The late-Medieval water towers in Augsburg were inscribed on the World Heritage List in July as part of a water management system spanning 400 years, as was the Erzgebirge/Krušnohorsk Mining Region. Colleagues in TICCIH Germany have worked for many years for this, so we send our congratulations to all of them! Other industrial sites which were approved were the ancient flint mines of Krzemionki, Poland, evidence for early iron production in Burkina Faso, Africa, the late-19th century Ombilin Coal Mining area of Sawahlunto, Indonesia, and finally Jodrell Bank Observatory near Manchester, England, one the earliest radio astronomy observatories in the world.

**MEMBERSHIP NEWS**

**NEWS FROM THE TICCIH BOARD**

**Dr Miles Oglethorpe, TICCIH President**

Welcome to the new issue of the TICCIH Bulletin. This is a good opportunity for your President to share with you some news from the Board, and to flag some changes that are about to happen within TICCIH.
MEMBERSHIP NEWS

Perhaps most important is that we are moving to a new membership management system which will allow us to introduce improvements to the way we work and deliver benefits to members. Of these, the most significant is a change to our subscriptions.

The Board has decided to emulate best practice in some of our partner organisations by introducing a more inclusive system. There will be two classes of individual membership, standard and student. Each will offer different levels of payment to help accommodate varying personal circumstances. The standard membership will be: $40, $30, $20 or $10. For most existing members, nothing will change and the annual subscription you pay will remain the same at $30 US, which will be the default rate, but we will invite members to select a payment category that best meets their ability to pay.

For students, the standard rate will be $10, with an optional lower rate of $5. In addition, we are pleased to welcome members of ICOMOS at a lower rate if the burden of both organisations’ combined subscriptions proves to be too great.

The new system is trust-based and is guided by national rankings of GDP defined by the World Bank. New members will therefore be invited to select a level of payment that matches their personal circumstances and national ranking. It’s worth stressing that the reason most existing members will not be affected is because most of current members are from relatively prosperous countries. A quick analysis of TICCIH’s international reach reveals very significant geographical gaps in our membership, especially in less prosperous parts of the world. The Board has wanted to address this situation for a long time, so we hope very much that the new system will have a positive impact.

Similarly, we know that personal circumstances change, and that in the past this has led to members allowing their subscriptions to lapse. We are therefore hoping that the new regime will encourage former members to renew their subscriptions. However, a priority for us is also to nurture a new generation of members, so we hope that we will be able to encourage more young people to join TICCIH.

A major benefit of the new membership system is that it will also allow us to re-instate our Members Directory. In compliance with GDPR data privacy regulations, existing and new members will be invited to opt into the new directory if they wish, ensuring that we can resume the task of building and extending our international networks and sharing our expertise.

Meanwhile, it’s important to stress that TICCIH members will continue to have priority access to our Bulletin and to participate in our triennial congresses and intermediate regional and thematic conferences. We also hope that they will join and help build thematic and regional groups within TICCIH, further strengthening our organisation.

Finally, we would like to extend our congratulations to the team in Indonesia that has successfully nominated the Sawahlunto Old Coal Mining Town for inscription onto UNESCO’s World Heritage list. This is tremendous news, but is tempered slightly by the fact that TICCIH currently has no members in Indonesia. We know from this nomination, and from the outstanding work that has been done on the sugar industry, that there is significant interest in industrial heritage in the country, so we hope very much that our new subscription system will encourage a surge of new members from Indonesia, and in many other countries too.

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

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TICCIH is the world organization for industrial archaeology promoting conservation, research, recording and education in all aspects of industrial heritage. It holds a triennial conference and organises interim conferences on particular themes. Individual membership is $30 (USD), corporate membership $65, and student membership. $15

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

The TICCIH Bulletin welcomes news, comment and (shortish) articles from anyone who has something they want to say related to our field. The Bulletin is the only international newsletter dedicated to industrial archaeology and the conservation of the heritage of industrialisation. The TICCIH Bulletin is published online to members four times a year.

Back issues can be downloaded as a pdf file from the TICCIH web site, www.ticcih.org

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The shanty town at Malmberget was established in the 1880s by miners after the iron ore railway reached the Gällivare ore bodies in 1888. It had a reputation for poor living conditions, excessive alcohol consumption and prostitution. Photo: Dokumentera Malmberget

This issue opens with an article from the German-language magazine Industriekultur. This is the first exchange between our publications, which will continue about once a year. It starts with an article by Jennie Sjöholm from Sweden, and we thank the author and the photographers for their agreement.

Industriekultur is a high quality print magazine, presented in TICCIH Bulletin 75 pp. 16-17 as a public-private partnership project. A team of volunteer authors and photographers, supported by a large international network, in particular from the TICCIH community, regularly reports on current developments in industrial heritage and landscape, social, environmental and technological history. The subject of the current issue 3.2019 is the transformation of the steel industry. The magazine is published as a print edition and e-paper, for further information see the homepage. Please ask for free samples (PDF): indukult.net@gmx.net.

—Norbert Tempel, Associate Editor Industriekultur and TICCIH National Representative for Germany

**NORRBOTTEN’S TECHNOLOGICAL MEGASYSTEM**

*Dr Jennie Sjöholm, Associate Senior Lecturer, Luleå University of Technology*

Norrbottens technological megasystem, originating with the high quality iron ore deposits in northernmost Sweden and the infrastructure needed to support the mining of it, is a designated industrial heritage site of great significance. The idea of the megasystem in Norrbotten is abstract and its different parts are still in use; thus, understanding and communicating the concept has been highlighted as a central conservation approach.

The main components of the so called technological megasystem in Norrbotten, located in the Swedish Arctic, constitute the mining company LKAB’s (Luossavaara-Kiirunavaara AB) iron ore mines in
Malmberget and Kiruna, the railway that transports the heavy cargo to shipping ports in Luleå and Narvik, the water power plant in Porjus built to provide the railway and the mines with electricity, and the fortress of Boden which was considered necessary in order to protect these assets. These systems are interconnected, in that changes in one part of the system affect other parts. 

The opening of the large-scale mines in the late 19th century contributed to a massive structural change of Norrbotten, the northernmost county in Sweden; it covers part of Lapland and comprehends about a quarter of the country’s area although only 2.5% of its population. The iron ore deposits in the scarcely-populated inland have been known since the 18th century, but were not profitable to mine until the late 19th century. Mining became feasible due to technological development: the Thomas process made it possible to turn the iron ore, rich in phosphorus, into steel, and the railway transported the iron ore at a reasonable cost. 

The construction of the railway system was initiated by the English Gellivare Company. It built a railway between Malmberget, in the municipality of Gällivare, and the coast town Luleå, which opened in 1888. This dramatically increased the incentive for mining; the iron ore production in the north shifted from 0.02% of the country’s total output in 1887 to 10% in 1888. 

The Gellivare company soon went bankrupt. The iron ore findings in Malmberget were taken over by other companies, and the Swedish state took over the poorly-built railway. The railway was improved and extended; in 1902 the line opened between Kiruna and Narvik, enabling mining in the mountains of Luossavaara and Kirunavaara by the mining company LKAB. As both the mining and the railway industry required a large number of workers, it was necessary to found settlements to attract a workforce for the companies. Malmberget developed as a shanty town, and a town plan was not adopted until 1899. The poor housing and social problems became a national concern and forced LKAB to engage in proper urban planning and to provide housing in order to get permission from the state to open its mines in Kiruna. The Kiruna Arctic mining town was formally established in 1900, and constituted by a model company, a service and supply town, and an area built and managed by Kungliga Järnvägsstyrelsen (the Royal Railway Board). Along with the railway, stations, housing for line-men, etc. was built. The shipping port at the Norwegian coast was located near a few farms, and the area transformed into the town of Narvik. At the Swedish coast, the shipping port was located in Luleå, a town that rapidly developed as a consequence. 

Initially, the railway was powered by steam engines, which required coal. However, coal was expensive and the steam engines were not powerful enough to get the trains over the mountains, so electricity was desired as a power source. This resulted in the construction of a water-power plant about 50 kilometres southwest of Malmberget, at Luleå River. To support the industry with workers, the Porjus settlement was established.
Kiruna looking from the old mine (Luossavaara) to the new one (Kiirunavaara). Photo: Heinz-Josef-Lücking

With the mines, the railway, and the water power, Arctic Sweden developed into a great national asset, which required new priorities in the Swedish military defence. During the 20th century, the strategy was to consolidate in central Sweden if the country was to be invaded, and then gradually force the enemy back. The government now decided on a strategy that meant securing the Swedish seaboard in order to avoid an invasion. A key was the construction of a fortress in Boden, a strategic point where the Luleå River and two railway lines cross. The fortress constitutes of five fortresses in the mountains surrounding Boden. The decision to build the fortress was made 1900, and the small village Boden turned into a significant garrison town.

Today, LKAB is the main private employer in the Iron Ore fields of Norrbotten in the Swedish Arctic, with about 3,700 employees. The mining in Malmberget and Kiruna has a huge, and growing, impact on the towns. Malmberget was divided by an open pit in the 1950s. The subsidence continues and most, if not all, of the...
settlement will be evacuated. Gällivare, five kilometres south of Malmberget, is currently developed to provide housing and other facilities for the people who must move as a consequence. In Kiruna, where the main iron ore deposit reaches beneath the town, large parts of the built-up areas need to be relocated. A new town centre is being planned, a new railway route was put into use in 2012, and the first building blocks were demolished in 2015. These urban transformations have a huge impact on the built heritage; both towns are designated heritage sites of national interest and have many historic buildings.

Overall, rationalisation and technological development has an effect on historic buildings and environments within the megasystem. The railway is highly automated, leaving many historic buildings redundant; the Swedish Transport Administration wants to, or already has, demolish many stations and houses along the line. The power plant in Porjus was replaced in 1975, after which the old building was converted into other use. The reorganisation and down-sizing of the Swedish defence in the 1990s had a significant impact on Bodens fästning, where fortresses closed down and many of the garrison buildings were adapted to civil use.

The hoist tower at the Kaptensgruvan in Malmberget mine, formerly a landmark and tourist attraction but sealed off from public visits since more than two years and doomed to destruction from ongoing mining operations. Photo: Dag Avango

The technological megasystem was designated as one of twelve industrial heritage sites of national interest 2001. The complexity of the megasystem and the fact that it is a heritage site that covers a huge geographical area were highlighted as challenges to address. Clarifying the connection between the different parts of the megasystem and communicating knowledge about it between the many stakeholders was considered a necessary conservation approach. It would seem that contemporary conservation practice has difficulties in managing this kind of large-scale, operating, and somewhat abstractly-constructed heritage site, which so clearly is defined by its on-going processes. Most stakeholders are involved with specific historic buildings or environments that are part of the technological megasystem. Within the technological megasystem there are also clear difficulties to address in conservation due to opposing economic issues: on one hand, there is rapid change in the built environments due to development and expansion of industries, on the other, advances in technology changes the conditions to live and work at a place, making it difficult to maintain certain sites.
INDIA

SAVE THE WORLD’S OLDEST HABITABLE IRON-FRAMED BUILDING

Moulshri Joshi, Architect, India National Representative

The greatest use of architecture is that of a timekeeper. Watson’s Hotel in present day Mumbai harks back to the colonial city of Bombay. An architecture marvel of the 19th century, this building helped herald industrial architecture in India. Built in 1865 by the British entrepreneur John Hudson Watson, the hotel was an avant-garde project that tested the limits of how buildings were imagined and built.

Industrialization and Architectural Innovation

The structure - almost entirely prefabricated in cast iron – was produced in the United Kingdom and shipped to Bombay. Cast-iron columns came from Phoenix Foundry in Derby, bricks and cement from the banks of the Thames, and the column bases from Penrith in Cumberland. In the unique assembly of Watson’s Hotel, columns were erected before floors and walls were in-filled, and the structural members left un-concealed to express its foreign, industrial origins. This unconventional architectural expression ar-
Architecturally, this was an extraordinary way to imagine and produce buildings. It demonstrated — much to the indignation of neoclassicists and gothic-lovers — that brutally honest structures of an industrial aesthetic were possible. These ‘huge birdcage’ structures were nimble and transparent, unlike conventional heavy stone buildings. Pre-fabrication demonstrated that buildings could now be conceptualised as an object, a product that could be manufactured, processed and transported as any other, by anyone and built anywhere. This capacity of industrialisation to transform traditional architectural production and demonstrate new, modern ways of building makes Watson’s Hotel a unique industrial heritage of outstanding value.

Indian Cinema, Bombay, and Watson’s Hotel

Cinema, as we know it, was born on 28 December 1895 in the basement of the Grand Café in Paris. Ten films by the Lumière brothers, Louis and Auguste, were screened in a room called the Salon Indien, thereby linking, however tangentially, India and the moment of cinema’s birth. Some six months later, the Lumière Cinématographe, a film camera which also served as a projector...
Watson’s Hotel, Mumbai, was designed by the engineer Rowland Mason Ordish who is famous for his work on London’s Crystal Palace and the roof of St. Pancras Station.

Watson’s Hotel, Mumbai, was designed by the engineer Rowland Mason Ordish who is famous for his work on London’s Crystal Palace and the roof of St. Pancras Station. On 7 July 1896, Watson’s Hotel screened a film for the first time ever in India. The short, soundless films screened were Entry Of Cinematographe, Arrival Of A Train, The Sea Bath, A Demolition, Leaving The Factory, and Ladies And Soldiers On Wheels; the industrial themes of the subjects covered resonated the spirit of the times. Influential newspapers like the Bombay Gazette and the Times of India proclaimed it ‘The marvel of the century!’

From such humble beginnings, Mumbai eventually became the epicentre of Indian cinema, a cultural enterprise that dates back over 100 years and today spans continents and languages. By hosting the first screening of motion pictures in India, Watson’s Hotel gave this historic moment a definite built location and securing its place in the history and geography of Indian Cinema. Two facets need to be emphasised: the place of Watson’s Hotel in cinema heritage of the world and locating Bollywood as an industry in its own right with its unique built heritage. Both reinforce this building as an industrial heritage of global importance, yet both are overlooked in the articulation of industrial heritage of India.

**Destruction by Delay**

In the 1960s, the luxury hotel changed to residential use and private ownership. Rebranded as Esplanade Mansion, its premises were subdivided and tenanted with no investment in maintenance and upkeep. In the years since, it has suffered damage to its structure and rampant encroachment, with no action taken by the Mumbai Housing and Development Authority (MHADA). In 2018, it was recognized as a part of the World Heritage precinct of The Victorian and Art Deco Ensemble of Mumbai. Despite the legislation, the ‘oldest habitable cast iron building in the world’ has become a landmark of dilapidation and decay.

The 2018 Structural Assessment by Indian Institute of Technology concluded that ‘the structure cannot be repaired without demolishing the building’. However, this claim has been challenged by conservationists. Mid-Day, a local daily, reported that UK-based TICCIH has urged authorities to ‘properly investigate the state of the building’. Dr Miles Oglethorpe (President, TICCIH) wrote to the Mumbai Heritage Conservation Committee (MHCC) and MHADA; empathizing that ‘…properties made of cast-iron such as this [Watson’s Hotel] are frequently misunderstood, and contrary to popular belief, can often be repaired and rehabilitated… and can offer a range of exciting options for adaptive re-use’

In June 2019, occupants were forced to vacate due to safety concerns, expiration of structural strength, high preservation costs, and inability for conservation measures to restore the building. Accepting these as valid reasons for demolition is at odds with the
IRAN

FROM INDUSTRY TO COMMUNITY: RECYCLING CEMENT WORKS

Pirouz Hanachi and Shanli Khani

The Portland cement factory of Rey city was the first in Iran and is one of the most prominent industries in the contemporary period. It was built during the First Pahlavi, with the start of industrial construction in Iran, and officially inaugurated by Reza Shah in the capital Tehran on 29 December, 1933.

Iran is surrounded by a series of limestone mountains. As a result, the primary items for cement production are abundantly available inside the country. In 1927, the government decided to build a cement factory and signed a contract with Swedish companies to buy cement factories.

The Rey factory was equipped by the Danish company F L Smidth and three production lines were built over three periods, with buildings added in each one. Cement production began in September 1933, under the German company Tens, with secondary buildings was built by the Ministry of Roads. Reza Shah was enthusiastic about German approaches, as well as overall achievements in various fields, particularly industry. With German help, he jump-started Iran’s industrialization as part of an overall program of modernization. The influence of German architecture had a strong influence on Iran’s industrial architecture of that period.

The point of mentioning this huge factory is the maintenance and preservation of basic cement production devices such as Siemens diesel generators, primary devices, basic devices of AEG’s, mills as well as the maintenance of buildings, including the cooling tower and water supply, the chimney of the cement kilns in this collection.

It is one of the rationalistic and Brutalist architectural symbols of Iranian industrial architecture. This huge historical collection
WORLDWIDE

is now undergoing restoration and rehabilitation, a program of economic development based on culture. Tourism will provide services to the city people, domestic and external visitors, and the cement factory will become a museum of industry. Physical rehabilitation and restructuring of the cement factory through injecting new uses will have a positive effect on the living environment of residents around the surrounding area. The factory will have a new use as a museum and multi-purpose cultural center, considering its location in the historical city of Rey. The old silos will be converted as a cement exhibition and used as a restaurant, and the building generators will be used for the old crafts museum.

Considering the museum’s use for the buildings, while keeping the available equipment in the factory, and displaying the production industry of cement, we will create a peaceful atmosphere to show them. The two buildings, while providing the museum space, are also very convenient for displaying the old pictures of the factory.

As a result, the cement factory of Iran has become a very beautiful and attractive urban space which, while preserving the country’s industrial values and identity and highlighting the issue of sustainable development, is an attractive environment for visitors and tourists.
The main warehouse building and water tower in Fordlandia, a settlement laid out by the Ford Motor Company to exploit vegetal latex in 1927. Henry Ford’s idealistic plans were for a large area to secure the rubber needed for making tires, valves, hoses and gaskets. Photo: Amit Evron

WORLDWIDE

BRAZIL

COMPANY TOWNS (MODERN VILLAGES)

Dr Eduardo Romero de Oliveira, Universidade Estadual Paulista (UNESP)

Some years ago, my team and I did a survey of Brazilian company towns as a contribution to Professor Gigi Fontana’s company towns project, of which this report is part. We listed around 56 Brazilian company towns founded between 1856 to 2008: iron mining (1812-1890); railway, cement, lime, rubber (1890-1940); iron mining (Monlevade/MG, Carajás/PA), metallurgy (Volta Redonda/RJ), manganese (Serra do Navio town/AP), hydroelectric power plant (Tu-curuí/PA, Ilha Solteira/SP, Porto Primavera/SP) (1940-1985).

Some of the worker villages which were created by companies in Brazil after the 1910s, especially those which were bound to extraction activities (ore, wood and latex), and can highlight the transition to a new stage of international industrialization.

A new international production dynamic was established in the beginning of the 20th century, with international company models (aiming for the linear control of an economic activity), as is the case of the Southern Brazil Lumber Colonization, a North American company, which began its wood extraction and processing activities in 1911 in the State of Santa Catarina, in addition to the colonization of lands. With that an isolated residential center was formed, originating the Três Barras district. The Lumber company was part of a group with North American capital (Brazil Railway Company) which also administrated the São Paulo-Rio Grande Railway and the railway Porto União-São Francisco do Sul branch line - which gave access to the São Francisco port and the transportation of goods.

On the other hand, we have centers built for extraction and raw-material supply for European and North American industries, such as the Ford Motor Company which built two residential centers...
for the exploration of vegetal latex in 1927 in Pará, the Northern region of Brazil: Fordlândia and Belterra. Still in the 1920’s, a Belgian-Luxembourg group acquired local mining companies in Sabará. In 1934, along with Monlevade Plant, a first center was also built, while others arose around it in the following years.

From this first stage of the extraction industry in Brazil, any cultural property was declared, yet it does acknowledge the importance of housing projects. The urban project conceived by Lúcio Costa used new and traditional techniques in the construction of the houses (concrete and mud, fiber-cement tiles and bamboo lining). This project seems to have included traditional elements from the industrial centers and modern architecture conceptions.

In the 1940’s, mining became a priority for a national economic development policy. With the discovery of manganese deposits in the State of Amapá, the exploration concession was under the responsibility of the Commerce and Mining Industry (Indústria e Comércio de Mineração–ICOMI), as of 1947, which had the Bethlehem Steel Company, a North American steel production company as a shareholder. This industrial urban center refers to another stage of industrialization in Brazil, interacting with the new globalization stage: the formation of heavy industry and international capitalism.

To enable exploration, the company built a series of transport infrastructure (port, railways, highways) and urban centers with urban equipment (houses, schools and hospitals) in the exploration area (Amazon village, Santana and Serra do Navio). Among them, we highlight Serra do Navio Village, whose urban design was performed by the architect Oswaldo A. Bratke, a modernist conception and thermal comfort. The project estimated 330 houses, in addition to collective lodging and urban equipment buildings, with an estimated population of 2,000 people, with infrastructure conceived exclusively for the workers. The architect carried out studies about the residents’ habits and the tropical environment. He also learned about mining villages in other countries, which resulted in modernist construction solutions that were adapted to the local culture. The company ended its activity in 1997 and the village went into economic decay and physical deterioration – including environmental devastation and high contamination of the area by arsenic derived from the manganese extraction.

The protection of this type of industrial urban center was only recognized by the end of the 20th century, as shown by the protection of the Serra do Navio Village by the Historical and Artistic Heritage Institute (Instituto de Patrimônio Histórico e Artístico – IPHAN). In 2012, the Serra do Navio Village was granted legal protection by IPHAN, and its wealth and complexity enabled the residential center to be recognized by its aesthetic, historical and landscaping aspects.

The protection of these new industrial urban centers demonstrates the particularities of another industrialization stage in countries with a ‘later’ industrialization – different from the first industrial revolution, when New Lanark was constructed (1786). In Brazil, whose industrial heritage adopts modernist shapes, it is possible to understand the other faces of the contemporary Western society, as well as the Latin American globalization nuances.

IRON BUILDING, CONTINUED

reckless ambition of conservation that preserves sites irrespective of their ‘usefulness’. Heritage lovers, experts and organisations favour the building’s preservation, have offered technical support, and have highlighted the damage demolition would inflict to the World Heritage status of the entire Ensemble. It is counterintuitive that a modular, pre-fabricated building built in 1869 cannot be repaired 150 years on and that the birthplace of Indian cinema that lies in the heart of Bollywood is being demolished.

Conservation is the space of possibility that we co-create for the future, and we need to secure this space from being reduced to a project of proscription and practicality. Evaluating old buildings against modern safety norms is setting them up for failure. We need to acknowledge that heritage structures are useful as markers in our anthropogenic journey. Watson’s Hotel is an irreplaceable milestone in India’s uneven journey of modernity. Whether or not we can achieve its preservation within a budget and schedule is a matter of design, not a question of principle.

Contact the author
AUSTRIA

FOUNDRY HALL IN DONAWITZ: A SUCCESSFUL RE-USE OF AN INDUSTRIAL BUILDING.

Ute Maldoner, Silvia Mariani and Günter Dinhobl, TICCIH Austria

The Old Foundry Hall in Donawitz is now a (rare) example of successful re-use of a listed industrial building in Austria. The former Foundry Hall is part of the Donawitz integrated steel plant. The plant belongs to the voestalpine Group, a global technology company which in 1949 developed an innovative steelmaking process, also known world-wide as LD-steelmaking process; ‘LD’ comes from the towns Linz and Donawitz, the name of the plants where the process was first performed (international also used ‘basic oxygen process’ / BOP) and one historic LD-converter is exhibited at the Technical Museum Vienna.

The hall has a saddle roof with rooflight and consists of lattice girder construction. It is located near the University City of Leoben in Upper Styria in the municipalities of Donawitz and Sankt Peter-Freienstein. The foundry hall belongs to the steel plant complex and, after having witnessed the final expansive phase of large-scale steel industry in the region, was then closed and converted into a warehouse. During this time its fabric fell into disrepair and lost much of the original exterior due to the erection of a metal curtain-wall along the facade. However, the building survived as industrial heritage of the last 100 years and, worthy of designation, was listed a few years ago.

More recently the former foundry hall of the Donawitz integrated steel plant was renovated and adapted to accommodate a new use, namely an innovative metallurgy technical center: the ‘Technikum Metallurgie’ (TechMet), which opened in 2019, is a complete, small size steel plant dedicated to the research and development of pioneering steel grades. It produces ultra-light, pure and high-strength steel in small units of up to 5 tons. In comparison, the existing Metal Engineering Division plant in Leoben-Donawitz is designed for the production of at least 68 ton units.
INDIA

TRADITIONAL INDUSTRIAL HERITAGE OF SAMBHAR, RAJASTHAN

Somya Johri, Conservation architect

Sambhar Lake is a unique ecosystem of a salt water lake within the north western, semi-arid region of Rajasthan, and has been an important centre of salt extraction in India for hundreds of years. The traditional activity is believed to have started in the 6th century, developed commercially under the Mughals during the 16th century and attained heights with the advent of the British in the early 19th century. This traditional industry acted as a catalyst to the evolution of the settlement of Sambhar, located on the southeastern edge of the lake. Most of the population of Sambhar was dependent for their livelihood on this salt industry. The lake, the salt industry and the society evolved as an intertwined landscape and the impact is still visible.

The lake covers an approximate area of 190 km² at full capacity and a catchment area of 471 km². The lake stretches 22 km in length and varies from 3.21 km to 11.23 km in width, with a maximum depth of the lake is not more than 3 m. The lake is a natural habitat to many migratory birds and due to its ecological and biological diversity, the International Union for Conservation of Nature declared it as a Ramsar site, a wetland of national importance in 1990.

The process of making salt from saline water is believed to have been discovered in the 6th century by the local Kayastha community of Kalptaji, later known as Manikya Bhandari (Hooja 2006). The malanghis were the salt workers and the banjaras carried salt on animals in small quantities for trade. The farodis were the local salt dealers, licenced for selling salt at the production centres and handling the major portion of salt distribution. Traditionally, salt was produced by the natural evaporation process when the lake receded during summers, leaving behind layers of salt crystals on the naturally made salt pans near the settlement. Under the Mughals, the town developed as a wholesale trade centre and mandis (markets) and store houses developed within the settlement. With time, the trading pattern changed and these areas were left abandoned.

Infrastructure was added by the British to maximise the commercialisation of salt production. Networks of railway lines was laid to export salt to far areas in India. A trolley system was introduced to exploit the interiors of the lake for salt extraction. The lake was divided by a 5.16 km long dam and production area was divided into salt pans or kyars (World Wide Fund for Nature 1994). Water was released from the lake and collected in the pans to an appropriate depth for crystallisation. These salt crystals were collected and transported to the plant set up within the settlement. A salt bridge was built for unloading of salt crystals at the plant and storage units close to the railway line for easy transportation. The Salt Museum, a two- storey domical stone building, was constructed displaying salt samples from across the country and instruments used for salt manufacturing process.

These changes disturbed the ecosystem, resulting in the loss of the link between the lake and the settlement. After independence, the lake came under the Government of India and control of salt production was given to Hindustan Salt Limited. At this point, the local traders also lost their hold on the salt trade. Construction of dams and blocking the rivers feeding the lake, resulted in reduction of water flow and minerals into the lake and it has dried up.
substantially over time. Due to the reduction of brine, the production of salt has also reduced. There is further exploitation of the saline water by many private industries coming up on the periphery of the lake. Inappropriate lake management has led to the decline of waterfowl migration and desertification of the watershed areas. The misbalance between the various components of the ecology, physical and geochemical process, has led to the decline of a natural resource and decline of once a thriving settlement. On the other hand, the traditional industrial heritage of Sambhar, constituting the memory of a flourishing past, is still striving to be recognised.

Hooja, Rima, A History of Rajasthan (New Delhi: Rupa & Co, 2009), 204-205.


Contact the author
LARGE OBJECT CONSERVATION: THE SEARCH FOR SUSTAINABILITY

Isabel Tissot, Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa, Graça Felipe, Ecomuseu Municipal do Seixal, and Marta Manso, Instituto de História Contemporânea (IHC-UNL), Universidade Nova de Lisboa

Industrial heritage encompasses objects, buildings and equipment that are tangible pieces of evidence for the history of industry and technology, and their preservation is fundamental. However, this heritage is very vulnerable, endangering its long-term sustainability. To reverse this, it is essential to develop new research and conservation approaches based on the object, enhancing it as a primary source of information, whenever possible in its industrial environment. In this context, a multi-disciplinary team has been established to implement research devoted to the sustainable preservation of Industrial Heritage. It includes museologists, historians, conservators-restorers and scientists (from physical, chemical and material domains) from museums, universities and private companies.

The goals of this three-axis line of research are to face the present IH preservation challenges, i.e., the need for detailed knowledge of the materials used in the objects fabrication and of their degradation and corrosion processes, the definition of new tools and methods for the conservation assessment, and the development of decision-making processes to define conservation strategies and maintenance programmes.

A new approach has been made taking as a case study the early 20th century powerplant in Levada de Tomar, Portugal, a representative industrial heritage site for public lighting and industry. The powerplant comprises three generator groups that produced electricity using hydro and diesel as primary energy sources. These generators were built and operated between 1924 and 1944, and are composed of several elements, such as turbines and alternators, made of metal alloys and wood partially coated with blue, red, orange, yellow and black paints. An integrated conservation project was carried out for the recuperation of the site-built heritage, taking advantage of this new line of research.

The project methodology included the material study and the conservation of the three generator groups. The science-based material study aimed to create a materials database and to disclose if there were significant differences between distinct groups of equipment, to increase our knowledge of the site. In addition, the degradation, corrosion and material wear were examined. The equipment is, nowadays, conserved in static mode, and this scientific-based assessment gave us valuable data for defining more accurate conservation methodologies and maintenance programmes. The conservation included the implementation of a recent conservation treatment, surface cleaning using CO2 blasting. This method enables interventions with large pieces of equipment in an optimised time frame, an important factor when deciding to conserve equipment or sets of apparatus. This first project was important to improve the multidisciplinary material-based study approach, and to work on synergies among the different knowledge domains involved in the Industrial Heritage preservation.

We recently started another project, IH4Future, which considers the implementation of a material-based study of the Vale de Milhaços Gunpowder Factory (VMGF). The production of black gunpowder in the Vale de Milhaços began in 1896 in a steam-powered facility. In 1898, an innovative system for transmitting mechanical energy was introduced, and production continued until 2001 by using steam to produce the energy required by the 19th century equipment. In 2001, the gunpowder factory became an extension of the Seixal Municipal Ecomuseum, with the objective of ensuring the management of the site at which the Seixal Municipality sought to guarantee the preservation and safeguarding of the heritage. VMGF comprises a central set of buildings containing the steam-generating boilers and steam engine dated from 1900, with a system of aerial cables that ensured the transmission of mechanical power from the central building – powered there by the main motor – over a length...
of over 500 metres, to the various gunpowder manufacturing workshops.

The scale of the FPVM and the operation mode of the main power suppliers are a challenge for its conservation. Again, the sustainability of the FPVM depends on the definition and implementation of maintenance programmes based on the material study approach. The IH4Future project involves the scientific study of the FPVM aiming at accomplishing four main goals, to reinforce the implementation of the industrial heritage conservation line of research: raise awareness of the importance of industrial heritage in the history of industrial civilisation and the urgency of its preservation; contribute to its historical and technical documentation with science-based knowledge and use it as a valuable tool for its preservation; derive scientifically-based information for end-users (conservation-restoration companies and museums); and stimulate the integration of the FPVM into the surrounding community, promote scientific and technological culture and heritage education as well as tourism.

To achieve these objectives, IH4Future includes the research of historical records and documentation, and a survey of the state of conservation of a set of equipment and its material characterization, using a multianalytical spectroscopic approach, assisted by Monte Carlo simulations (a probabilistic method for determining the interactions of radiation with matter). The results of the analytical studies will be added to the information and documentation database of the Seixal Municipal Ecomuseum, which includes the FPVM museological inventory and documentation.

A final presentation, containing the research developed and the results achieved during the project, will be prepared. This will be an excellent opportunity to disseminate the results of the IH4Future project and to deepen and promote the dissemination of new conservation and research approaches for the sustainability of the Industrial Heritage.

This work has been financed by the Competitiveness and Internationalization Operational Program, through the European Regional Development Fund and National funds supported by the Portuguese National Funding Agency for Science and Technology.

NOTES


2. G. Filipe, O projeto do Museu da Levada de Tomar, a musealização como processo de salvaguarda de Património técnico e industrial, Al-Madan 19 (2016) 137-146.


Contact the authors
OBITUARY

JORGE TARTARINI (1954 -2019)

Dr. Arq. Mónica Ferrari, President of TICCIH Argentina

When Jorge Daniel Tartarini died on June 6, Argentina lost an outstanding architect and specialist in the preservation of urban and architectural, industrial and railway heritage, and in particular at an international level.

Jorge was born in the city of La Plata on June 26, 1954, and he graduated as an architect at the National University of La Plata. He completed his postgraduate studies in Argentina and abroad. He was a fellow of CONICET (The National Council of Scientific and Technical Research) in the categories of Initiation (1981-1983) and Improvement (1983-1985). During those periods he developed studies on ‘The railroad and its action in the formation of urban city centres’, and during 1992 - 2012 he worked as a Scientific Investigator. From 1995 until now he was the Director of the Museum of Water and Sanitary History in Buenos Aires, located in the stunning Palacio de Aguas Corrientes. During his stay at the Museum he reorganized the documentation collection and published numerous works related to the water heritage. Today the Museum is as well-known for his work as for the large water tanks that had served to supply the city.

He also worked as an advisor to public and private, local and international organizations, in everything related to the dissemination and conservation of industrial heritage. He participated in the restoration and re-use of examples of industrial and railway heritage, and in particular such as Haedo, Ramos Mejía, Balcarce, Jaramillo, the warehouses of the Eleven Terminal, and he advised on the rescue of branches and historical facilities of markets, mills, etc.

In 2001 he was awarded a grant from the Guggenheim Foundation for the study of the railway heritage in Argentina. With this scholarship and with the collaboration of several Argentine professionals Jorge was able to put together an inventory of more than 1500 Argentine railway stations.

He was appointed member of the National Commission of Monuments, Places and Historic Property in 2002, an honorific post that he held until the end of his life, and from which he developed a highly qualified work that resulted in the declaration of the protection of several heritage enclaves. He also developed the recognition of the more recent architectonic values of the Retiro and Constitución terminal stations. Until a few days before his death he was correcting the evidence of what would be his last contribution to the railway theme: Monumental Railway Heritage, the recovery of Retiro and Constitution Square Railways Terminals (2019).


Jorge Tartarini was an important member of TICCIH for many years, participating in international meetings including the conference on the heritage of the water industry in Barcelona last year; and the 2018 TICCIH Congress in Santiago de Chile. With former TICCIH President Eusebi Casanelles he was preparing the new ‘Industrial Heritage in Latin America’ to which he contributed several articles. The text is in its final revision and will be published during 2019.

The first time that I met Jorge Tartarini was when I asked him to be co-director of a research grant on railway heritage, he was a great teacher to whom I learned the complexity of the railway system and to whom I will be grateful for all my life. Those of us who had the opportunity to work with him were lucky enough to enjoy his good sense of humor, his generosity and his human quality. I adhere to the words of the Monuments Commission when referring to Jorge as a ‘discreet and courteous man, a meticulous professional, a calm and respectful speaker in discussion, willing to explain with generosity, patience, rigor and clarity his views, in the end always accurate’.
The theme ‘INDUSTRIAL HERITAGE RELOADED’ is designed to encourage a redeployment of reflections and practices beyond classical ‘post-industrial’ formulations coloured by escheat and obsolescence. As such, beyond the manufacturing industry, the congress questions what is the industrial’ in the contemporary world, both in terms of what remains and with regard to current productions: is the knowledge economy an industry? How does the major multinational industry of the 20th century view itself, faced with ‘castles of industry’ and at the time of its own demise? Beyond a generic narrative on progress, how can we address the legacy of the scientific breakthroughs that supported its expansion? How to discuss neighbourhoods where the working-class identity is disappearing? Or how, conversely, to preserve the brand of industry in the urban centres that it forged, including modern cities, company towns, or working-class neighbourhoods undergoing significant economic, social, and cultural changes? One can, likewise, question the methods and practices beyond mere preservation: what are the contributions and issues of increasingly popular oral history? What about branding strategies, which have positioned vast requalification operations on a planetary scale? How to conciliate environmental assessment and heritage assessment? How can industrial tourism adapt to the new desires of visitors whose relationship with the industry is more and more distant?

In the wake of such questions, the Congress will enthusiastically welcome especially those proposals of research or intervention on industrial heritage that will bring to discussion, together with a more traditional corpus or a new one, with a specific case or with a more theoretical reflection, themes like:

- Functional or symbolic requalification;
- Belonging and social acceptability;
- Social engagement with the scientific discourse;
- Memory and people's participation;
- Sustainable development;
- Uses and aims of heritage;
- Environmental challenges of industrial heritage.

These questions and themes aim to ‘reload’ the industrial heritage by targeting its social and territorial realities, to reflect on its new or potential identities and to situate it in the changing cultural landscapes of our times.

This XVIII TICCIH Congress considers the manifestations, discourses, policies, and stakes of industrial heritage - as an artifact, a phenomenon, a tool of empowerment; in communities, societies, or any material or mental environment. It seeks to strengthen the investigation and the understanding of industrial heritage as an inclusive topic to be addressed from diverse geographical regions and disciplinary fields, such as public history, memory studies, museology, archaeology, tourism studies, architecture and planning, urban studies, archaeology, geography, sociology, cultural studies, political science, anthropology, ethnology and artistic research. Subthemes range from the legacies of the Second Industrial Revolution to the future of working-class, company towns to heritage-based sustainable development, deindustrialization to issues of urban preservation.

The call for papers will be launched in September 2019. The deadline for the call for sessions is January 31st 2020.
CITIES AND HISTORIC TEXTILE COMPLEXES

Typology, Good Practice, and Global Perspectives for Conservation, Humboldt Universität zu Berlin

Dr Heike Oevermann (Georg Simmel Center, Humboldt Universität zu Berlin, Germany), with TICCIH, Mark Watson (Historic Environment Scotland), and Prof. Bartosz M. Walczak (Łódź University of Technology)

For nearly three centuries, the textile sector led industrialization and urbanization. Textile entrepreneurs introduced multi-storey mill complexes to urban contexts, implemented steam-powered machinery for spinning and weaving operations, and established a global trade network based on transport, skills, knowledge, and power. Textile industries consequently changed cityscapes and urban spatial structures of many European cities. Mill complexes and their infrastructure (canals for power and transport, railways, warehouses etc) form part of a local historic urban landscape, and represent global chains of production. This textile heritage includes tangible traces, buildings and artefacts with transcultural dimensions, as well as various aspects of living heritage.

Several previous studies have developed our understanding of the technological and architectural contributions of the textile industry. The decline of the textile sector in much of the world has meant that converting and repurposing these historic industrial complexes has become a new opportunity and important task in many European cities. Ongoing practice in architecture, planning, and conservation shows historic textile complexes to be urban and architectural structures that can be conserved and enhanced by conversion to new uses.

Questions arise for research:

- How to describe, identify, and value the historic urban landscape of the textile industry; does the TICCIH typology properly cover urban industrial types?
- What constitutes good practice for conservation and enhancement when converting mill complexes?
- What are the relationships between textile heritage sites in Europe and the world; and among the people involved in textile production? How can we critically discuss these in heritage conservation, by and for whom?

The expert meeting in Berlin will discuss historic mill complexes in towns and cities, aiming to identify an urban industrial typology to facilitate the description and valuing of these complexes, and good practice criteria to provide orientation in conversion processes. In this context, a typology is understood as an instrument of analysis, used in thematic studies by TICCIH and other classification systems, in inventories, listings, and heritage conservation. An urban typology focuses on the larger-scale mill complexes, their spatial composition, the configuration of different buildings and building types connected to communities in an urban setting.

Additionally, we discuss approaches that will better understand the global networks and transcultural dimensions (knowledge, traditions etc) of this heritage. What are the global networks of knowledge, trade, and power in the textile industry? What meanings do elements of textile heritage have for local people and for global workers? What do we share when conserving textile heritage sites? How can we understand and take into account global and transcultural aspects in inventories and conservation practice?

Please send an abstract (not more than 350 words) and short CV to heike.oevermann@gsz.hu-berlin.de to apply to join this meeting.
INTERNATIONAL CONFERENCE ON WATER AS HERITAGE

Chiayi, Taiwan, 27-29 May

Hsiao-Wei Lin, Meisha Hunter and Irene Curulli

The International Conference on Water as Heritage gathered around 200 participants with 33 representatives from different water related organizations and 30 countries. The aim was to achieve better water futures through the inclusion of water heritage in community engagement, engineering and policy making. To support this goal, it aimed to involve ICOMOS, International Scientific Committees, the water sector, governments, associated communities and NGOs. The conference was organized by ICOMOS Netherlands and the Centre for Global Heritage and Research of the Universities of Leiden, and TIIWE from Taiwan. The conference concluded by setting up a working group to propose a new ISC on Water Heritage for the ICOMOS General Assembly in Sydney, Australia, in 2020, and a Taiwan Statement to proceed the following cooperation.

Three TICCIH members took part in the conference, Irene Curulli, Meisha Hunter and Hsiao-Wei Lin. On behalf of TICCIH, Hsiao-Wei Lin, Board member of TICCIH, delivered the statement of TICCIH’s water heritage achievement, based around the comparative study of water heritage produced in 2018, at the opening ceremony, and lead Theme 3 Waterway together with Irene Curulli.

The objective of the conference was to bring together key organizations, heritage groups and other stakeholders engaged in water management under one platform with the idea of identifying water-related heritage across the world. The diversity of papers from different dielines highlighted the importance of water heritage and the knowledge embedded in it. This may show a better way in attaining sustainability with a balance between water heritage and development. A selection of papers will be published at the ICOMOS GA 2020 in Sydney.

There are different disciplines of presentations from planning, landscape architecture, engineering, historian and community empowerment. In addition, the issue of climate change effects on the water heritage is also essential for the discussion. According to the conference statement, the further action of the conference will be:

• Developing methodologies, training, policies and design processes that respond to heritage significance in the water world
• Showcasing and promoting best practice examples of water heritage management
• Exploring and developing the interlinkages with water heritage managers, designers, planners, and a broad range of relevant organizations

In addition, the priority work of the further steps will be:

• Identification of approaches and synergies
• Establishment of a common language
• Emphasizing the relevance to the SDGs
• Intensification of climate action planning
• Promotion of the Water Heritage Awareness Shield
SPECIAL REPORTS

IN MEMORY OF MICHAEL STRATTON

TWENTY YEARS OF ADAPTIVE RE-USE: A COMPARATIVE REVIEW

Profesor Massimo Preite


Ferran PONT and Teresa LOURDÉS, Espais Recobrats: Els nous usos del patrimoni industrial català (Recovered Spaces, the New Uses of the Catalan Industrial Heritage), mN-ACTEC, Terrassa, 2014

Heike OEVERMANN and Harald A. MIEG (eds.), Industrial Heritage Sites in Transformation, Clash of Discourses, Routledge, 2015


Marina GASNIER, Le patrimoine industriel au prisme de nouveaux défis (The Industrial Heritage in the prism of new challenges), Presses universitaires de Franche-Comté, 2018

Twenty years ago, Michael Stratton (1952 – 1999), the director of the Archaeological Heritage Management course (Department of Archaeology) at the University of York, died at only 45 years of age. A year later, in 2000, ‘Industrial Heritage Conservation and Regeneration’ was issued. Edited by Stratton, this was a collective work in which experts of different specializations (archaeologists, architects, planners, managers, etc.) shared the lessons learned from their experiences of Regeneration through Heritage, a program launched in September 1998 by the Prince of Wales which aimed to ‘promote awareness of opportunities offered by industrial heritage’.

The volume constituted an absolute novelty on its appearance. It was the first time that the recovery of industrial heritage had been dealt with at such disciplinary breadth: the collected essays cover a broad range of themes, including conservation, geography, urban planning, architectural typology, feasibility analysis, management. Twenty years later, one can wonder: what happened after that? What were the effects of this work? Which of the themes identified by Stratton have received greater depth?

Within the space available, three moments of Stratton’s reflections are selected here which, in the writer’s opinion, still preserve the strong interest they had aroused at the time, and from which new and significant contributions have originated from younger scholars in the different disciplines of the industrial heritage.

Industrial Typology and a Geographical Approach

The first thing that impresses in Stratton’s work is the breadth of the survey carried out on the re-use of industrial heritage. The overview of the examples considered has a global reach (United States, Australia, India, Europe), even if the largest number of cases analyzed concern England: the Regeneration through Heritage database, reported at the end of the volume and elaborated together with Sue Taylor (to whom Stratton entrusted, when he died, the final conclusion of the work), is absolutely remarkable. The merits of this database, composed of over 200 files relating to reuse interventions in Britain and Ireland, go beyond a merely descriptive purpose; from this huge amount of stored information Stratton was able to derive a typological classification of the industrial buildings, functional to the discernment of their ‘potential for re-use’. An operational classification, therefore, and aimed at highlighting the opportunities for the conversion of each specific structural type.

It is a pity that Stratton did not have the time to develop a similar classification of the spatial organization patterns of industrial activities at different geographical scales (from the individual site, to the industrial district, to the city and the industrial region). A pity because the book does not lack explicit acknowledgments of the ‘plural’ nature of the industrial heritage, in all those cases where value and meaning become fully understandable not from the consideration of individual buildings, but from their aggregation into ensembles on an urban and/or territorial scale. Despite not having found their organic theoretical framework, some notions by Stratton reveal an acute understanding of the evolution of the localization models of industry and the causes that explain
the decline of the industrial inner areas (born with the Industrial Revolution and consisting of a mixture of different factories and workshops) and the parallel development of new ‘huge single-storey sheds located on the urban fringe’. The causes of all this, argues Stratton, are to be charged only in part to the process of de-industrialization; the erosion of the broad concept of integrated city actually has deeper roots that go back to the inter-war period and to the new principles of the separation of the urban functions following the application of zoning criteria in British planning.

Despite this, the intricacy of the traditional industrial city has continued to demonstrate undeniable performance skills: ‘looking back, it’s remarkable how resilient the mixed industrial and housing inner-areas of most cities proved to be’. Perhaps what prevented Stratton from elaborating a classification of the spaces of industry is the absence of the category of ‘landscape’ among its analytical tools, an absence which is all the more surprising given Stratton’s strong interest in urban industrial landscapes (Norrköping, naval dockyards, waterfronts, etc.). That this analytical category can play a primary role in the interpretation of industrial heritage on the large geographical scale has been amply demonstrated by the work of Pierre FLUCK (2017) and its elaboration of a well-articulated classification of the ‘paysages de l’industrie’ (from the factory hamlet, to the company town, to the industrial city, to the industrial territory). However, Stratton reveals a keen sensitivity to the geographical approach in relation to the types of localization of productive activities.

**Protection and Planning**

The protection of industrial heritage occupies a central place in Stratton’s reflections which, on this issue, developed an approach of great originality. From the title itself of the first chapter - An overview of conservation and commercial interests - one can deduce a marked distance from positions of conservative purism since the explicit key issue of the book is ‘the relationship between building conservation and revitalization of run-down urban areas’. To achieve this goal ‘designers can experiment with radical interventions that would be unlikely to gain acceptance with, say, cathedrals or country houses’. However, while not adhering to principles of strict conservative dogmatism, Stratton identifies with great lucidity the main obstacles to the protection of industrial heritage. In traditional heritage policies, protection is normally granted to ‘listed’ buildings on the basis of an official recognition of their aesthetic and architectural value; but the relevant parts of ‘unlisted’ industrial heritage remain without protection. Furthermore, this ‘selective’ protection system, which favored compact and enclosed complexes, has not proved to be suitable for managing the ‘challenge presented by factories, warehouses and their surrounding landscape’.

The instrument to allow protection, not of individual properties, but of large urban portions of industrial heritage, was correctly identified by Stratton as urban planning. In this regard the book offers, in relation to the years of its publication, the most comprehensive review of urban planning instruments adopted in the United Kingdom to promote urban regeneration programs through heritage conservation, as an alternative to the previous urban renewal practice: Conservation Areas (1967), General Improvement Areas (GIAs), the Urban Development Corporation (UDCs, 1980), the Conservation Area Partnerships, etc. While constituting
past history, reading the pages dedicated to this theme still offers undoubted elements of interest: first of all it is a critical balance of urban regeneration policies that has no precedent in any other country. Among other things, because the UDCs were formulated for completion over ten years, their main critical elements could be detected: antagonism with the local authorities, poor architectural quality of the interventions, poor regeneration effects in terms of social improvement and job creation.

This cycle of experiences, despite being born from the lessons learned from the American experiences of re-use of ‘huge redundant factories and warehouses as powerful forces for area regeneration’ (Baltimore waterfront, 1962; Ghirardelli Square in San Francisco, 1964; Quincy Market in Boston, 1976), also showed, according to Stratton, a British way that distinguishes itself, compared to the post-modernism of the American examples, for a greater attention to the aspects of conservation (Covent Garden, Camden Lock, the Ironbridge Gorge Museum).

If, as Stratton first pointed out, proper urban planning is an indispensable prerequisite for effectively protecting industrial heritage; it is equally true that an effective convergence between planning and heritage is not always fulfilled. The beautiful book Industrial Heritage Sites in Transformation (edited by Heike Oevermann and Harold A. Mieg, 2015), animated for the purpose of developing ‘an interdisciplinary approach that brings together heritage and planning’, elegantly highlights the conflicts of value that can arise between three distinct forms of discourse: that of heritage conservation, that of urban development and that of the production of architecture. As their different core objectives can be irreconcilable, it is essential to identify some values that ‘can be common to several discourses, and can function as bridges to resolve conflicts of the constellations of discourses’. The examples reported in the volume show that the construction of these ‘bridging values’ is a road that can lead to different outcomes: in some cases the destination has proved satisfactory, having led to a recovery-orieneted urban planning approach that can manage the conservation of former industrial sites (Belfort, France); in other cases, however, bridge values prove to be difficult to construct, leaving potential conflicts between planning and heritage approach unsolved (Liverpool, Mumbai).

A sure intention to pursue heritage conservation through planning is the one that emerges from the recent experiences of recovery of the industrial heritage in the Catalan region of Spain. In ‘Espais Recobrats, Els nous usos del patrimoni industrial català’, Ferrant Pont and Teresa Lourdès have catalogued 124 factories, dating to the 1831 - 1950 period whose restoration has preserved architectural and historic heritage. The majority of these interventions are profoundly affected by the evolution that took place in the 21st century: ‘Going beyond the importance of each specific element, the focus is now played in the construction of the city’. Thanks to this evolution, the town planning initiatives that embody this new vision are increasingly numerous: Modification of the Metropolitan Plan in Barcelona’s 22@ district, Terrassa’s Plan for Municipal Urban Planning, the Special Plan for Heritage Protection in Sabadell, etc.

Conservation and Transformation

This is the central and most original topic in Stratton’s reflection. The whole book can be considered the attempt to answer the ‘key challenge of finding the right balance between preservation and change’. A challenge that the author undertakes to play down, pointing out that the change has always been an intrinsic character of the industrial heritage. An intransigent conservation of this heritage, aimed at freezing it in the last configuration reached at the time of the cessation of its activity, would paradoxically risk, to contrast the principle of material authenticity (of keeping ‘as it was’) with the principle of historical authenticity of a property (that has always been immersed in a process of continuous becoming). In this regard, Stratton warned that the practice of re-use, which we are now looking at as a novelty, is as old as the industrial revolution: the shrine at the birthplace of the Industrial Revolution - that is, the furnace of the first iron smelting with coke in 1709 - it was actually a former derelict furnace where Abraham Darby incorporated beams fabricated in the mid-seventeenth century for his experiments. So, the pragmatic process of evolution and adaptation of former productive structures is an inseparable and permanent factor of the industrial development process. Today’s notion of adaptive reuse (only apparently new) therefore fits into the wake of a consolidated tradition that has allowed conservation to be achieved through ‘building incrementally on surviving resources in terms of buildings, landscape and people’.

There is no reason why what has worked in the past cannot continue to work even in the future. In fact, further transformations do not necessarily entail a reduction in terms of authenticity since, on the contrary, as noted by Stewart BRAND (in his How Build-
ings Learn, 1994), ‘most buildings are born to evolve and ... often some change can augment, rather than dilute, their historical signification’.

It is on this trust that we can understand some signs, detected by Stratton, of softening certain rigid positions of conservation purism, and cautious openness to less dogmatism in ‘the protection of twentieth-century commercial and industrial buildings ... especially those not deemed to be nationally significant (English Heritage).

However, this does not imply the acceptance of any transformation intervention in the name of an ever more generous ‘tolerance for change’ (Gustavo Araoz, 2009). On the contrary, it is essential to have solid principles of ‘Design Ethics’ that Stratton formulated with great intellectual honesty.

Thus we approach the most original core of Stratton’s reflection, the one that, in our opinion, continues to be a very useful compass to guide the policies of the re-use of industrial heritage. ‘Conservation is rather an art than a science’, but, in this case, the responsibilities of art are no less than those of science, especially when, in the forest of possible options, very few are those that survive the severe scrutiny of the author. In his opinion, the vernacular heritage is certainly to be discarded, with its ‘amorphous jumble of new buildings made to look old, and old buildings looking new’, ended up producing a ‘nightmare of over-restored bridges, warehouses and lockhouses’ (Brindley Place, Birmingham). No less to be avoided is the post-modernism that, despite having ‘a valid philosophical justification in terms of adding layers of historical building...has been sold short by many of its advocates and even more so by commercial plagiarists’ (Tobacco Warehouse in London’s docks).

And finally, no less caution should be reserved for the façadism of many re-use projects where ‘the exterior of a building may be carefully restored but the interior heavily reworked’. This is a concern that demonstrates Stratton’s extreme perspicacity in perceiving the first signs of increasingly popular trends (in France, Italy, etc.), but no less disturbing for this, which found their full manifestation in subsequent years: the Logics of the Add-Ons, or ‘Boxes in the Box’ (Bernhard Reichen, in Heike Oevermann and Harald A. Mieg, 2015). This new design approach has found a growing field of application in the re-use projects of former industrial halles characterized by great height and open space of considerable size. In these cases the conservation, justifiable only on the basis of an efficient energy-saving system, involves a splitting of the internal space through the creation ex-nihilo of a miniaturized urban structure composed of new roads and new architectures (boxes) for offices and other activities. Once the transformation is completed, any evidence of machinery and former original interior lay out is removed.

Once excluded these options (vernacular, post-modern, façadism), the problematic relationship between transformation and conservation seems to find a solution only in the compliance with some basic rules of prudence (minimizing the changes to the historic buildings undergone to meet current needs, and maximizing their authenticity) and honesty (to avoid any imitation of the new buildings, but design them with respect for their context). Simple rules that have deep roots in a line of thought that Marina Gasnier has cleverly reconstructed in her ‘Le patrimoine industriel au prisme de nouveaux défis’ (2018).

Through a careful examination of the reuse strategies of nineteen industrial sites (in France and other European countries, see Annex II), the author showed that a change of direction does not necessarily detract from the integrity of the abandoned building or industrial site, on the contrary it can represent an event that adds to a process of stratification not yet completed and therefore susceptible to prolong itself over time with the overlapping of new layers. For this to happen, it is necessary, as the author claimed, ‘to privilege the integrity of the building, facing the program. It is not the architectural object to submit, it is the program to adapt to the forms’. In many of the analyzed sites (Tech’hom, Euratechnologies or Seine Innopolis) the reconversion of the former industrial buildings was inspired by an alternative strategy to that of conservation ‘à l’identique: the addition of new architectural elements, as well as any suppression of accessory elements that are no longer functional, are acts of transformation that do not subtract, but rather add a new layer to the stratification of the industrial monument - that of contemporary history, which can be read through the shapes, colors and materials of our time. In a nutshell, the task for the architect in the built heritage reconversion is to ‘know how to compose with the existing’ in order to ‘relocate the converted building into a context, in a historical continuity in which the contemporary architectural act participates’. In these words of Marina Gasnier echo the profound theoretical debt, from the honestly acknowledged author, towards the best Italian school of architecture, from Gianfranco Caniggia (‘to design means to compose what is already there, with what one is doing’) to Aldo Rossi, Alberto Magnaghi, and others.

Stratton was well aware of the tension between old and new, between past and present, which arises when the architectural project inserts the reconverted industrial building into a future perspective, and he did not hide his personal distrust of any form of ‘modernity with deference’, conditioned by excessive respect for the context (conserving as found) and by timidity of design (new elements largely designed in traditional forms and simplified details).

Also for Stratton the best experiments of industrial conversion were those in which ‘new uses and additions are marked by sensitive modern design’, which did not renounce to ‘radical juxtapositions of old and new’, such as those implemented in the projects of conversion of the Grand Hornu by Bruno Renard, of the Design...
Center at Zollverein by Foster & Partners, or of Bankside Power Station, converted to Tate Modern by Herzog & De Meuron.

The line of thought that runs from Michael Stratton to Marina Gaznier seems to reassure us that conservation and re-use do not represent antithetical strategies and that the assignment of new functions to industrial buildings of the past can be accomplished without detracting from their integrity and values of memory that we recognize in them.

All this is undoubtedly comforting, if it weren’t that some voices, not isolated and not secondary, of contemporary architecture express radical objections to the stratification processes that generated the historic city as we know it.

In an imaginary letter to Oriol Bohigas (2000), Vittorio Gregotti thus summarized the design approach adopted for the reconversion of the Pirelli Bicocca Area in Milan: since ‘the overlap of the layers produced by the passage of time is not reproducible ... it is necessary to tackle the difficult theme of a well-rounded design ... and to build the support plan for future stratification, future changes, future interpretations’. The renewal of the Pirelli area could not have been more radical: the reconstruction of the area took place without any stylistic reference to the previous architecture of the work; ‘the memory of the old settlement is based solely on the conservation of the original road grid inside the factory, now transformed into an urban grid’.

In the projects of Rem Koolhass for the reuse of some industrial areas in Italy a substantial unavailability to conceive the new interventions as new layers to be added to the pre-existing stratification emerges (Junkspace, 2002): ‘Throughout the history of humanity, cities have grown and improved through a process of consolidation on the spot, in the same place, layer by layer’. This process is over: this stratified city is replaced by the Generic City, to which ‘any idea that it would be necessary to add a new layer, to intensify, to complete, is foreign: Generic city has no layers’.

Prophetic declarations that will be applied in the conversion of an old distillery in Milan in the new Prada Foundation (2015) through a densification of the built fabric with discordant architectural topologies, from a showroom to a skyscraper. In order to avoid any possible integration of new volumes with pre-existing buildings, Koolhass has programmatical exaggerated the differences, without trying to redesign any formal unit of the site.

Finally, in the writer’s personal opinion, Stratton was not reluctant to appreciate ‘the long simple roof terrace added to Bankside Power Station’ by Herzog & De Meuron. The new volume, in its horizontality, in its lightness (given by the continuous glass wall), and in its slight setback with respect to the original front of the building, is the demonstration that a new element can be inserted into an older structure without compromising its identity.

But it is legitimate to ask ourselves what Stratton’s judgment would have been on the most recent projects for the conversion of industrial architectures carried out by the two Swiss architects. What would have he thought of the conversion of new Caixa Forum in Madrid (2001-2006), which, through the suppression of the ground floor, engages in a singular challenge of gravity’s law to produce a levitation effect of the whole structure? Or what would have he thought of the new Elbphilharmonie in Hamburg (2017) that like a stormy sea overlaps with an existing brick warehouse (Kaispecher A, 1966)?

In conclusion, we have just examined some excellent projects which, however, go against the vision shared by many of us, that the recovery of the industrial heritage, while excluding its crystallization, must not give up to develop this past-present dialogue, which is the proper function of heritage. Gregotti, Koolhass, Herzog & De Meuron, and many others seem to oppose this dialogue and hold that the only possible relation with the memory is that of a radical discontinuity. In my opinion it is a point of view that may not remain a minority. For the future, I anticipate that the reuse of industrial heritage will have to come up against these ideas. So let’s get ready.

Editor’s comment
In the 1997 issue of the TICCIH Bulletin, then edited by Dr Barrie Trinder, Michael Stratton published this ‘Delegate’s view’ of the recent congress in Thessalonica, Greece. While characteristically enthusiastic about the experience and stimulated by the company of the other participants, he ended with this warning, which I hope we keep to heart:

‘The conference was well-organised and enjoyable, but it confirmed some worrying traits apparent in the Spanish and Canadian meetings in 1992 and 1994. There was a marked gulf between well-researched but narrow case studies and broader presentations informed by theory. TICCH is not encouraging progressive discussion about critical issues of methodology, interpretation and preservation. Conference programmes have become swamped by essentially factual papers. We should all be delighted that the geographical and technological boundaries of Industrial Archaeology continue to broaden, but the end of the century is an appropriate time for the subjects’ international body to play a more assertive role in defining the highest standards and challenging some too well-chanelled approaches and preconceptions.’
THE NIZHNY TAGIL CHARTER: FIT FOR PURPOSE?

Dr Iain Stuart, Artefact Heritage Services and JCIS Consultants

I have been asked to make some comments on Colm Murray's opinion piece in the last TICCIH Bulletin (#84, 2019) where he discusses the Nizhny Tagil Charter for the Industrial Heritage in relation to the ‘Ecological Age’, and sadly finds the Charter does not live up to the ideals that Murray thinks it should. I will begin by commenting that I am not a great fan of the Nizhny Tagil Charter, nor am I an architect. Rather I am Australian and thus consumed the Burra Charter with my mother’s milk, and I am an archaeologist and professional historian whose profound interest in industrial heritage came from my engineer father. I also have a degree in Environmental Science so I would consider myself qualified in the area of ecology as well as industrial heritage.

The Nizhny Tagil Charter for the Industrial Heritage was the first document put out by TICCIH to provide guidance on the subject of the study and conservation of industrial heritage. It was developed and ratified at the 2003 TICCIH Congress in Russia and takes its name from one of the early centres of Russian industrialization.

Charters are documents that outline a set of definitions and principles regarding a particular topic and which are, generally speaking, ethical and aspirational rather than seeking to confer any legally enforceable entitlements. Charters and the generally similar Principles abound in the heritage world, starting with the International Charter for the Conservation and Restoration of Monuments and Sites (the 1964 Venice Charter) adopted by ICOMOS in 1965. The Nizhny Tagil Charter is a general statement about Industrial heritage, its values and significance, and outlines principles for legal protection and management.

A comparison with the Venice Charter of 1964 shows the influence of the Venice Charter on the Nizhny Tagil Charter.

Subsequently, TICCIH and ICOMOS have jointly endorsed the Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes (aka the 2011 Dublin Principals) which elaborate on some aspects of the Nizhny Tagil Charter. There was also the publication Industrial Heritage Retooled which expands on relevant topics relating to the conservation and management of industrial heritage.

Of course, individual national groups have their own Charters, Principals and Guidelines which refine the lofty ideals of international charters into a set of practical and comprehensive documents for use in heritage conservation practice. In Australia, for example, there is the Australia ICOMOS Charter for Places of Cultural Significance (aka the Burra Charter) which comes with an additional set of Guidelines and Practice notes. At state levels in Australia, state heritage agencies have also provided useful guidelines on such topics as: Levels of heritage significance; Assessing historical importance; Assessing historical association, and the ever-popular Assessing Significance for Historical Archaeological Sites and ‘Relics’. There are also innumerable articles on the application of the Burra Charter to almost any situation.

I mention the range of documentation because in the practice of studying, assessing and managing industrial heritage, the Nizhny Tagil Charter is not the only resource available for guidance. Indeed, approaching industrial heritage as if this is the sole document sells the discipline short.

I think there is considerable merit in Murray's comments in that quite a lot of industrial history and heritage is steeped in ‘Whiggism,’ the view that history is a positive progression towards the present day. Too often, heritage looks back at periods of time through a Whiggish lens, creating historiographical narratives that justify the current (often political) position and smoothing over inconvenient facts such as failures and environmental disasters. It is often used to justify modern development or policies that repeat the mistakes of the past. In contrast, there is the view that progress, such as it is, is inevitably marked by dispossession, marginalisation, conflict, as well as profoundly negative impacts to the ecosystem such as massive pollution, loss of species and habitat, deforestation and ultimately climate change. In Australia this approach has been characterised as the ‘Black Armband’ view of history.

There is much to be said for facing dark and unpleasant facts about industrial development both on people and on the environment. The task of a historian in telling the story of an industry is to seek to sit somewhere between these two poles.

Murray raises several issues with the Nizhny Tagil Charter. These are: Whiggism; that it fails to create a normative or ethical framework; and that the document fails to guide a conservator (by which I think is meant heritage practitioner) through difficult dilemmas which are particular to industrial heritage.

The first point is a classic case of claiming that a document should do something and then criticising it for not doing it; an approach familiar to those observing the current US president. There is no evidence in the text of the Nizhny Tagil Charter that TICCIH is in any way advocating an uncritical or positive view of industrial heritage, and the words chosen seem deliberately neutral in tone. The Nizhny Tagil Charter is quite silent on whether industrial heritage is good or bad. It neither adopts a 'Whiggish' or a 'Black Armband' approach. Rather, it refers to historical, technological, social, architectural or scientific values without actually concluding anything about the nature of these values or going into the matters in de-
I do, however, feel that Murray’s general criticism that often heritage tends towards the Whig view has some merit. The very phrase ‘universal and outstanding’ has Whiggish overtones. Whether a Charter can realistically address those concerns is doubtful. The development of a historical understanding of a place is where questions of balance and thoroughness in research really come into play, in evaluating what historical values a place might have. Perhaps developing guidelines on assessing tangible and intangible historical, technological, social, architectural or scientific values would be a useful step in avoiding this issue.

The second criticism is that the Nizhny Tagil Charter does not ‘create a normative or ethical framework in which the industrial heritage can contribute to an understanding of our current predicament: how to make the trajectory of technocratic consumerist materialist development ‘sustainable’. I am, as many other TICCIH members would be, at a loss as to why one would expect a charter for the conservation of industrial heritage to take on such a task. After all, the charter fails to address world peace as well!

It would have been helpful if Murray had given some examples of what is actually meant by a ‘normative or ethical framework’, and then for bonus points he could explain what the ‘trajectory of technocratic consumerist materialist development’ means.

The third and probably more substantive criticism is that the Nizhny Tagil Charter is unclear about these principals and its discussion of the values of industrial heritage (Section 2) is limited, and the actual process of assessing these values, which the Burra Charters sees as broad based and interdisciplinary, is not discussed. Furthermore, in Australian practice at least, there is the recognition that within the boundaries of a place there may be areas of greater or lesser significance to the overall significance of the place and that heritage management should take this into account.

Murray is critical of ‘the prioritisation given to the evidential value is rooted in the ephemeral nature of the subject matter and the preoccupations of archaeologists with the skills they can deploy’. Which I think means, in the context of adaptive re-use, archaeologists don’t like the significant evidence embodied in the fabric of a place being rooted out by a bunch of architects in the name of adaptive re-use. From my perspective, if there is a conflict between highly significant fabric and the ability to adaptively re-use an area, then the conservation priority surely should be the preservation of the significant fabric ‘in situ’. Often a developer will claim a site lacks commercial potential because they are lazy and cannot be bothered thinking through alternative solutions, and this then acts as a driver of destructive adaptive re-use practice. My experience with the Urban Design unit in the Department of Planning and Environment, Victoria, showed how a properly trained urban designer can work with difficult heritage sites and difficult developers towards a positive solution for both sides.

My point is that the issues and solutions are more complex than a simple ‘us versus them’ argument which Murray seems to posit. At the core lies the question of significance which I think is largely absent from the discussion, but needs greater elaboration both in a revised Charter and in supporting documentation.

To conclude, Murray seems to blame the Nizhny Tagil Charter for not meeting his high expectations. That may be so but it does
bring us to a more critical issue: who sets those expectations and who writes the Charters? The Venice Charter was written by a small number of men from Europe who were mainly architects. It is not clear who wrote the Nizhny Tagil Charter, but it is likely it was a small sub-set of TICCIH. ICOMOS Australia has at least attempted broader community consultation for its revisions to the original Burra Charter and maybe it is time for TICCIH to also look at broader consultation for its conservation documents.

Even with consultation and taking on board some of the issues raised by Murray, a charter has to be more general in nature, and TICCIH needs to consider whether developing guidelines for specific topics might address some of the issues Murray raises.

CONSERVATION OF 20TH CENTURY HERITAGE FROM ARCHITECTURE TO LANDSCAPE

Negaresten Garden, University of Tehran, Tehran, Iran, 23th and 24th April 2019

Dr. Arq. Jaime Migone Rettig

The University of Tehran through the Faculty of Fine Arts together with DOCOMOMO invited TICCIH to participate in the international congress Conservation of 20th Century Heritage from Architecture to Landscape that took place in the Gardens of the Negarestan Palace in its site museum.

The invitation was made by Professor Dr Pirouz Hanachi, Director of the Congress, President of DOCOMOMO Iran and Dean of the Faculty of Fine Arts of the University of Iran, and Jaime Migone Rettig, member of the TICCIH Board participated on behalf of TICCIH.

The meeting was held with the participation of more than 100 people from around 15 countries, especially from Asia and the Middle East. The importance of industrial heritage as an agent of cultural integration and the fundamental role that TICCIH has in the world was discussed.

We take this invitation to celebrate the entrance of Iran to TICCIH as a new member and we congratulate this initiative, which we are sure will signify an important link for the industrial heritage and its appreciation.
LE PATRIMOINE DANS TOUS SES ÉTATS – UN HOMMAGE À LOUIS BERGERON (Industrial heritage in all its states – a tribute to Louis Bergeron).

Edited by Gracia Dorel-Ferré

Published in FRENCH in the Heritage Collection series of the University of Savoy Mont-Blanc, February 2019
463 pages, €38

David Worth, TICCIH Treasurer

This book combines a celebration of 20 years of the work of the 'Association pour le Patrimoine Industriel de Champagne-Ardenne' (APIC), with a tribute to the late Louis Bergeron, who had a long career as an economic historian, was the President of TICCIH (1990-2000), and editor of the TICCIH journal Patrimoine Industriel.

I am proud to have contributed a paper to this volume, so cannot pretend that this is an unbiased review, but I have been asked to bring the book to the attention of our members via the TICCIH Bulletin.

Much of this well designed and extensively illustrated book of high production quality comprises 37 papers presented at a colloquium, hosted by APIC, and held in Charleville-Mezieres, in the Ardennes region of France during June 2017. The text is in French. The book is comprised of three sections, each with an introduction by APIC's President, Gracia Dorel-Ferré. In addition, there is an introduction to the book by Gracia Dorel-Ferré; a tribute to Louis Bergeron by Denis Varaschin; and a concluding piece by CILAC President Florence Hachez-Leroy. Finally, there's a useful bibliography of the numerous publications produced by APIC since 1997.

The first section brings together a range of theoretical frameworks to examine topics as diverse as the garden city of Chemin Vert, in Reims (1920s); the development of water and charcoal and sources of power in the Champagne region; the textile mill at Neuflize (1860s); and a military airbase (1950s).

Section two broadens the geographical scope of the book by moving beyond France, arguing for the value of industrial heritage as a study without borders. Social and cultural issues are considered alongside matters such as the transfer of technology and the growth of urbanisation. Contributors from Spain and Russia provide examples of ways in which the heritage of food and agriculture, and of metallurgy, for example, may be compared to their French counterparts.

The third section, titled “Connaitre, Transmettre”, looks at ways in which industrial heritage has been valorised and interpreted. Examples from Chile, Mexico, Portugal, Russia and South Africa, sit alongside others from France, providing a useful overview of some of the varied work taking place around the world.

Gracia Dorel-Ferre and the editorial team are to be commended on producing a valuable contribution to the published records of work being done by a diverse range of heritage professionals in France and elsewhere.
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Technology and Power, ICOHTEC 46th Symposium.
22-27 July, Katowice. Includes 3rd ICOHTEC Summer School for PhD students and early career scholars.

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September 12-13, Katowice, Upper Silesia.
Information

SPAIN
XXI Jornadas Internacionales de Patrimonio Industrial - GEOGRAFÍAS, GEOMETRÍAS Y EMPLEOS.
25-28 September, Gijon.
www.incuna.es

GUATEMALA
IX COLOQUIO LATINOAMERICANO DE PATRIMONIO INDUSTRIAL.
4 - 7 November, Ciudad de La Antigua Guatemala

2020

GERMANY
CITIES AND HISTORIC TEXTILE COMPLEXES: Typology, Good Practice, and Global Perspectives for Conservation
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