic England to explore the potential for the mills' future use, with mill sites able to provide space for around 800 new homes.

The Oldham Mills Strategy identifies surviving textile mills across the borough and assesses how important each one is to the local heritage and landscape. It also establishes how they could be repurposed, such as conversion into new homes, for employment or other uses – minimising the area's carbon footprint by reusing previously developed sites.

Why are Oldham's textile mills so important and worth saving for the future?

During the 19th century, Oldham emerged as one of the satellite cotton towns supplying Manchester in its role as the epicentre of the developing textile trade. The industry of the town and the surrounding area was initially handloom weaving, particularly of woollen goods, but Oldham subsequently became a centre of coarse-spinning using American cotton.

Oldham's cotton firms were aided considerably during the 19th century by the emergence of a local engineering infrastructure, and a network of textile-machinery manufacturers expanded to become the greatest in Lancashire. These included the Platt Brothers, who from the 1840s outstripped their rivals as the largest textile-machinery makers in the world.

By 1860, there were around 200 cotton mills in operation in Oldham. In contrast to many other textile-manufacturing centres in Lancashire, Oldham's position was boosted during the Cotton Famine of the mid-1860s when the American Civil War caused supplies



Elk Mill (1926) was the last cotton mill working in Oldham, it closed in 1998 and was demolished the following year (Chris Allen, CC).

of raw cotton from the slave plantations of the southern states to dry up. Platt Brothers worked with mills owners to adapt their mules to spin Indian yarn instead of American. The result was that Oldham surpassed Manchester and Bolton to become the metropolis of cotton spinning.

As in other textile-manufacturing districts, Oldham's earliest mills were generally plain, utilitarian structures. By the middle of the 19th century, mills were being built higher, longer and wider, an L-shaped plan evolving where the engine house projected from the building at one end.

The years 1873-75 were a boom of mill-building, so that 318 mills were in production by 1875. By 1890, Oldham cotton had reached its zenith, and its spindles accounted for 12.4 percent of the global total. The design of mills became increasingly sophisticated, mirroring advances in technology and construction and the need for increased output and efficiency. In the 1820s and 1830s, brick-vaulted ceilings supported by cast-iron beams and columns were introduced, a technique developed further and subsequently patented by renowned Oldham architect Abraham Henthorn Stott in 1871. By the end of the 19th century, concrete floor joists were being used instead of brick arches. Despite the application of fireproof construction techniques, however, blazes were still common and from the 1880s, and sprinkler systems, invented in the USA in 1881, began to be introduced, with reservoirs in the towers on the flat roof.

Roger Holden has shown that in the hands of the joint-stock companies, mills began to be more decorative and ambitious, turning them into landmark structures, the name of the mill was often displayed across the top (Roger Holden, 1997, *Stott & Sons: Architects of the Lancashire Cotton Mill*). The remainder of the building usually consisted of vast flat expanses of wall punctuated by windows. The windows themselves became larger as the 19th century progressed, responding to a need for more light and better ventilation as faster machinery generated higher temperatures.

A further boom in 1904-8 generated another phase of mill-building, and by 1911 there were 335 mills in Oldham. In 1926, the peak year when the Lancashire Cotton industry reached its maximum productive capacity, Oldham's spindleage stood at its all-time high of 17,700,000. However, a combination of trade depression, coal shortages, the General Strike and over-stretched finances meant that from 1927, mills began reducing their spindleage as companies started to fail and overseas markets disappeared. Despite boycotts from India in the 1930s and overseas competition during the late 1940s and 1950s, Oldham remained until 1964 the largest single centre of cotton spinning. However, by the 1990s in the face of artificial fibre

production and a collapse in overseas markets only a handful of cotton spinning mills were working in the town, and the last, Elk Mill, closed in 1998.

Across Oldham the 2017 survey noted that the average loss rate of mills between 1988 and 2017 is 38.8%. Even so, it is clear from the 2016-17 assessment by the Greater Manchester Archaeological Advisory Service (GMAAS) that the borough has an important stock of textile mills still standing, making a significant contribution to the character of the historic industrial environment. The national importance of several of these mills is reflected in their designation as listed buildings, although the borough also contains numerous very significant but non-designated mills.

The GMAAS survey concluded that most of Oldham's extant mills (76 out of 104) were at 'Low Risk' or 'No Risk' based on their current condition and levels of occupancy/commercial use. How many of these might be standing in another 40 years thus depends upon local communities recognising the value of the embedded carbon in these structures as opposed to new builds, and the promotion of these industrial structures as buildings for converting to new apartments. That's the challenge and aim of the new mill strategy.

CHILE

A CRITIQUE OF THE INDUSTRIAL HERITAGE OF THE GLOBAL SOUTH

María Esperanza Rock Núñez, Director of OTEC Cultura y Territorio and NUDISUR Patrimonio, Cultura y Territorio

The process of industrialization in Chile was carried out gradually and in parallel with the process of colonization and the subsequent installation of the Republic. As a result, the labour force of Chile comes mainly from the native peoples and natives who have been assimilating to the agricultural dynamics imported and installed by Europeans.

The process was a long one given that not only a new culture, a new religion and new political ontologies were installed, but also a new legislation that supported the worldwide expansion of extractive processes that originated in Europe. This phenomenon will later be called globalization.

Particularly in southern Chile, this had great challenges, not only for the foreigners who pushed the extractive activities in regions far from industrial centres, but also for the indigenous Mapuche people, who led an unprecedented resistance. Chile's independence from the Spanish monarchy was driven by Chilean-born children of Spaniards, and was declared with the signing of independence in 1818. This meant that the political distribution of



The sloping entrance the Lotilla mine leading down to the below-sea coal seams, 1876. (ENACAR photographic record, digitized by the Universidad de Concepción Photographic Archive, recovered in 2010)

power stayed in the hands of outsiders. Territorially, the natural border was the Bío-Bío River, which separated the new Chilean Republic to the north of it from the lands of the native people, the Mapuches, to the south. The Mapuche lands, extending from the Bío-Bío south to the Toltén River, are now commonly known as the Araucanía.



Headstock and winding engine of the mine, 1866. (ENACAR photographic record, digitized by the Universidad de Concepción Photographic Archive, recovered in 2010)

The occupation of the Araucanía started in 1860, and it was incorporated into the Chilean Republic in 1883. Wars, treaties, agreements and disagreements affected the agricultural lands of the Mapuche who still defended their territory, their families, their lifestyle, and their cosmogonies.

In 1861, Cornelio Saavedra proposed the plan of militarized and systematic occupation, building fortifications that gradually ran along the border line to the south of the Biobío River. This process was marked by violence and forced labour by the original communities. The frontier life developed from wars, political and economic relations and with important family relations that were produced by the mixing of Spaniards and Mapuches.

This period is called the Arauco War, and it featured discord between both power groups disputing territories, autonomies, and mutual recognition. The problem persists as an important historical debt to the Mapuche who continue to resist in search of recognition and autonomy.

Coal and the rise of modernity in indigenous contexts

It was in this context that industrialization was installed in the frontier territory. The discovery of important minerals attracted many industries, creating what is necessary to activate industrial development.

A significant phenomenon occurred with the installation of in-

dustrialized mining operations along the Biobío River. Although there were extractive activities throughout Chile of both coal and other minerals, it was in Lota where industrialized extraction and the development of modernity were installed from the middle of the 19th century. Matías Cousiño, a businessman with important background in the saltpetre and copper mining industry of northern Chile, discovered the submarine coal seams in Lota and began systematic settlement in the territory. In 1851, the first extractive plant was established, and in 1897, the first hydroelectric plant in Chile.

Cousiño and his team placed extraction processes, copper smelting, the hydroelectric plant in Chivilingo, and they promoted the construction of the railway. The latest technology of that time also promoted the construction of a company town with high standards, quickly becoming a city where peasants and Mapuches saw the possibility of independent life.

However, the problems of settlement, public health and the precariousness of the labour system that was confused with colonialist dynamics, lead to years of mutual struggle. Lota was an important engine of social change for establishing decent work systems, housing, education, and health.

After important political, economic, and social processes, the industrialization of southern Chile is an important part of the acculturation process that took place here, with the original native

people assimilating a new culture through their direct contact with European-style extractive industries and the formation of modern societies in indigenous territorial contexts.

For the social sciences, these company towns can be real laboratories to observe historical phenomena of cultural syncretism, and socio-cultural phenomena where the network between cultural diversity, the different power groups and the installation of modernity are perceived as motors of important social changes for those who were obliged to change their lifestyles and worldviews, either out of necessity or in search of new horizons. To understand the original cultures, is to understand the cultures of those who are relevant for the installation of industrial processes and who first assimilate the modern life. In them we can find the foundation of our current society.

Critical industrial heritage reflections

The coal industry in Lota finally closed in 1997. At the end of the 20th century, many industries in Chile had to close given the various global political and economic phenomena.

The coincidence of the colonizing events, the installation of republics with an important colonial stamp, and the phenomenon of the

industrialization of the global South, demand a critical reflection in relation to the processes of industrial patrimonialization, where the important indigenous contribution in these matters is rarely visible. This can be an important attribute also within UNESCO World Heritage declarations.

The spheres of power are installed from a complex cultural domination and require native peoples to adapt to lives that scarcely incorporate their ontologies.

The determinism of the labour trades has meant that the ancestral cultures' ways of being overlap or are hidden in the industrial historiography, being an important axis to consider for those of us who continue to understand and observe the importance of their worldviews in modern, postmodern, and current processes.

In post-industrial cities, and in current political contingencies, indigenous identities are an important part in the re-significance of their past and present. This reaffirms the need for further research and studies that allow us to dismantle the official history in order to trace the cultural and historical threads of the original cultures. This would also make important contributions to the critical reflection on the industrial heritage of the global South.

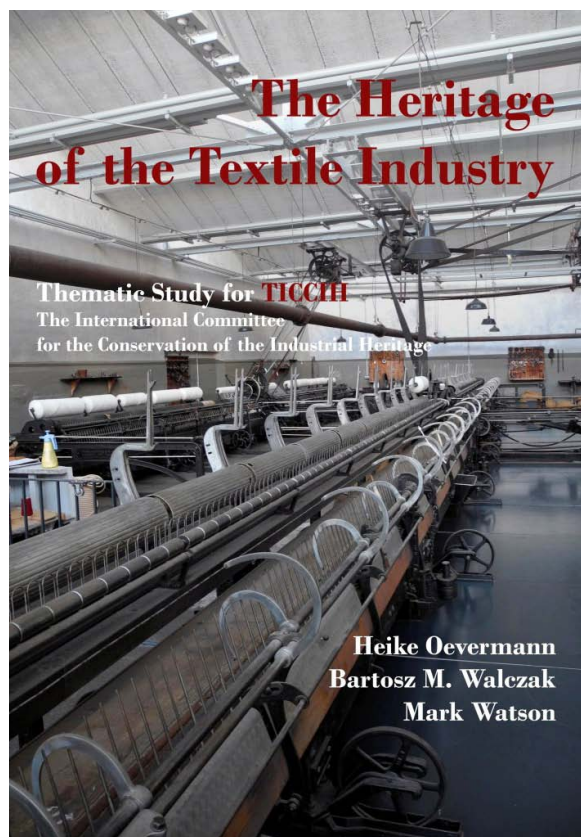
TICCIH NEWS

THE HERITAGE OF THE TEXTILE INDUSTRY – TICCIH THEMATIC STUDY

Mark Watson

The textile industry is a global phenomenon encompassing the impetus for industrialisation, the growth of cities, the creation of company towns and world-wide trading routes in staple goods: silk, wool, linen, cotton, jute and artificial fibres. Facing global economic changes, textile mills have proved adaptable to new purposes. Many spearhead urban regeneration and secure the future identity of places. Which lessons do mill conversions give? Which are the pioneers, the flagships, the giants, and the time capsules, containing historic machinery, and what are the related skills (intangible or living heritage) needed to work them? Which networks best demonstrate international interchange? Did associated company towns fail or prosper? Some are World Heritage Sites - is the balance correct? What attributes do these places share, what makes them different, and what is missing?

This book ([downloadable pdf](#)) condenses input by several researchers into the better understanding of textile mills and landscapes worldwide. The authors/editors are professors of Architecture in



Poland and Germany, and a historic buildings practitioner in the United Kingdom. They incorporate contributions made by experts at meetings of the TICCIH textile section in Spain, Germany and France. During the global pandemic, two online workshops were held that enabled better participation from other parts of the world, for example Iran, Egypt, China, India, Mexico. There is also a [YouTube video](#) compilation Preparing the TICCIH textile study by Heike Oevermann from the two online workshops.

Online searches by Bartosz Walczak of lesser-known countries, now big textile producers, such as in the former Soviet Union and in Africa filled some gaps. He also did the layout for printing and reorganised the Gazetteer by country for ease of reference. Yet the initial criteria and themes for selection agreed at the TICCIH Textile section meetings hold true: pioneers, flagships, giants, international interchange, time capsules, urbanism (including com-

pany towns) and textile landscapes. We felt this fitted better with UNESCO criteria, while not being identical matches, than would something like “Best silk mill / cotton mill” etc.

The authors are grateful to everybody whose work is included here, and apologise to those who don't think the representation there adequately reflects the relative importance of the industry in some countries (yes, Belgium). The search for places of international value to textile heritage goes on, and we will be glad to hear of sites that may have been missed. Please contact the author at [mark.watson\(at\)hes.scot](mailto:mark.watson(at)hes.scot)

The following text is an example of the sites which have been examined. Mashhad Mill was entered in 2020 in the National Heritage List of Iran.



Mashhad Mill, Iran, which used German technology and closed in 1990.

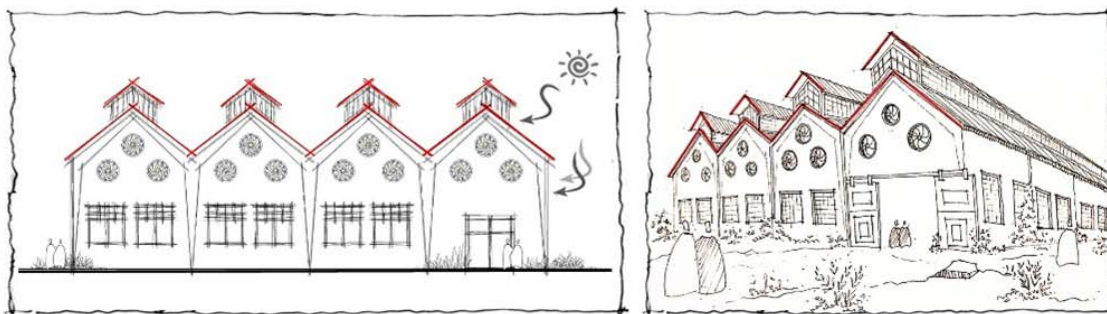
MASHHAD TEXTILE FACTORY, IRAN

Mohammadjavad Mahdavinejad, Maryam Rasoolzadeh, Fateme Fanaei Sheikholeslami and Martin Meyer

The Mashhad Textile Factory is a pioneering example of modern industry in eastern Iran, which had a constructive role in the Mashhad economy in the first Pahlavi era (1921-45). The first steam-

powered textile mill in Mashhad was built by an Armenian named Haroutonian. Mashhad textile factory was financed and owned by the Persian government. Planning started in 1927 under the supervision of the German Max Otto Schünemann, of Hochtief, who supposedly brought to Iran sketches by famous German architects such as Walter Gropius, Hans G. Meyer, and Martin Hoffmann, as inspiration for the design of the factory buildings.

Local Iranian architects were involved in the design process and construction of the Mashhad Textile Factory in order to match the sketches to Iran's climatic conditions and to harmonise the archi-



Sketch by the authors of the gable roof of the production halls with unadorned walls.

tectural drawings with local materials. The first section was built in 1934 and the factory started partial production until its completion and formal opening in 1937. Architectural elements such as the flat roof of the central hall, the gable roof of the production halls, and unadorned walls lacking conventional ornamentation, resemble the Bauhaus style. Some architectural details, such as stair-shaped form, the entrance, limited ornamentation, and monochrome colour resemble the architecture of Peter Behrens. The architectural style of the Mashhad Textile Factory quickly became a source of inspiration for the city. Therefore, some elements of the building, such as the detailing of the cladding roof and simple triangle in frieze of the front facade, have been mimicked in other buildings in Mashhad. The main products were textile, leather, treated wool and fur for Persian carpet.

All the spinning machinery was ordered from Platt Brothers of Oldham, UK, and all the knitting machinery and accessories were from the German company Union Matex. The factory has been a witness of international interchange, a joint effort by German, Austrian, Italian, Iranian and Swedish engineers before World War

II; and then by Iranian British and American engineers after production paused in 1943. The Mashhad Textile Factory worked until 1990 when it was abandoned. Due to MHFL (the Modern Heritage and Future Legacy Research Hub) efforts, in 2020 it was listed in the National Heritage List of Iran, by the Ministry of Cultural Heritage, Tourism and Handicrafts.

The area of the Mashhad textile factory's site is around 6 hectares. The early plans of this factory, which were documented by German architects, demonstrate that most parts of this complex have remained till today. One of the oldest buildings of Mashhad textile factory with an area of about 1560 square meters, was used for generating the electricity of this complex and also parts of the city's electricity and is still left abandoned.

Mashhad textile factory is of great value in terms of its significant location in the inner city. Adaptive reuse of this factory can positively affect its surroundings and increase the quality of life in this area. Recently, some parts of this factory have been changed into a museum, but the valuable parts of it are still left abandoned.

EDUCATION

ERASMUS MUNDUS JOINT MASTER DEGREE IN TECHNIQUES, HERITAGE, TERRITORIES OF INDUSTRY (TPTI)

Marco Bertilorenzi (University of Padova), Ana Cardoso do Matos (Universidade de Evora) and Valérie Nègre (Université Paris I Panthéon Sorbonne)

The Master Erasmus Mundus **Techniques, Heritage, Territories of Industry** (TPTI) is a two year international graduate program coordinated by the University Paris I Panthéon-Sorbonne in France and offering a joint degree with the University of Padua, in Italy, and the Portuguese University of Evora. Created in 2007, the TPTI has obtained the funding by the European Erasmus-Mundus action four times, the most recent in December 2021 (Erasmus Plus

call 2021-2027), which marked a unique achievement within the Erasmus-Mundus master programs.

This graduate program focuses on technological and industrial heritage, proposing a multidisciplinary approach that merges methodology from the history of technology and technological heritage relating to objects, buildings, urban planning, and landscapes. It is intended for both students and professionals who want to deepen their knowledge in these fields of study, either to move forward with a career of teaching or research, or to work within the cultural sector (museum studies, management of cultural institutional heritage and cultural mediation between communities and government on both a national and international level).

Thanks to European funding, it offers a unique opportunity to students aiming at a multidisciplinary and multicultural training. The TPTI curriculum offers specific and in-depth skills regarding economic history, history of technology, heritage, architecture and plan-

ning, landscapes, management and languages. These include the skills used for the detection of the layers that configure the different territorial cultural systems and for conducting research on technology, on industrial heritage and on tangible and intangible cultural heritage, on business history and technology history, while mastering the techniques of onsite investigation, the critical use of written, oral and visual (iconographic, cartographic, photographic and cinematographic) sources, the process of granting heritage status to industrial heritage, and the analysis, inventory and enhancement of tangible and intangible heritage, produced by the technical and industrial culture in different eras and civilizations, also in view of new local development processes.

The courses are smoothly integrated within three major European universities. During the first semester, the Department of History at University Paris I Panthéon-Sorbonne offers a high level program centered around the history and the anthropology of technology. During the second semester, students move to the University of Padova, where courses are focused on the industrial history and heritage. The third semester takes place at the University of Evora and focuses on the study of cultural and technical landscapes. For the fourth semester, students return to one of the three universities, based on the focus of their research topic. Also included is the option for a research period of up to five weeks in one of the five partner universities located both inside and outside of Europe in the Czech Republic, Spain, Tunisia, Senegal, Japan or Argentina. Dur-

ing the two year program, students also work on a research project for their master thesis and on a collective project on a specific heritage. At the end of the program, students receive a joint degree from Paris I, Padova and Evora universities.

The richness and strength of this Master Degree lies in the interdisciplinary nature of the program. It combines history, anthropology, archeology, art history, sociology, conservation, and museum studies, as well as a diverse supervising team of both research professors and scientific practitioners connected with culture and heritage. Another important quality is to bring together institutions, scholars and students from all over Europe, Latin America, Africa, and Asia with the goal of illuminating the variety of ways in which the history of technology, industrial heritage, and cultural heritage are addressed around the globe. The first language of instruction is in French, and the second is in English. French, Italian, Portuguese and English courses are also offered throughout the program: the multilingual challenge is a further quality of the master program.

The master program offers scholarships to students and visiting researchers and usually the enrollment campaign starts in November of each year. It is highly competitive, because the master program usually enrolls about 20 students per year, selecting them on the basis of their CV, research program and cover letter. For more information, please visit the program [website](https://www.univ-paris1.fr/tpti) (in French and English). or contact the coordination at tpti@univ-paris1.fr.

CONFERENCES

EAST-WEST WORKSHOP ON INDUSTRIAL ARCHAEOLOGY

Juan M. Cano Sanchiz, University of Science and Technology, Beijing

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The East-West Workshop on Industrial Archaeology (EWWIA) series is an initiative developed since 2021 by the Institute for Cultural Heritage and History of Science & Technology, University of Science and Technology Beijing (ICHHST, USTB); and the British Association for Industrial Archaeology together with its Young Members Board (AIA-YMB). The series aims to create a virtual space for sharing experiences in the archaeological study of the industrial past, but with plenty of flexibility in terms of chronological scopes, topics and disciplinary approaches, since such flexibility has always been at the core of industrial archaeology. In doing so, the EWWIA brings together scholars and professionals from the West, the East and beyond with two objectives. First, to promote industrial archaeology in the East, where this field of studies is underdeveloped in spite of the fast growth of industrial heritage studies, protection and reutilisation. Second, to exchange ideas and practices, so together we can build a more diverse discipline that can explain better the complexity of industrialisation in its global and multi-temporal dimensions.

So far, two editions have been celebrated. The first workshop (May 2021) was entitled Introducing the Archaeology of the Industrial Society and counted on presentations by Professor Marilyn Palmer (President of the AIA, UK), Dr Michael Nevell (Industrial Heritage Support Officer for England), Professor Wei Qian (Dean of the ICHHST, China), and Dr Juan M. Cano Sanchiz (ICHHST and AIA-YMB). The second edition (May 2022, The New Generation) gave voice to young scholars and professionals doing industrial archaeology in China (Dr Yuchen Wang, ICHHST), Britain (Otis Gilbert, vice-chair of the AIA-YMB), Portugal (Mário Bruno Pastor, Portuguese Catholic University) and Brazil (Dr Tiago Alves Silva Muniz, Federal University of Pará), thus including the Global South in the conversations.

Perhaps the most prominent contrast between Western and Eastern industrial archaeology revealed by the EWWIA is that in the East (namely in China) the discipline is more frequently understood diachronically, while in the West a synchronic approach (the archaeology of the industrial period) is generally preferred. Such diachrony comprises traditional handicrafts and modern manufactures. Besides, it involves not only a further look into the past, but also a wider one into the present, as demonstrated by the interest in very modern sectors and technologies (the display industry, for example), especially among industrial heritage scholars. A second point of contrast is the involvement of

the archaeologists themselves. Everywhere, industrial archaeology has traditionally gathered a diverse collective of people with different backgrounds. This has resulted in its interdisciplinary character, but also in certain distances from proper archaeological theories and methods, and in its double understanding as a conservation movement and as archaeological research. However, in the West, especially in countries such as Britain and the USA, the involvement of the archaeologists in the study of the industrial period has been more prominent, while in the East the archaeologists are typically focused on older periods of history. Finally, a technological approach is stronger in the East (particularly in China), which means that more weight is given to the history of technology (in contrast to the socio-cultural history of industry defended by modern industrial archaeology in the West), and to the use of tools from archaeological science and other disciplines more related to the natural sciences.

In short, the EWWIA series is evidencing the complex nature of industrial archaeology and the different ways of understanding it: period/thematic discipline; research/conservation; social archaeology/history of technology, etc. This is a consequence of the dis-

similar features that industrialisation has had in diverse parts of the world, as well as of different ways of understanding and practising archaeology. In front of this situation, the EWWIA seeks to generate discussion to support the revision of the chronological and thematic borders of industrial archaeology and to update its research framework with a more international approach that can reflect other realities.

From now on, two workshops a year will be hosted, most likely on the last Saturday of every May and November. The third workshop (November 2022) will give more visibility to the contributions made by women to industrial archaeology in the present and to the industrial society in the past. The fourth edition (May 2023) will be centred in the archaeology of technology. In all of them, several perspectives will continue to be considered (such as industrial heritage, history of technology, museology, conservation...) to further develop the dialogue between the archaeology of industrialisation and other disciplines interested in the industrial past, as well as among experiences from the West, the East and the rest of the world.

OBITUARY

PROFESSOR AKIRA OITA, 1949-2022

Shoji Ishida (Chubu Society for the Industrial Heritage)

On June 22, 2022, Mrs. Yukiko Oita sent an e-mail saying that her husband, Professor Akira Oita, had died.

Prof. Oita was born in 1949 in Takarazuka City, Hyogo Prefecture in Japan. Prof. Oita became a researcher after working at the Faculty of Economics, Keio University. His specialty was the social history of technology, industrial heritage research, and museology. When he was in graduate school, he studied abroad in Germany and became a visiting researcher at the Deutsches Museum in Munich. After graduating from graduate school, he was a professor at Tamagawa University, University of Marketing and Distribution Science, St. Andrew's University, Shizuoka University of Art and Culture, and Atomi University.

Prof. Oita first participated in the TICCIIH congress in Sweden at the 3rd conference in 1978 while studying in Germany. I first met Prof. Oita in Munich in the summer of 1990. Since then, he has been familiar for 30 years through participation in the Industrial Archaeological Society and the TICCIIH Congresses. He participated 14 times, from the 5th Boston-Lowell to the 17th Congress in Santiago, Chile in 2018. During this time, he was the TICCIIH Japan national



AKIRA OITA

representative from 2000 to 2015. He is probably the one who attended the TICCIIH conference the most and it left an impression on me that Prof. Oita always made people laugh with a light humor while holding a smoking pipe in one hand.

Prof. Oita and I have long wanted to hold the TICCIIH conference in Japan. In 2005, the Aichi Expo was held in Aichi Prefecture, and in

order to liven up the Expo, various events were invited as related events. It took a lot of money to hold an international conference. We held close meetings with the persons in charge in Aichi Prefecture and Nagoya City. Succeeded in sponsoring Nagoya City and Aichi Prefecture and proposed to hold Japan at the 2003 TICCIH

Moscow Conference, which was approved. TICCIH Intermediate Conference 2005 was held at the Nagoya Congress Center from July 6th to 8th, 2005, and Prof. Oita was the greatest contributor to holding this conference.

BOOK REVIEWS

INDUSTRIAL HERITAGE RETOOLED: SELECTED PERSPECTIVES ON PROTECTION

Ivana Kocavska, Independent Cultural Heritage Practitioner / Management Associate at National Committee ICOMOS Macedonia

At the end of last year, the project Perspectives on Industrial Heritage Protection climaxed in an online event gathering several renowned experts to present their points of view on this type of heritage preservation in front of an international audience. The project executed by the National Committee ICOMOS Macedonia consisted of the translation of professional literature on the protection of industrial heritage and a promotional event - expert discussion.

The first activity was completed with the support of TICCIH, a selection of eight chapters from *Industrial Heritage Re-tooled: The TICCIH Guide to Industrial Heritage Conservation* were carefully curated and translated into the Macedonian language, along with two international doctrinal texts for the protection of industrial heritage, the Nizhny Tagil Charter and the Dublin Principles, both for the first time translated into Macedonian. The pioneering digital publication, titles *Perspectives on Industrial Heritage Protection*, is edited by Kristina Biceva, president of ICOMOS Macedonia and Ivana Kocavska, author and manager of the project. The selected chapters reflect the current condition of Macedonian industrial heritage and the essential steps to be undertaken if this type of heritage is to be preserved in the country.

On the notion of successful collaboration between TICCIH and ICOMOS Macedonia, the new book begins with a foreword by Miles Oglethorpe, the president of TICCIH. This section is followed by an introduction by the editors, Biceva and Kocavska, who briefly introduce the readers to the industrial development in N. Macedonia and give an overview of the selected chapters.

The goal of Perspectives on Industrial Heritage Protection was to set the foundations for further development of this professional practice in N. Macedonia. The chapters chosen were Why Preserve the Industrial Heritage? by Neil Cossons, followed by Recording and Documentation by Miles Oglethorpe and Miriam McDonald. The authors in this chapter argue that recording is a fundamental priority for all those concerned with managing, protecting and utilising the industrial



heritage, so crucial to be done at the highest possible standard. The third chapter, Choosing What to Preserve by Paul Smith, was selected to serve as a case study of the criteria for the study and the protection of the industrial heritage developed in France.

Besides industrial heritage from earlier periods, N. Macedonia has a vast legacy of factories from its self-governing socialist period, affected by privatisation following the disintegration of Yugoslavia during the 1990s. Privatisation implies a maze of ownership regulations, which is why Legal Protection by Keith Falconer is a vital input to the selection. According to the author, the legal protection of historic industrial sites is a means to an end, as management and conservation should be the primary aims involving different levels of protection.

The fifth chapter, Urban Regeneration and Planning by Massimo Preite, offers cases of transformations of industrial cities in England, France, Sweden, Finland, and Germany. The author addresses the

new cycle of transformations from the beginning in the 1990s in Europe, when abandoned production sites were finally seen as opportunities for development. Preite highlights the critical issues of urban regeneration plans: sources of financing, governance models, the relationship between the plan and the project, and conservation goal concerning the regeneration goals.

Projects for adaptive re-use are a hot topic in architecture and urban studies, even in N. Macedonia, where the interest in industrial heritage is relatively low. As Benjamin Fragner states in the sixth chapter, Adaptive Re-use, nothing has brought the amount of attention and interest in industrial heritage as revitalisation projects of abandoned warehouses, textile mills, factory halls, breweries, iron and steelworks and power plants that go hand in hand with the latest art trends. In fact, master's theses of architecture students often explore the revitalisation of specific local factories. Several NGOs have brought these issues even further by campaigning to transform an abandoned factory on the periphery of the capital city into a student cultural centre. This chapter is included with the hope that it will be helpful for a broader audience to understand several vital methods such as preserving the integrity of industrial heritage through conservation, searching for the right degree of new, creative interventions, to abusing through the destruction and devaluation of surviving features.

The seventh chapter is a valuable resource for the professional community that deals with heritage management. Conservation Plans by Helen Lardner focuses on three crucial elements of good conservation plans: significance definition or heritage values of industrial heritage, policies development to protect the recognised value significance, and management strategies for the future.

The last chapter from the selection, Conservation and Community Consciousness by Hsiao-Wei Lin, deals with conserving small and traditional industrial heritage sites against the redevelopment of large sites through adaptive re-use, urban regeneration, museums or tourism.

This publication aims to open up a discussion on industrial heritage and highlight its broader values for the community. On this note, the project's second activity, along with promoting the novel publication, a forum with an expert discussion, took place on 17 December 2021 on the Zoom platform to increase the interest and research in industrial heritage protection in the country. The forum featured Miles Oglethorpe, president of TICCIH; James Douet, editor of the original publication Industrial Heritage Re-tooled and of the TICCIH Bulletin; Sonja Ifko, president of ICOMOS Slovenia and associate professor of Architecture at the Faculty of Architecture, University of Ljubljana; Ada Vlajić and Rifat Kulenović, curators at Museum of Science and Technology, Belgrade, Serbia; and Ivona Krsteska, representative of Cultural Echoes, Skopje, Macedonia.

The virtual event was attended by professionals of various backgrounds from N. Macedonia, USA, China, Bulgaria, Turkey, Nigeria, Indonesia, the Netherlands, Serbia, Bosnia and Herzegovina, Croatia, Israel, Slovenia, Japan, Vietnam, Australia, Iran, Portugal, Ireland, Belgium, Scotland, Spain and Lebanon. The video stream of the event is available on [ICOMOS Macedonia's YouTube channel](#).

Contact

TECHNOLOGY, ECONOMICS, AND CANAL DEVELOPMENT – AN EARLY TECHNICAL BOOK AND WHAT IT REVEALS

Mike Clarke, Railway & Canal Historical Society, Stamford 2021. 240 p. £35.00es

Reviewed by **Martin Hohberg**

The Canal du Midi connects the Atlantic with the Mediterranean over 500 km as the crow flies, and allowed France from 1681 mass transports by water, bypassing the Iberian Peninsula. The Habsburg Empire pursued similar strategic plans with a connection from the Danube to Trieste, of which the Wiener Neustädter Kanal, opened in 1803, still bears witness today; however, the southern railway, opened in 1857, got in the way of its extension to Trieste.

Mike Clarke has taken on the task of translating the standard historical work from 1817 of the K.K. Field Marshal Lieutenant Sebas-

TECHNOLOGY, ECONOMICS, AND CANAL DEVELOPMENT

AN EARLY TECHNICAL BOOK AND WHAT IT REVEALS

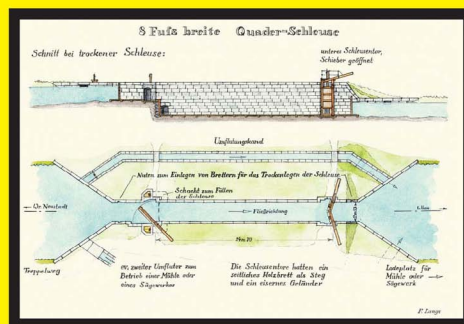
Mike Clarke

including a translation by Mike Clarke of

Instructions for the Design and Implementation of Navigable Canals

SEBASTIAN VON MAILLARD

K.K. Austrian Field Marshal – Lieutenant in the Engineer's Corps, Member of the Royal Army's Society of Sciences in Prague, and Corresponding Member of the Emperor's Academy of Sciences in St Petersburg.



tian von Maillard, *Instruction for the Design and Execution of Shipable Canals* into English. In his own beautifully illustrated supplementary chapters, he traces the model of the Dutch towpaths (*trekvaarten*) and their great economic importance in the Dutch Republic 1581-1795 as well as Maillard's winter journey of 1795/96 through England. He became acquainted with the advantages of the 'narrow canals' and calculated that if limited to narrow boats with a load capacity of 22 t (instead of 84 t on the Canal du Midi), the construction, operating and maintenance costs would only amount to about one third of those wide canals with the same loading capacity. The colourfully-engraved construction drawings of canal bridges, tunnels and locks with the lateral towpaths are finely reproduced and, thanks to Maillard's complements, make it possible to immerse oneself in the engineer-like trains of thought. In short appendices, further pioneers of canal construction from France and Germany are presented.

Mike Clarke's own research and discussions with experts in continental Europe in the chapter Technical Training: Education and the Craftsman allow him to draw interesting educational-historical comparisons between the aristocratic military engineering of France and the artisan tradition of England, whose combination in technical universities (such as the Fridericiana Karlsruhe founded in 1825) with mathematics as a key discipline led to Germany being able to pass Britain in many technologies from the middle of the 19th century.

Thanks to the editors of *Industriekultur* for permission to reproduce this review.

THE COLONIA SEDO D'ESPARREGUERA, THE LONG HISTORY OF AN EMBLEMATIC INDUSTRIAL COLONY

Gràcia Dorel-Ferré, Ajuntament d'Esparreguera & Baix
Llobregat District Studies Centre, 2021. 272 pp, ill.

Reviewed by Patrick Vianne

The long-awaited publication on the Colonia Sedo by Gràcia Dorel-Ferré (Doctor in History, EHSS, Paris) is the result of her very extensive scientific research on all facets of the history of this colonia. It is a very well preserved 19th and early 20th century textile industrial complex with typical working-class district and additional facilities, located along the Llobregat river in north-eastern Spain. The richly illustrated book is written in Catalan, the author's native language, but also contains all the texts in Spanish and English.

The book is divided into ten chapters, covering both the physical, geographical and spatial context in which the textile enterprise was implanted, as well as the family history of the successive entrepreneurs and their partners. This story, a true industrial success saga, begins with the work of the founder Miquel Puig i Catasus (1800-1863) and his partners, who in 1846 set up a textile factory

near an existing grain mill, located along the Llobregat. The work is continued by Puig i Llagostera and Antoni Sedo i Pàmies, who realize the Cairat dam, the remarkable aqueduct between the river and new factory wings, around which a typical working-class district with various facilities developed between around 1880 and 1900. The unique technical infrastructure of the factory complex, which has been retained to this day, is analyzed in detail. The author then discusses the heyday of the Colonia Sedo during the first decades of the 20th century. After the Second World War, a short period of prosperity began, but after 1955 the decline began, with the final closure of the factory in 1979.

In the last section, Gràcia Dorel-Ferré discusses the difficult realization of the reuse of industrial buildings, with the creation of a polygon industrial (industrial estate) in which the industrial heritage was fortunately largely respected. The role of CECBLL, as a supporting local association, was of considerable importance. In 1993, under the impulse of Eusebi Casanelles, a museum was set up in situ as a new department of the MNACTEC (National Science and Technology Museum of Catalonia), with its headquarters and central museum in Terrassa. Dorel-Ferré, who devoted her doctoral thesis on the Colonia Sedo in 1992, was closely involved in the development of the museum.

The book concludes with a look at the future. What could it hold for the Colonia Sedo? This is what the author and architect Antoni Vilanova Omedas ask themselves and they formulate various proposals for sustainable conservation, use and management.



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