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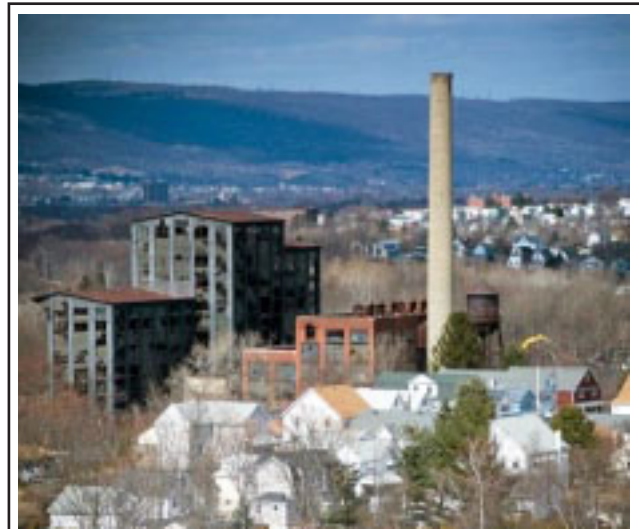
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The Huber anthracite breaker in northeast Pennsylvania, USA was finally demolished in April. Bode Morin described the situation of the immense structure in TICCIH Bulletin #58, and the difficulties of preserving a highly contaminated site in such an economically distressed region proved too much.

[www.ticcih.org](http://www.ticcih.org)

## Opinion

### Renewal of ICOMOS/TICCIH Collaboration Agreement

**Patrick Martin**

At a recent ICOMOS Executive and Scientific Committee meeting in Costa Rica the matter of continued collaboration between ICOMOS and TICCIH was discussed, and a common understanding was reached that our existing agreement was ripe for renewal. Signed in 2000, this Collaboration Agreement ([visible on the TICCIH website](#)) laid out a number of points of common interest between the two organizations and specified some common actions for continued cooperation. As it happens, the 2000 agreement replaced a former agreement from fifteen years earlier; it therefore seemed an opportune time to revisit and renew our arrangements. Toward that end, Kristal Buckley, ICOMOS Vice President, and Patrick Martin, TICCIH President began correspondence to draft a new agreement.

# Opinion

After a few iterations, the draft has been reviewed by Board members from both organizations, and a finalized draft is under consideration for approval by ICOMOS at the upcoming General Assembly in Florence in November. I take this opportunity to inform you of the general shape of the proposed Memorandum of Agreement.

After laying out the essential characteristics of both ICOMOS and TICCIH, the proposed agreement suggests a series of measures to cooperate and collaborate in the preservation of industrial heritage resources. Primary among these measures is the promotion and dissemination of the [ICOMOS/TICCIH Dublin Principles](#), encouraging parties around the world to embrace and implement the approaches advocated therein. We propose to develop systems of reciprocal representation in the governing bodies of both groups and to collaborate on generating Thematic Studies of Industrial Heritage topics. We expect to continue to act as an advisory body to ICOMOS and assist in identifying experts for desk reviews and site missions involved in assessing World Heritage nominations for sites with significant industrial heritage components.

Of some particular interest to many TICCIH members will be a segment of the defining characteristics of industrial heritage, where we state: "Industrial heritage includes not only the remains of the Industrial Revolution, but also the traditional precursors from earlier centuries that reflect increased technical specialization, intensified productive capacity, and distribution and consumption beyond local markets, hallmarks of the rise of industrialization. And industrial heritage also includes the planning, policy-making and rehabilitation necessary to manage these remains in the face of deindustrialization."

A number of our members have long felt that previous definitional statements limited the scope of our field to the Industrial Revolution as expressed in Europe in the past three centuries, a constraint that would ignore the early pre-industrial and proto-industrial activities in places such as China, as well as the critical processes of deindustrialization that so actively impact industrial heritage sites today. I agree wholeheartedly that such a characterization is excessively limiting and needs to be addressed in this and future definitions of the field.

## TICCIH News

### Stone quarry landscapes: newest thematic report for ICOMOS

The next in the series of TICCIH Thematic Reports to guide the inscription of industrial sites on the World Heritage List is being circulated for consultation. Written by Dr David Gwyn of Govannon Consultancy, it was commissioned by Gwynedd County Council, UK, which is backing the [inscription of the slate quarry landscapes of northern Wales](#).

Other sites with quarries on tentative lists include Carrara in Italy, Norsk Kvernsteinsenter in Denmark, Germany's Lengefeld and the S'Hostal quarry in Minorca, Spain.

The report coincides with the launch of the European Quarry Landscape Network (EQLN), which will provide a forum to discuss the proposal at its first conference in October 30-31, 2014 in Teruel, Spain.

Following the format of previous studies on canals, railways or workers' settlements, the report has a section of definitions, a historical summary, the proposed criteria for internationally significant quarrying landscapes and case studies to explore how the criteria might work in practice.

Everyone is welcome to comment on the report which can be downloaded from the [EQLN web site](#). Experts who would also like to attend the conference should contact the organisers.

### Second call for papers: Extended deadline to September 15, 2014. TICCIH 2015 Congress, Lille, France;

Industrial Heritage in the Twenty-First Century, 5-14 September 2015

#### [TICCIH 2015 2nd Call for papers link](#)

We are happy to announce a second call for papers and posters until the date of September 15, 2014 for the next TICCIH Congress to be held in Lille, France, 5-14 September 2015.; Industrial Heritage in the Twenty-First Century.

I urge you to consider submitting a paper or poster proposal for the 2015 TICCIH Congress. Please consult the congress website for conference details and on how to submit a paper proposal. **Patrick Martin**, TICCIH President

#### Congress 2015 Schedule

- The pre-tour will be organised September, 5 & 6, 2015
- Sept. 6 will be dedicated to Registration, 4:00 to 8:00 pm.
- The opening of the Congress is planned at 10:00 am, Monday, September 7, 2015
- The post-tours are planned from September 12 to 14/15, 2015.

[XVIth INTERNATIONAL TICCIH CONGRESS 2015 Website](#)



# Report

## **TICCIH Congress XIV LILLE-REGION 2015 The Industrial Heritage in the Twenty-First Century, New Challenges**

*In anticipation of TICCIH's sixteenth congress in Lille and its region in September next year (see also the Call for Papers), here is the second insight into industrial heritage in France. In subsequent issues running up to the Congress we will present more exceptional places created by French industries.*

### **France's 'double' World Heritage site: the Great Saltworks of Salins-les-Bains and the Royal Saltworks at Arc-et-Senans**

#### **Geneviève Dufresne**

Vice president of CILAC, TICCIH French Representative.  
English translation by Paul Smith

Among the thirty-nine cultural properties in France currently inscribed on UNESCO's World Heritage List, three may be considered as industrial heritage sites: the saltworks at Salins-les-Bains with the associated royal saltworks at Arc-et-Senans in the France-Comté region; the 360 km Canal du Midi, cut in the seventeenth century to join the Atlantic to the Mediterranean; and the coal mining landscape of the Nord-Pas de Calais basin.

The property we are examining today is the double site inscribed on the list in 2009 under the title 'From the Great Saltworks of Salins-les-Bains to the Royal Saltworks of Arc-et-Senans, the open-pan production of salt'. The Arc-et-Senans site was originally inscribed in 1982 on account of its highly original late-eighteenth-century architecture designed by Claude-Nicolas Ledoux (1736-1806). The much older works at Salins-les-Bains is less well known and for a long time the connections between the two sites were not fully appreciated. In 1981, however, these links were made perfectly clear during the visits organised to the two sites on the occasion of the last TICCIH congress—the fourth—in France, at Lyon and Grenoble.



The Arc-et-Senans guard house with its eight massive Doric columns and heavy sculpted decoration around the doorway evoking chaos.

The production of salt from brine, tapped from natural brine pits then boiled in open pans to produce salt by evaporation, is several thousand years old in the Franche-Comté region. Three different works are known to have existed at Salins-les-Bains during the twelfth century and during the thirteenth century a large underground gallery, 165 m long and 7 m high, was dug out. At the same time the great saltworks was protected behind a surrounding wall and the town itself was fortified. At this period the works belonged to various religious or lay owners, among them the Counts of Burgundy. From the sixteenth century the works passed under Hapsburg domination, being united in a single administration during the seventeenth century. After the capture Salins by the armies of Louis XIV in 1674 and the definitive integration of Franche-Comté into the French kingdom, the site entered the crown estate and the works became a royal manufactory. In 1750 the old waterwheels driven by horse gins were replaced by overshot waterwheels which, by means of a crank and connecting rod system, continuously pumped the brine up to the level of the pan houses.

Towards the end of the eighteenth century, these installations at Salins had reached the limits of their capacities. The depletion of forestry reserves in the vicinity forced the saltworks to maintain a cavalry of several thousand horses or mules to supply the timber for fuel, whilst the narrowness of the valley prevented the installation of the graduation system—a technique which effected a preliminary concentration of the brine by subjecting it to the effects of the wind as it was run over faggots of branches—which could have significantly reduced these fuel requirements.

It was for such reasons that Louis XV entrusted the architect Claude-Nicolas Ledoux, who had been appointed inspector of the Franche-Comté saltworks in 1771, with the task of designing a new works, to be located at Arc-et-Senans at the edge of the vast Chaux forest, covering some 22,000 hectares. Rather than bringing the wood to Salins, the brine would now be brought to this new site, piped by means of a 'saumoduc', a 21 km conduit made of hollowed-out lengths of pine trunks fitted together and reinforced with iron bands. Between the two sites the main technical innovation was an immense and spectacular graduation building, 500 m long and 7 m high. This timber structure (destroyed in the 1920s) was open to the elements beneath its roof and housed a huge quantity of wooden faggots over which the brine was made to trickle, accelerating the evaporation process and the concentration of the salt. The brine was raised to the upper part of the building by means of two large water wheels driven by a derivation of the river Loue. An underground reservoir allowed for the storage of 200,000 litres of concentrated brine. Horse gins were then employed to pump this brine to the new industrial plant where, as at Salins, it was boiled in shallow open pans, known as 'poêles' in French, made of iron plates bolted together. The fire was kept alight beneath the pans to complete the evaporation of the water and the production of the finished salt.

# Report



Nine radiating paths divide the works and converge on the central director's house, the 'temple of surveillance'. On either side are the two main industrial buildings or 'bernes', housing the pans. Around the circumference are various ancillary buildings, a forge, cooperage and workers' dwellings.

For the new saltworks built at Arc-et-Senans from 1775 to 1779, Ledoux designed a truly monumental ensemble worthy of a major royal establishment. The buildings are laid out in a semi-circular arrangement, "as pure", according to the architect, "as the curve described by the sun in its daily course". At the entrance to the site, aligned with the director's house, the guard house has the appearance of a classical temple.

The two sites are now united on UNESCO's World Heritage List, their outstanding universal value justified in terms of the scale of their timeframe, from the Middle Ages up to 1962 for Salins-les-Bains and from 1798 to 1894 for Arc-et-Senans; in terms of the specific nature of salt production at Salins-les-Bains, tapping brine deep underground and using fire to evaporate this brine and crystallize the salt; and finally, of course, in terms of the exceptional architectural features of Arc-et-Senans, a model industrial community built with as much care as palace or a major religious edifice.

At Salins-les-Bains only fragments of the medieval saltworks remain. Only the gateway of the original surrounding wall is intact. The vestiges of the later 'great saltworks' are more numerous, particularly underground where the mid-eighteenth century pumping mechanisms survive, and above ground where the brine was evaporated in open pans.

The work carried out to interpret the two sites in preparation for their new World Heritage status has been extremely thorough.

The quality of the historical and technical research carried out owes much to the remarkable efforts of the team led by Philippe Mairot, heritage curator and former director of the region's 'chain' of technical and cultural museums, and to two researchers from the General Inventory service, Christiane Roussel and Jean-François Belhoste, who have brought new understanding of the site during the fifteenth century.

At Salins-les-Bains, considerable renovation work has been undertaken, calling on numerous specialists. The restoration project was carried out by the Malcotti-Roussey architectural agency based at Luxeuil-les-Bains. This team also designed the nearby casino, formerly housed inside the salt work site in one of the large dwellings (Logement du Puits d'Amont). The work, now completed, involved the new interior arrangement of the workshops, undertaken without touching the historic fabric and comprising the creation of a new visitors' entrance with ticketing and shop facilities, and a second room with a large-scale animated model of the site and an early sixteenth century painting depicting the town and its works. A new building to house temporary exhibitions has also been constructed, in the form of a windowless box in weathering steel, inserted into an existing structure. A salt museum, equipped with audio-visual facilities, has been opened, presenting the objects and documents patiently accumulated to tell the story of salt at Salins-les-Bains. The last surviving open salt pan, unique in France, has been restored, as have the underground galleries and their pumping mechanisms. The new casino may be seen as a successful example of new-build in an historic environment.

# Report



Salins-les-Bains. The last surviving brine sublimation pan, an almost unique survivor in Europe.

At Arc-et-Senans, the buildings were purchased by the Doubs department in 1927, in a sorry state of repair and having lost all traces of their former industrial use. Over the years they have suffered various other vicissitudes—they were used as an internment camp for Roma during the Second World War—but the walls have survived and have been restored. From 2000, in view of the extension of the existing UNESCO inscription, several important changes were made. A permanent exhibition on the history of salt, from its production to its consumption, and covering the whole world, now occupies 500 square metres on the ground floor of the director's house. Another museum space, in the former cooperage building, is devoted to the architect Claude-Nicolas Ledoux. Models present both his completed buildings—most of which have disappeared today—and also the projects he never built, a give an overview of the architect's



Salins-les-Bains. The restored underground galleries and pumping mechanism.

originality and vision. Another space recounts the history of the site from the cessation of its industrial activity in 1894 up to the present day. A thirty-bedroom three-star hotel has also been opened inside the site and a concert and conference venue created in one of the two industrial buildings. Towards the end of the spring, the site hosts a garden festival on a different theme each year. Around the buildings, covering more than four hectares, eleven different gardens are laid out that make for one of the best-known garden festivals in Europe.

In conclusion, the sites of Salins-les-Bains and Arc-et-Senans correspond fully with UNESCO's criteria of integrity and authenticity. Although they are located in two different departments (Jura and Doubs), their management structures have institutionalised a joint governing authority which will guarantee harmonious operation and promotion of the two sites.



The new casino at Salins-les-Bains. The building's sober appearance "respects the authenticity of the archaeological remains and surviving buildings; its exterior skin in rust-coloured steel is appropriate to the roughness of an industrial site, whilst allowing for a clearly contemporary architectural idiom" (Cabinet Malcotti-Roussey).

# Worldwide

## China, Russia and Wales

### The Evolution of Early Structural Iron

Dr Stephen Hughes, TICCIH Secretary

To understand the early history of structural iron there are too few comparative studies of the successive centres of iron production and their innovations in iron use. The ironmasters of the Urals in Russia and of south and north-eastern Wales were successively producing large and innovatory structures around their vast production complexes at the heart of international centres of production. However, over a thousand years before these developments engineers in China were starting the first great period of technical innovation which is still being researched.

Excavated artifacts in China suggest that the first stage of iron metallurgy had its beginning at a date not later than the middle of the Spring and Autumn Period (770-476 B.C.) Over a thousand years later the ironmasters of the Urals in Russia and of south and north-eastern Wales were successively producing large and innovatory structures around their vast production complexes at the heart of international centres of production.

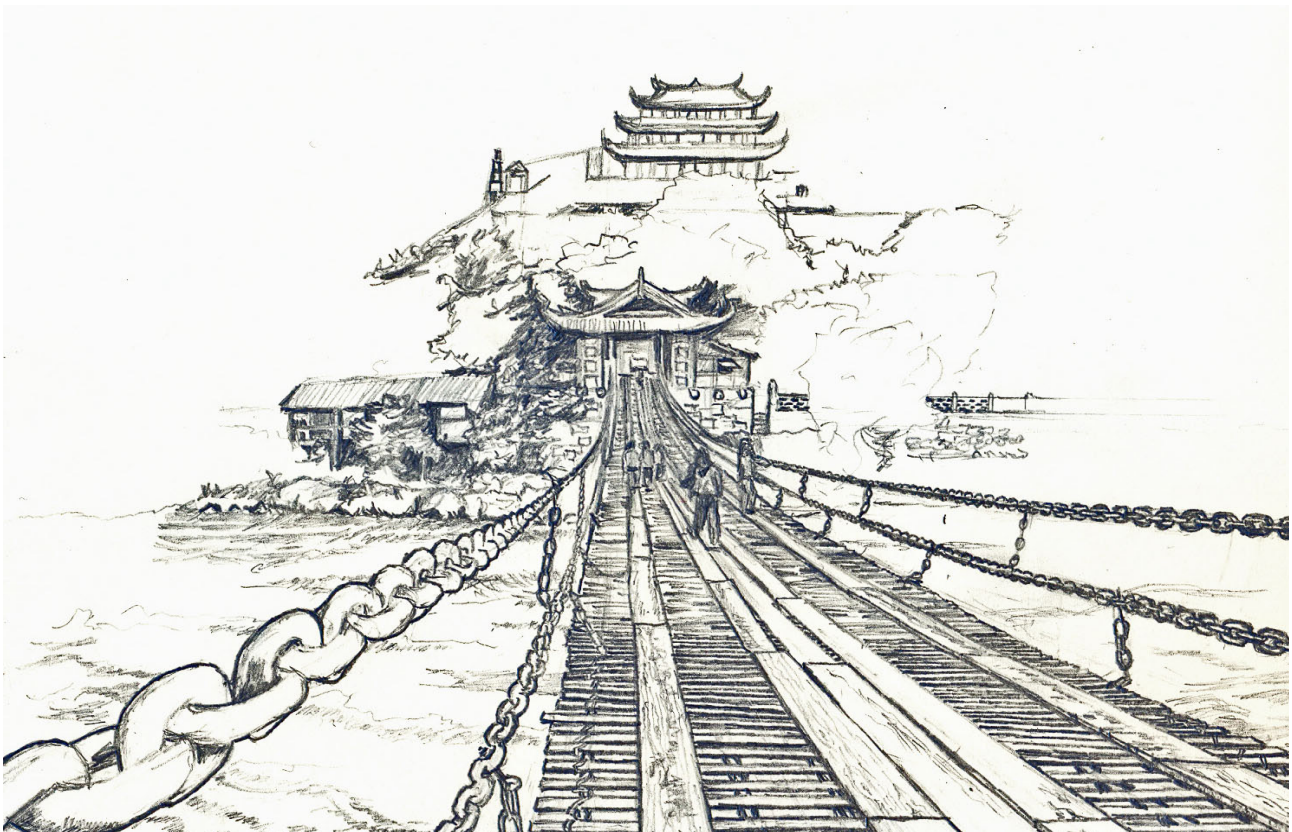
In the first century the Han government in China established ironworking as a state monopoly and built a series of large blast furnaces in Henan Province (the central eastern plains of China, some 500km south of Beijing & 800km west of Shanghai).

Each one was capable of pouring several tonnes of iron a day due to the development and use of water-wheel driven blowing apparatus.

The city of Chengdu, capital of Sichuan province in central southern China, was one of the five main metropolises of Ancient China and at the centre of one of the richest iron-ore deposits in the country. In 1937, the Rev. J. Hudson noted that the structure called 'The iron window-sill is situated outside the east water gate where there is an iron bridge built of three bars each about five or six feet [1.52-1.83 metres] long, one foot [0.3048 metres] wide, and four inches [10cm] thick. These are said to be the iron window sills used during the Song Dynasty [960-1279 A.D.]'

Iron chains manufactured in China were first noted in documents of the Spring and Autumn Period (770-476 BC) when 3,609 iron-ore mines are mentioned. Joseph Needham, in his pioneering work on Science and Technology in China, evidenced that at least 24 iron suspension bridges were built in China between the 6th century and 1706.

The first substantial multi-storey buildings constructed of iron (and some of bronze) may have been a substantial series of Chinese cast-iron pagodas that aroused the astonishment and admiration of foreign visitors in China from the ninth to the nineteenth centuries.



The best known of the early surviving iron-chain suspension bridges is the 100 m Luding Chain Bridge over the River Dadu in Sichuan, China (Drawing, Stephen Hughes).

# Worldwide

The Russian iron industry became the greatest in the world at the end of the seventeenth-century as Czar Peter the Great prepared to defeat his Swedish enemies by importing Dutch technology to develop his Urals iron potential. The largest of the two hundred plus industrial settlements founded by Peter the Great was at Nevyansk in the Urals in 1699. James Sutherland claimed in 1997 that the early structural use of cast-iron was limited by the small size of casting possible before the successful use of coke for smelting, instead of coal. However, what has not been taken into account is the huge scale of the ironworks founded in the Urals. There were large multi-furnace charcoal-fuelled complexes at each of the Urals Ironworks where double rows of eight or ten blast-furnace were roofed to provide protection against the severe winter conditions.

A works bell-tower was constructed above the works and the very substantial grid plan worker's settlement. The start of construction of the bell-tower in 1725 is marked by a surviving cast-iron date plaque.

The belfry is characterised by the very wide-spread use of iron, the entrance steps have treads of cast-iron slabs and the doors and their frames are formed of cast-iron. Balconies on top of the square lower tower have cast-iron floor slabs with balustrades formed of cast-iron slotted sections.

The tower also serving as a strong-room and laboratory and either at the time of construction, and certainly by 1741, it had a steeply-roofed ground-floor annex attached with a wrought-iron-framed roof.

Such was the scale of innovation that the tower steeple was originally capped by a lightning conductor in the shape of a sun-like hollow sphere with radiating spikes. The metal used in the tower is equivalent to the best contemporary samples of Swedish iron and its tested strength properties are similar to those of modern St3kp and St4kp steels with analogous amounts of carbon and silicon.



Nevyansk Bell-tower and annex, built by Peter the Great in 1725 in a fortified enclosure alongside a water-power dam

(Photo, Stephen Hughes).

# Worldwide

Between 1790 and 1806 the Cyfarthfa ironworks of Merthyr Tydfil in Wales, Great Britain, became the largest in the world, eventually with seven 15 metre-high coke-fuelled blast furnaces (of which six survive), and vast ranges of water-powered forges and rolling-mills using the new puddling techniques to produce wrought-iron in large quantities.

The present cast-iron Pont y cafnau railway bridge and aqueduct of 1793 at Cyfarthfa was once the substructure for a gigantic cast-iron aqueduct conveying water to a 90 ton, 15.24 m diameter cast-iron waterwheel. This 32-span aqueduct was operational by 1796 and provided the blast for four furnaces. It was replaced by an inverted syphon in 1824-25.

By 1788 there had been a complete reconstruction of the forges at the ironworks and their water-power provision.

The mills here were extended with at least partially iron-framed roofs and connected by a horse-worked railway crossing the River Taff on two bow-string girder bridges of cast-iron. The new water-feeder canal also crossed a railway incline and track by two small cast-iron aqueducts. Branch aqueducts entered the respective forges at roof level in order to drive other cast-iron waterwheels. South Wales still retains a significant number of iron railway bridges built before 1825.

There is an urgent need to discover and protect early iron-chain suspension bridges in China, Bhutan and Nepal and early iron structures and bridges in the Urals and south Wales.

*A longer article with full references and illustrations is in the current issue (#33) of Industrial Patrimony.*



South Wales became the centre of the world's iron-making capacity in the early nineteenth-century with a large group of ironworks. This reconstruction shows the longest single-line of eleven blast-furnaces at Ystalyfera, supplied by the Swansea Canal running along the tops of the furnaces

(Painting, Stephen Hughes. Crown Copyright).

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# Worldwide

## Costa Rica

### Eloy Alfaro cart mill, Sarchí

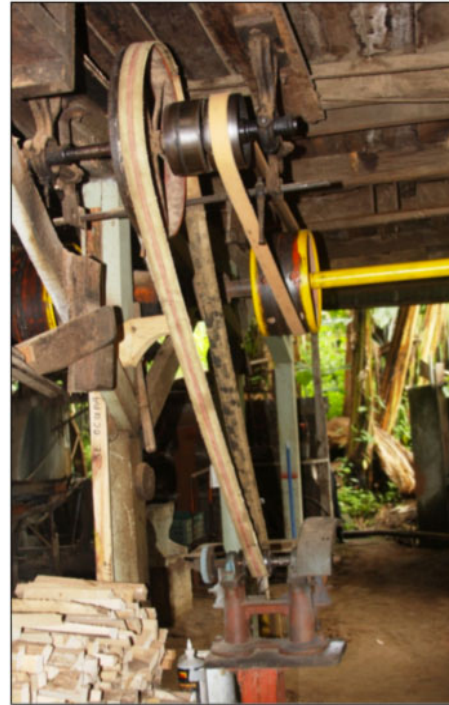
**Ileana Vives Luque**, Director of the Centro de Investigación y Conservación del Patrimonio Cultural, Ministry of Culture, Republic of Costa Rica

In the town of Sarchi, in the Republic of Costa Rica, recently declared “Historic Architectural Heritage”, is a former workshop where bullock carts are made using a technology driven by a waterwheel. The site consists of a group of machines, equipment and tools testimony to the development of an ancient industry that has been present and has characterized various significant stages of economic and cultural development of the region: the construction of the ox wagon. The wagon was the main means of transport from the colonial era for a growing crop and livestock production, which had to develop despite a limited and very badly maintained road network.

The cart workshop is a living historical document that acts as a window or archeological witness, incorporating kinetic energy from the use of a mill or water wheel operating a system of pulleys and belts to produce the necessary movement in the different tools, as well as the actions of a system of air tube operating a “bellows” with which effects the binding of the wheels of the cart.

This industrial and artisanal system documents an ingenious hydraulic mechanical system that works in the present day.

This industrial heritage, including its scientific basis, the procedures and technologies, their environmental relationships, their symbolic content and its landscapes, emerges as a site of significant cultural resources, both and intangible, to act as a generator for actions of research, creativity, dissemination and economic revitalization.



The interior of the cart mill with part of the drive shafting.



Painted ox wagon produced at the Eloy Alfaro mill

# Worldwide

## Spain

### Textile industrial landscape along the Llobregat River

**Eusebi Casanelles**, Vicepresidente de la Fundación del Museu de la Colònia Vidal, TICCIH Life President

The start of the Catalan industrialization at the beginning of the 19th century was hampered by the lack of coal in the Spanish Mediterranean area, forcing manufacturers to buy it from Wales, which turned out very expensive. This led to using the waterpower of the not-very-mighty and seasonal rivers of Catalonia. It has been calculated that more than two hundred water-powered cotton factories were built here during 19th century. Seventy of them also erected a larger or smaller village for the workers, and the ensemble was called an industrial colony. These industrial colonies worked moderately well until the 1960s when the European textile sector entered a crisis. Factory closures caused the abandonment of the neighbouring villages.

The Llobregat was the most industrial river in Catalonia. The French geographer Pierre Deffontaines named it “the hardest-working river in Europe” for the huge water energy used by the factories. Some parts of the river became a kind of water ladder because of the frequent weirs and dams. Especially interesting is an of 18 km stretch located in the Berguedà county where 18 cotton industrial colonies were built. These colonies, among them the Colònia Vidal, have created a very special landscape where the natural environment is mixed with the industrial one.

A public consortium called the Parc Fluvial was created in 2003 to manage this outstanding industrial heritage. It promoted the restoration of some of the buildings, opened a walking trail along the 18 km, and created three industrial museums. But the most recent crisis ended such public initiatives and slowed the private ones. Today a huge industrial heritage which is in a process of deterioration is waiting for someone to reuse and restore it, otherwise part of it will disappear in a few years.

The Board of Trustees of the Colònia Vidal is promoting a heritage study that aims to carry out an inventory of all this heritage composed of the productive and also social heritage made up by housing, church, theater, sports fields... of the 18 industrial colonies. It includes the isolated heritage that exists outside the main centres, too. It will be assessed on the base of its authenticity, integrity and the level of conservation. The study will define the original parts, delimiting them from new works and the ones that have no historical relationship with the Colony. It will form part of the catalogue of the Landscape Charter of the Berguedà, which by law has to be done in all the Catalan counties.

On the other hand, the study proposes to identify the river heritage which is mainly made up by dams and canals, which has created a water surface which characterizes the landscape. It intends to define a “continuous heritage area” formed by factories and neighbourhoods that will be joined by a strip along the river that, at a minimum, includes the entire “flood area” where by law it is forbidden to build. This strip will link the eighteen colonies and form a single entity, surrounded by a buffer zone where construction would be controlled by the administration according to the “Urban Director Plan of the Berguedà industrial colonies”.

The result of this study must be used to help society and the authorities to increase their awareness about this heritage and to help the latter establish priorities when they have to allocate investments that can be obtained in the future. It is likely the manufacturing will be reused even though they are filled with a lot of cast-iron columns. There is also a possibility to restore the social heritage of churches and schools. But it will be very difficult to reuse the housing because even if the area were reindustrialized, new industry does not need the same quantity of workers as before. And it must be added that the workers’ apartments do not have the quality and aesthetics demanded by today’s society.

All this heritage conservation requires the complicity of society which must value it. For this it is necessary to look for the best way to involve citizens in the preservation and in the subsequent dynamics of revitalizing the heritage. It is likely that some buildings will be demolished, but the challenge we have is to preserve consistent heritage ensembles that will be able to transmit what was the life and the way of working in this Valley to future generations.



In 2003, the American construction group Hines bought the Colònia Vidal for €15m, planning to convert the factory to apartments and build new houses around, but the plan has been paralysed since the collapse of the Spanish property bubble.

# Worldwide

## Sweden

### A graded approach to conservation

#### Bengt Norling

One of the crucial issues in the conservation of the industrial heritage is how to finance restoration costs. To restore a former industry with large building volumes in different shapes demands in general strong economic injections.

Means for these purposes are normally scarce and total restoration of former plants is not often conceivable, so other accessible methods need to be explored. In order to find out such an approach a group of skilled industrial archaeologists gathered together at Fengersfors' paper mill in the south-west of Sweden in the middle of June.

At Fengersfors, pulp and paper was manufactured during the period 1906-68. After closing down, other activities have thrived in parts of the mill. Much attention has been paid to these activities, but also to the fact that a great extent of the production equipment is still in place.

Most of the outfit has great value for the history of technology and industry. Even though separate components have been removed the paper mill still illustrates, in broad outline, the most important steps in older, industrial pulp and paper manufacturing. In that respect Fengersfors is unique for Sweden.

A certain value of technological interest has the continuous sulphate digester, which, when it was put in operation in 1950, was the first in the world of its kind.

Other interesting features worth noticing is the paper machine, built in 1906, preceded in the process by pan grinders, beaters and Jordan refiners. Worth noticing is also the steam-powered power central.

These fittings are suited in a closely connected group of buildings erected at different times. The buildings have, since closure, been shielded against decay to different degrees, but through damaged roofs water has forced its way into the premises, destroying parts of the building and also causing different damage to the machinery.

The desire is to restore the paper mill to the condition it had by the time of close-down. The decay has now been stopped since new roofs have been built, but there is still damage at the sulphate digester and the central power plant. A restoration of the equipment is feasible from a technical point of view but far beyond economic and practical limits.

The assignment of the archaeologists was to identify and to rank the premises on the basis of impression values, which ended up in a final discussion suggesting ways to visualize the production line without spoiling the thrilling interior spirit of the mill.

The rankings were geared to an established structure:

1. Premises for re-use, restored or to be restored
2. Premises with manufacture line equipment to be restored
3. Premises with grave damages to be left without any action

The point is to leave severely damaged buildings to their fate, without losing their position for interpretation, so that resources be directed to more important features. This approach is quite a new one in Sweden, but will hopefully serve as another tool in the box for the preservation of the industrial heritage.



Archaeologists assessing the control room of the sulphate digester



The ruins of the evaporation "cathedral" will be left without action

# Worldwide

## England

### Property values threaten Kirkaldy Testing Museum

Dr Robert Carr

Close to the Tate Modern art museum, a former power station by London's River Thames, is an industrial archaeological gem that may no longer exist in a few years' time. **Kirkaldy Testing Museum** is the nineteenth-century testing and experimenting works set up by David Kirkaldy (1820-1897) to investigate the strength of engineering materials. The Works contains a unique nineteenth-century hydraulic testing machine which is still in working order.

Purpose-built and part of the building, the machine is over 14 m in length and weighs nearly 118 tonnes. It cannot be moved: as well as the likelihood of parts being broken during dismantling, once taken apart it is now unlikely that anyone could put it back together.

Problems with higher costs in an area of increasing property prices mean that a current economic rent may have to be paid by the Museum, and part of the building which includes the house-built testing machine could be converted into a bar or restaurant. Space is restricted and if such conversion were to take place the condition of Kirkaldy's unique machine is sure to suffer, to such an extent that in a few years the machine would probably be broken up for scrap. This kind of thing even happens in major museums.

Built in Leeds in 1865, there is nothing like it of this early date. A similar machine was installed in Belgium but this was lost during the 1914-18 war. Rather than of local concern the survival of the Kirkaldy testing and experimenting works is an international issue.

It is not possible to relocate the Kirkaldy machine. The skills to rebuild it and put it back into working order probably no longer exist, and in any case the expense would be enormous and its relevance to the building and to Southwark would be lost.

The machine and the experimenting works has been in the heart of this formerly industrial neighbourhood since 1874 and it is still in good working order. Even now the breaking of test pieces is regularly demonstrated to the public. Moreover, a virtually unique period atmosphere pervades this cluttered time capsule of a works. This will be destroyed by conversion to a more economic use.

Manufacturers sent materials from all over the world. Kirkaldy tested ferrous materials from Krupp's of Essen and steel for James Eads' 1874 Mississippi Bridge at St Louis, the first large-span alloy steel bridge in the world. Ironwork from the infamous first Tay railway bridge, which failed disastrously in 1879, was investigated here. In more recent years, Kirkaldy's supervised the construction of the 1923 Empire Stadium at Wembley. Parts for the 1951 Festival of Britain Skylon tower and from the de Havilland Comet jet airliner that crashed off the Isle of Elba in 1954. Even though the records are incomplete, it is clear that the range of testing carried out at the Kirkaldy works was truly prodigious.

Because of his **celebrated labours, David Kirkaldy** was well-known in professional engineering circles though his name is not familiar in the way that the Brunels and Robert Stephenson are. Ironically, the same high-rise buildings whose construction now threaten this shrine have been made possible by the painstaking, fastidious work undertaken by him and his small workforce.

The problem is the intense pressure of redevelopment in the locality. London is divided into semi-autonomous Boroughs and there is no overriding authority. Richer London boroughs north of the Thames are able to resist high-rise development schemes but Southwark is a relatively poor borough with serious housing problems. It has little option but to allow large scale high-rise building near to the river in order to raise funds that can be spent on social housing in less expensive parts of its area to the south.



The protection grade of the Kirkaldy testing machine was raised to 2\* in June, 2014.

Photo by Ian Visits

# Worldwide

## France, Spain, Portugal, Ireland and Great Britain

### The Atlanterra Project and the development of interpretative animation

**Dr Stephen Hughes**, Projects Director, Royal Commission at the Ancient and Historical Monuments of Wales, and TICCIH Secretary

The development and international diffusion of innovatory survey and presentation techniques was one of the objectives of the four year Atlanterra: Green Mines Project, which was brought to a conclusion in the first half of 2014. This article also shows where the innovatory animation films produced from this project can be viewed online.

The project examined the mining heritage from both a geological and archaeological/historical viewpoint, and explored how to showcase this heritage using the application of new digital technologies.

The Atlanterra: Green Mines II European Inter-regional Project was formed in February 2010 by a group of geological, archaeological, tourism and regeneration organisations from France, Spain, Portugal, Ireland and Wales led by the municipality of Noyant-la-Gravoyère. An understanding of historic mining fields can only be achieved by a determination of their geological structure considered together with their archaeological remains. Consequently, the project partners have included the Instituto Geológico y Minero de España (IGME), the Laboratorio Nacional de Energia e Geologia of Portugal (LNEG) and the Geological Survey of Ireland (GSI). The Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) has led on the archaeological objectives that included the demonstration and diffusion of digital and laser-scanning techniques.

The Royal Commission recently won the first Peter Neaverson Award for Digital Innovation, given by the British Association for Industrial Archaeology, for its animation of the Hafod Copperworks in Swansea, south Wales, UK, the largest early/mid 19th century copper works in the world. **It can be viewed online here.** Other industrial archaeological interpretative animation **films can be viewed here.**



The two surviving engine sheds and rolling machinery at the Hafod Copper Works site.

Crown Copyright:RCAHMW

Laser-scanning of significant sites such as that carried out in the Vivian Slate Quarry, part of one of the world's biggest nineteenth-century mountain terraced **slate quarries of Dinorwig, Llanberis, north Wales can be viewed here.** The Royal Commission also commissioned a scan of an underground mine-pumping waterwheel in a **lead mine in mid Wales which can be viewed here.**

Other Atlanterra project partners produced 'fly-through' films. One produced by the Copper Coast Geopark in County Waterford in Ireland of the conserved **copper mine engine-houses on the cliff at Tankardstown and can be viewed here.** Another has a fly-through of the remaining dry underground tunnels and mineral formations in the mine. This includes a **3D digital representation of all the levels, shafts and tunnels ever worked in the mine constructed from the historical mine plans archive held by the Geological Survey of Ireland, and can be viewed here.** LNEG in Portugal has produced an animation of historical conical-shaped copper-roasting structures in use as part of the Teleiras mining process at Aljustrel.

Animations of two of the major slate-quarrying and mining sites at Maenofferen Blaenau Ffestiniog and Vivian's Quarry at the Dinorwig slate-quarrying complex have been produced as part of the Atlanterra Project and will be **available here.** An animation of the railway inclined-planes at the **Vivian's Slate Quarry is available here.**

The Atlanterra project also led to cultural tourism and heritage maps and guides of a number of mining fields including the Mapa de Patrimonia Minero de Galicia, (IGME, Madrid, 2013) and the slate quarrying and mining sites of the French/Breton border in 'Sur le Chemin des Ardoisières' (Marie de Noyant-la-Gravoyère, 2013). Mapping and publication of mining on the iron pyrites belt of Portugal is also being published as part of the project.

The Atlanterra Project has provided the funding for the compilation of initial TICCIH/ICOMOS World Heritage Studies of the slate and building-stone industries to be started. An initial summary of some of this comparative work has been published by Dr. David Gwyn in Anjou and Gwynedd: Slate Landscapes (Snowdonia National Park, Plas Tan y Bwlch, 2013). The report will be presented and discussed at the conference of the European Quarry Project in Teruel, Spain, in October, 2014.



Stills from the animation.

Crown Copyright:RCAHMW

# Archaeology

## The Wealden Iron Research Group

Jeremy Hodgkinson

The Weald is an area of south-east England. Once heavily wooded, its clays contain deposits of siderite ironstone and limestone. Iron ore in the Weald has been exploited since the 2nd century BC. Following the Roman invasion of Britain, there was considerable expansion of the iron industry in the Weald. However, production declined from the early-4th century, towards the end of Roman rule, and virtually disappeared for more than 500 years. It slowly revived during the later Middle Ages and with the introduction of the blast furnace into the Weald in 1490 the iron industry expanded rapidly. For the next century the region supplied most of England and Wales with cast and wrought iron from nearly 200 furnaces and forges. Expansion elsewhere in the kingdom caused a contraction in the region's output and concentration on gun production before the industry ceased in the Weald in the 1820s.

Antiquarian interest in the region's ironworking started only 20 years after its last forge closed, but the first major study, *Wealden Iron*, by Ernest Straker, did not appear until 1931. It was more than 30 years later that Henry Cleere and David Crossley, who were separately engaged in the excavation of ironworking sites in the Weald, and recognising that Straker's work needed considerable updating, instigated the formation of the Wealden Iron Research Group (WIRG) in 1968.

WIRG's research programme comprised four components: surveying known sites, exploration to find new sites, searching archives, and selected excavation. Known sites were systematically revisited, principal features measured, earthworks recorded, and waste products sampled. Later, measured survey drawings were compiled for selected sites. Many of Straker's assumptions were challenged and his conclusions revised. A key activity for the Group is exploration to discover new sites. More than 850 have been recorded, with more discovered annually. The group has excavated a small number of early sites, most notably the only bloomery from the Saxon period confirmed in the Weald. It also carries out a programme of experimental iron smelting. Archival research is restricted to the medieval and post-medieval periods. The French origin of ironworkers who migrated into the Weald during the early-16th century has been a significant area of research. WIRG administers a research fund and awards grants towards the cost of research into the industry in the region.

WIRG has published its findings in *Wealden Iron*, its bulletin of research, since 1969. A 1985 book, *The Iron Industry of the Weald*, by Henry Cleere and David Crossley, represented the latest historical and archaeological understanding of the subject and included a gazetteer of sites that reflected WIRG's fieldwork in its first 16 years. Subsequent publications include a bi-annual Newsletter and an online database of sites and personnel.



Romano-British bloomery furnace at Mayfield, Sussex

(photo: J. S. Hodgkinson)



An experimental iron smelting furnace in July, 2011

(photo: J. S. Hodgkinson)

# Modern industrial museums



## Professor Antonella Caroli

Director of the Polo Museale del Porto Vecchio (Old Port Museum Centre, ICMP (Istituto di Cultura Marittimo Portuale di Trieste), Italy

The historic port of Trieste is one of the largest abandoned harbor areas in Europe, some 600,000 square meters of obsolete port including outer breakwaters, five piers, 3 km of docks for loading and unloading goods, and twenty-three large hangars and warehouses. Projects to re-use the port go back 40 years, and discussions over how best to do it, to meet commercial concerns, urbanistic values, conservation hopes, cultural needs and local and national interests, continue today. Professor Antonella Caroli has been fighting for the conservation and interpretation of the port since it began to run down in the 1980s, with the development of container shipping, and she is now the director of the Polo Museale del Porto Vecchio (Old Port Museum Centre), within the larger **Istituto di Cultura Marittimo Portuale (ICMP)** which oversees the area.

The port was built by the imperial Austro-Hungarian government between 1868 and 1887 after the Suez Canal revolutionised sea trade logistics. The structure of the Porto Vecchio is different from that of the ports of the Mediterranean area, and in its design and in the construction of its buildings it has more the characteristics of the Lagerhauser of the ports of northern Europe, such as in Hamburg, i.e. city areas intended for the movement of goods. Construction was based on the highest quality architectural projects and on cutting-edge techniques in the use of reinforced concrete, testimony of the pioneering age of patents held by big European companies with branches in Trieste. Work to save the Porto Vecchio and use it to bring new life to the city have been led by the **Italia Nostra cultural association**, which continues to appeal to the Italian Ministry for Culture and Heritage to access EU funds to safeguard the historical heritage. It has drawn up a Master Plan for the re-use of the port area and it constantly promotes conferences, international meetings and publications to allow a better dialogue with the institutions. In October 2007, after extensive consultations, Antonella managed to conclude a Memorandum of Understanding between the Friuli Venezia Giulia Region, the Italian Ministry for Culture and Heritage and the Port Authority to promote the preservation and the development of the old port of Trieste, as a site of industrial archaeology of international importance. In particular, the aim was to bring about the restoration and refurbishing of the hydraulic power plant and the electric power converter substation in order to transform them into museums.



Fireproof transit warehouses within the area of the Porto Vecchio.

# Modern industrial museums

These two buildings were restored over the last two years. The star attraction is the last of four vertical steam engines and hydrodynamic plant which pumped water into a hydraulic system for powering more than 50 lifts and 120 cranes. They continued to operate until 1988. Next to the engine room are three of the Cornwall-type boilers. Recent studies have confirmed the value and uniqueness of the hydraulic plant, especially due to the vertical position of the machines, so much so that when it was built it was considered a prototype. A 40-metre high chimney completed the plant together with a coal warehouse and a repair workshop.

The Master Plan envisages continuation of the Old Port as a place of experimentation, the application of patents, implementation of new technologies and building materials. It is not merely an urban and architectural plan but will foster scientific collaboration among international scholars, promoting the development of specific skills within the University of Trieste and the Research Area in the field of sustainable techniques and materials. Experimental teaching activities and virtual realities will also be promoted, allowing a constant flow of information on the port area.

The museum shows a permanent exhibition of port-related museum pieces and occasionally hosts exhibitions of models of ships, of the history of navigation as well as cultural events, exhibitions and conferences.

Guided visits are guaranteed by the volunteers of the Italia Nostra Association, for individual visitors and groups, and there are historical, illustrative and educational videos. There are many schools wanting to visit as well as scholars and university professors from abroad.

Antonella visited several port and maritime museums, and in particular she used as references the international maritime museums in Hamburg and Bremerhaven. Her museum, with the objects and equipment it holds, is a museum of the port and not a generic sea or maritime museum. The port of Trieste is a real abandoned sea port district and the whole complex has international importance. The warehouses and buildings such as the hydraulic power plant and the electrical substation are unique in the world as is the machinery and equipment they hold.

Unfortunately, she finds that in Italy the interest for industrial sites is very poor, and the enthusiasm for historical port districts even less. Trieste is, among other things, the Italian port that has the greatest architectural heritage and harbour equipment. "We are still looking for European funds and the public's interest in order to proceed to the recovery of the entire area. In Italy, little is known about this heritage. The greatest risk is that the conversion processes could not only affect the symbolic values and alter the historical identity of the area, but also create some sort of unacceptable "hybridization" of the place. Many political interests would want to destroy it or take control over it for other purposes."



The steam pumping engines were manufactured in 1891 (the fourth one in 1904) in Karlín, today a district of Prague, by Breitfeld - Danek and Company (CKD). Pressure in the hydraulic system could reach 54 bar. Three of them were electrified in the 1930s and one was left intact.



# Books



Jonas Lie. *Path of Gold*,  
c. 1914. Collection of the High Museum of Art

**Industrial Sublime: Modernism and the Transformation of New York's Rivers, 1900-1940.** Kirsten M. Jensen and Bartholomew F. Bland, editors. Yonkers, NY: Hudson River Museum and The Bronx, NY: Fordham University Press (an Empire State Edition), 2013. 200 pp. 150 color Illustrations. ISBN: 9780943651446 (paperback). \$35.00.

**Professor Betsy Fahlman**  
Arizona State University

Published in conjunction with an exhibition at the Hudson River Museum, the essays published in **Industrial Sublime: Modernism and the Transformation of New York's Rivers, 1900-1940** consider "the new landscape painting that conveyed America's role as a global industrial power:" (vii) In New York's waterways and waterfronts, artists recorded the rise of "a great industrial democracy," (xi) one embodying "its vitality, its strength, its complexity, its diversity, its energy, its speed, its brawny self-confidence, and its darker corners." (xi) During the forty years before the commencement of World War II, American modernist painters portrayed a spectacular industrial landscape that provided them with a rich source of subject matter.

In her introduction "A Woman's Perspective on the Industrial Sublime," Katherine E. Manthorne considers the relationship between gender and the sublime. Fewer women artists portrayed industrial subjects, and only three of the fifty-one artists in the exhibition are female (the work of a fourth is illustrated) reinforcing the masculinist aspect of labor and the spaces in which it took place.

Bartholomew F. Bland's essay, "Rising From the River: New York City and the Sublime," traces the roots of twentieth century visions in the nineteenth century landscapes of the Hudson River School. Our early painters were inspired by the rugged beauties they encountered near the river that gave their movement its name, but their very presence and the subjects they chose also reference the steady development of the region. Artists George Inness, Samuel Colman, Robert Walter Weir, and John Ferguson Weir were inspired by railroads, steamboats, docks, and foundries, enterprises that coexisted within the Edenic vistas they prized. By the twentieth century, the artists who took New York as their primary subject were fascinated by "the new, the big, the tough, the gritty," (12) portraying an industrialized landscape and the waterways that made its explosive expansion possible, including the skyscrapers that had been spurred by the nation's "triumphal economic and cultural might." (15) The tall structures typical of New York during this period visually distinguished the city from the great capitals of Europe, and against this rising backdrop, it was the Ashcan artists who first embraced a romantic gritty urbanism of the city's rail yards and busy docks as a proper subject for art

Wendy Greenhouse and Ellen E. Roberts consider the diverse social and economic forces that contested the urban landscape. In "On the Fringe: Picturing New York's Rivers, Bridges, and Docklands, 1890-1913," Greenhouse explored how New York's "busy harbor, soaring bridges, and towering skyline" (33) represented an energetic "spectacle of modernity" (33) with its "concentration of bridges, docks, and piers." (33) Such an image of robust industrial vitality was best appreciated from the water, and the many bridges that spanned the region's rivers became symbols of "engineering technology." (40)

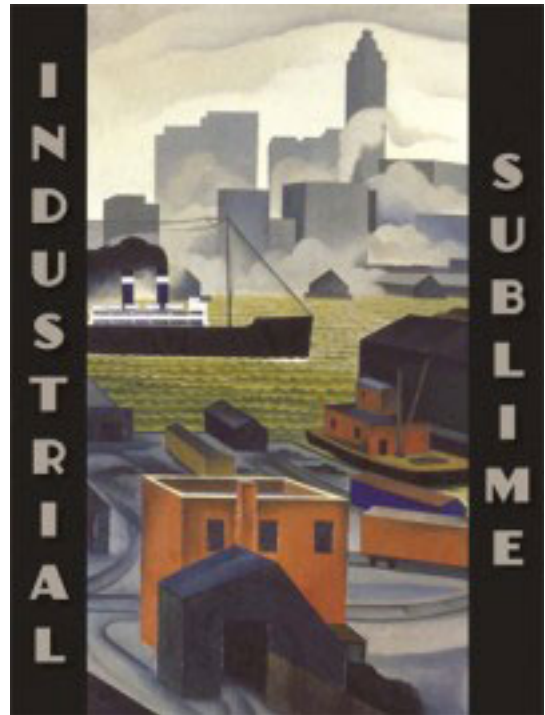
# Books

Roberts's essay, "Contested Waterfront: Environmentalism and Modernist Paintings of New York," discusses how "Progressive ideas clashed with industrial interests" (53) on the city's waterfront. While such flourishing industrialism made "the country a world power," (53) its negative effects included the toll it took on the environment, a situation that gave rise to a "crusade for environmental reform." (53) Private commercial development thus collided with public parkland, challenging urban planners on how to most effectively balance the competing agendas of "conservation and industrial development." (62) As a result, most parks "were created in the middle of the city rather than along the edge." (54)

"Painting Manhattan: Modernism, Urban Planning, and New York, 1920-1940" by Kirsten M. Jensen explores how the built environment may be understood through its art. During the twenties, skyscrapers were the era's defining image, but in the thirties that symbol had been supplanted by the city's bridges. Machine Age artists working in an abstractly representational Precisionist style were fascinated by both types of structures.

The final section comprises entries by Kirsten M. Jensen and Bartholomew F. Bland on seventy-three individual paintings. The works they have chosen capture a broad range of industrial subject matter, and include a fascinating diversity of imagery portraying waterfront structures and activities addressed in the preceding essays. The artists range from the well-known (Georgia O'Keeffe) to many talented individuals who will be less familiar to most readers.

A map helpfully locates the sites that inspired the artists, and this beautifully produced monograph is richly illustrated with 150 color plates of excellent quality. Anyone interested in industrial heritage will discover a wealth of visual culture. *Industrial Sublime* is an important publication, one that suggests a model for comparable studies of major European industrial centers.

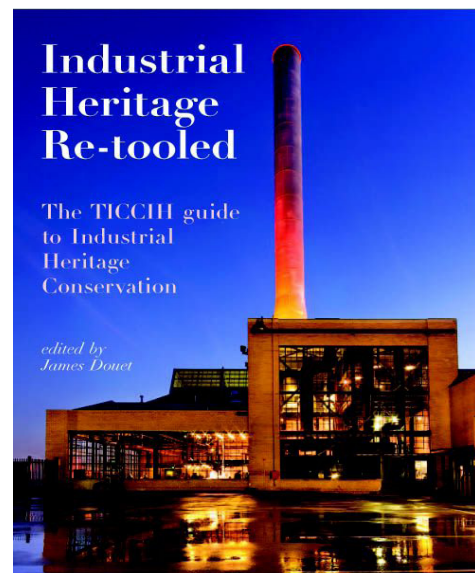


## **Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation.**

James Douet (ed.). Lancaster: Carnegie.  
2012. 71 colour photos. pp. 244. £14.99.  
ISBN 978-1-85936-218-1

The book lays out best practice across the range of issues facing industrial heritage, using illustrative sites from Finland to Sydney to Chile to illuminate the argument.

ORDER your copy from YPD books for worldwide mailing except for the USA (see USA link below). The price from YPD Book Distributor is 14.99 GBP plus shipping. TICCIH members will receive a 10% discount voucher. If you are a current member of TICCIH and do not know the discount please email us at [ticcih@mtu.edu](mailto:ticcih@mtu.edu). If you join or renew now we will send you the discount code to get the 10% member discount. The TICCIH Guide to Industrial Heritage Conservation is also available in the USA for \$24.00 USD plus \$5.00 shipping and handling for a total of \$29.00 (USD). This link is only for mailing addresses in the USA.



# Books

**750 Years of Harbour Cranes in Antwerp**, Jef VRELUST (ed.), Albert HIMLER, Gert THUES, Paul VAN SCHOORS. Antwerp, BAI / MAS Books, 2014. ISBN 978-90-8586-667-1, 156 pp., colour and B & W photos, plans and drawings. 29.95 Euro. English.

## Patrick Viaene

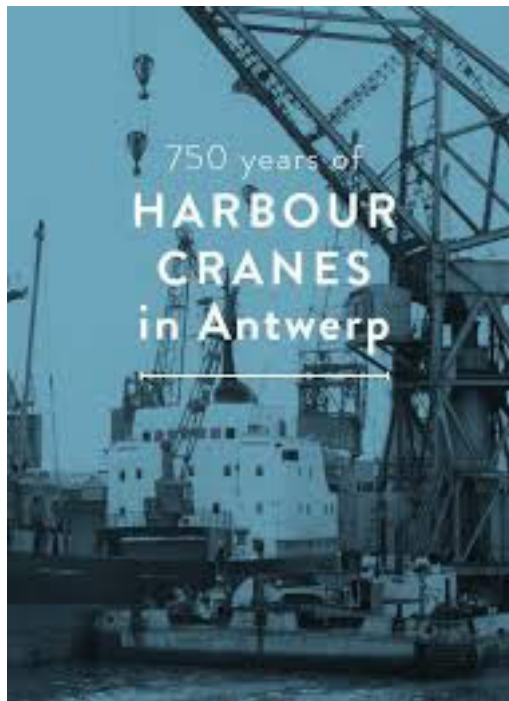
This richly illustrated book, published by the Museum aan de Stroom (MAS) in Antwerp, Belgium, provides an overview of 750 years of harbour crane history. Four experts describe in detail the developments in crane and harbour construction and discuss the crane's function as the essential link between quay and ship.

The first part by Albert Himler is "The crane, the Kranenhoofd wharf and the cranesmen". The earliest written report of a crane at the port dates from 1263, about twenty years after a mention of a harbour crane in Utrecht (1244) and about thirty-five years before the first mention of a crane in Bruges (1281) and Hamburg (1291). In 1263, the Antwerp city council placed a wooden treadwheel crane at merchants' disposal, located at the Kranenhoofd or Crane Headland Wharf.

A new fixed treadwheel crane was erected to the north of the worn-out Wharf Crane in 1546. This was the period of a new expansion of the city, involving the construction of the Spanish ramparts and the new dockside district of Nieuwstad. For centuries, Antwerp's cranes were operating using manpower. The cranesmen were called kraankinderen (literally 'crane children'), a designation which occasionally led to the misconception that children were employed to work the treadwheels. In fact, the cranesmen may have been smaller than average in order to fit easily within the treadwheels. The impressive 16th century treadwheel crane was demolished in 1811.

In "Manual zeal and cog wheels", Jef Vrelust describes the crane's 19th century evolution. Between 1830 and 1884 the city installed numerous new iron hand-operated cranes. This equipment was very powerful – up to as much as ten to twenty times more effective – compared with the rail-mounted cargo cranes that the city began deploying in large numbers from 1878 onwards. On the other hand, they were very slow and in most cases were not portable. The hand-operating iron cranes remained in use until the early 20th century. The only example, surviving as a museum exhibit, is a Stuckenholz crane from 1884, still in sporadic service until a hundred years ago. It was a 15-tonne assembly crane on a railway chassis intended for manoeuvring ships' screws and propeller shafts at different dry docks.

The design and manner of operation of harbour cranes evolved quickly from the late nineteenth century in line with technological developments and the use of steam power, hydraulic pressure and electricity. In "A port under high pressure" Albert Himler describes the use of hydraulic cranes from 1878 to 1975. Hydraulic driving by means of cold water under high pressure and was applied from 1846.



In 1866 the Compagnie des Docks – Entrepôts et Magasins Généraux d'Anvers installed in the Royal Entrepôt the first hydraulic installation supplied by the British engineering firm W.G. Armstrong, including hydraulic gable-cranes. In 1878 the Noorderpershuis (Northern Pumping Station) was erected as the city's first of eight hydraulic power stations. The last power station in activity (the Zuiderpershuis) closed in 1977 and was protected as a monument before being re-used for a music theatre.

Despite having opted for a hydraulic system, Antwerp purchased a number of steam cranes during the 1870's for the coal and mineral ore traffic at the Vaart Dock (now Asia) Dock. The steam cranes were sold and replaced with hydraulic versions as early as 1884.

From 1880 onwards, the growth of the fleet of hydraulic harbour cranes was impressive. From 1878 to 1912, the city purchased 335 hydraulic quayside cranes that could be moved on rails. Specific categories are the mobile pyramid cranes (of which none survive), portal cranes (crane n° 111 is preserved at the MAS), portal pyramid cranes (n° 97, a "La Meuse"- crane of 1912 is in the museum), semi-portal cranes, wide portal cranes, etc. Specific tools as the "jigger" (a portable hydraulic winch) and the different crane operations (hoisting, slewing, replacement of chains, etc.) are explained with excellent illustrations. As an important expert on hydraulic power, the author presents a chapter with an outstanding synthesis of the development of this technology and its applications.

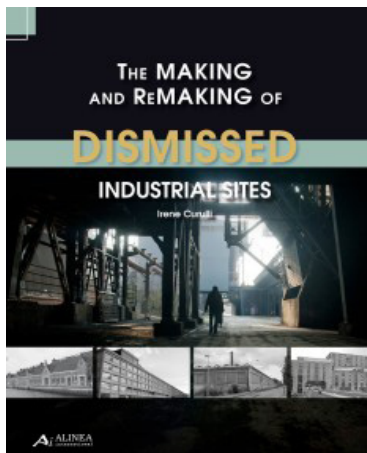
# Books

In the next section Gert Thues overviews the history of electric cranes. There was a delay of more than a decade in the introduction of electrical energy in Antwerp, compared to the surrounding ports. The era of the electrical crane in Antwerp can be described following five phases, which the author describes with typical electrical cranes from each period, including cranes preserved as outdoor exhibits of the municipal museum.

In chapters 5 and 6 Jef Vrelust overviews the history and heritage of floating cranes in the Antwerp harbour (including the "Grote Gust" built in the Gusto shipyard in Schiedam), and finally the mobile cranes.

The book closes with "Restoration, preservation and maintenance of Antwerp's historic dockyard cranes" by Paul Van Schoors. When the city decommissioned its hydraulic cranes in 1974, it resolved to create "a technological archive", a mu-

seum collection of harbour cranes. Presently the Museum aan de Stroom manages the largest and most diverse museum collection of harbour cranes in the world: eighteen cranes built by fifteen firms from Belgium and abroad. Most have been awarded protected heritage status and some of them are restored. This achievement was not possible without a broad base of community support and a partnership of "Immovable Heritage" (an agency of the Ministry of the Flemish Community, supplying 80% of the costs), the MAS, the Antwerp Port Authority and other actors. The non-profit training and employment organisation 'Werkvormm' takes responsibility for repairs to metal structures and rotating components, while WOTEPA is more joinery and carpentry-based and takes care of restoring wooden crane cabins. Working in partnership with such employment training schemes also allows to the MAS to achieve more with less money.



**The Making and Remaking of Dismissed Industrial Sites**, Irene G. Curulli, Catalogo Alinea Editrice, ISBN 978-88-6055-819-0, € 16,00

## Dr. Irene G. Curulli

Assistant Professor, TU/e Eindhoven University of Technology

*The Making and Remaking of Dismissed Industrial Sites* focuses on the design of reuse of abandoned industrial areas and its implications for aesthetics, context, history and memory, public space and reclamation of contaminated soil.

In the six chapters of the book I offer a critical investigation of these specific themes and a way of thinking a conceptual framework that designers might find useful and challenging when working with the 'sense of remaking' of those former industrial areas and polluted landscapes.

This book re-examines over ten years of research since 2000 with a fellowship at Cornell University and that led to the International Conference (*urban*) *Wastelands* at the Eindhoven University of Technology, The Netherlands. The issues emerging from this debate were the inspirational sources for the book. *Making and remaking* reflects on the qualitative aspects of both practices and discusses a three-dimensional approach to the issue of reuse.

It entails understanding the interaction between three distinct dimensions: urban and landscape, culture and architectural expressions and the skills and values of individual designers.

The practice in landscape architecture of 'landscape as a process' is the basis of this approach. To detect and make the time visible is a vital aspect: time layers must be felt by users and are distinct assets of the past. However, the history and the empathy for the past are not simply recorded but are put into perspective, thus welcoming new uses and dynamics.

Starting from the recognition that disquieting feelings and sense of 'otherness' characterize former industrial sites, but also generate their attractiveness and interest as alternative areas in the city, the subject matter as well as the intention of this book is how to perpetuate these perceptions when converting these sites into new uses.

This approach welcomes sensitivity for material qualities, possibilities for creative interpretations of the existing elements and facilitates a dialogue with the past based on processes of recognition and critical selection.

The book does not provide ultimate solutions. Its goal is to lay a knowledge basis and develop a new perspective able to challenge our current way of thinking about dismissed industrial sites, and finally to prevent the 'reparation' that follows after abandonment.

By focusing on the distinctive features and heritage values of dismissed industrial sites within the transforming city, the book aims at sparking off a debate on sensitive design of remaking dealing and experimenting with the challenges that those sites send to prospective users.

*The Making and Remaking of Dismissed Industrial Sites* is addressed to students, scholars, practitioners and passionate readers of 'decay' hoping for an uninterrupted experience of beauty that will echo the sense of uneasiness and awareness of the past. After all, true *Remaking* changes perception, remodels judgment and continues to provoke and interrogate us.

# Conference Report

**II International Congress on Industrial Heritage – Heritage, Museums and Industrial Tourism: an opportunity for the 21st century, Oporto, Portugal, May 22-24th, 2014**

**Professor José Manuel Lopes Cordeiro**

Past TICCIH Board Member and Portugal National Representative

Organized by the Portuguese Society for Industrial Heritage (APPI/TICCIH Portugal), the Catholic University of Portugal – Oporto Regional Centre, School of Arts and the Research Centre in Science and Technology of the Arts, the Congress was coordinated by José Manuel Lopes Cordeiro and Eduarda.

Opening conference, Xoán Carmona, professor at the University of Santiago de Compostela and TICCIH Spain Board Member, lectured on the relationship between economic history and industrial heritage. During two days, researchers, academics, post-graduate students, and professionals of museums and governmental agencies, from Portugal, Brazil, Spain, Italy, USA and China, presented 108 papers and posters that covered subjects such as cultural landscapes of industrial heritage, art and industrial heritage, conservation and industrial heritage reuse, industrial museums and conservation of technical and industrial collections, railway heritage, education and training in industrial heritage, business archives, inventories and registration of industrial heritage, theory and methodology of industrial heritage and its archaeology, industrial tourism, legal protection of industrial heritage, and geological and mining heritage.

We emphasize the presentation by Paulo Oliveira Ramos (Universidade Aberta, Portugal) on the use of the expression “industrial archaeology” during the nineteenth century, before Francisco Sousa Viterbo employed it in 1896, Cristina Meneguello (TICCIH Board Member) on recent recovery processes of industrial heritage in Brazilian cities, Leonor Medeiros (APPI/TICCIH Portugal Board Member and Michigan Technological University) on heritage inventories in a digital world, Ronaldo A. Rodrigues da Silva (TICCIH Brazil) on industrial musealization proposals in Brazil, and three interesting papers on archaeological works in late eighteenth and nineteenth century Oporto ceramic factories by Teresa Silva, Liliana Barbosa, and Laura Sousa, all of them professional archaeologists. Regarding the posters, we emphasize those presented by Jacopo Ibello (“Save Industrial Heritage”, Italy) on the Battiferro power plant in Bologna: heritage at risk, and Vitor Teixeira (University of Saint Joseph, China) on the industrial heritage of Macau before 1999.

The first post-conference tours was to Foz Tua, a small railway junction located in the Alto Douro Wine Region (World Heritage Site by UNESCO since 2001), where the nineteenth century Tua Railway is soon to be submerged by a very controversial hydroelectric power reservoir. The second tour visited the still-working Viarco pencil factory, preserved since 1931, and the Hat Museum in a former hat factory, both in São João da Madeira. These visits were organized in collaboration with the “Industrial Heritage Circuits”, the most successful Portuguese project on industrial tourism.

It was definitely a great Congress, the best-attended event on industrial heritage ever organized in Portugal, with an excellent scientific level and tours greatly appreciated by participants. The author, one of the organisers of the Congress, promises to publish the proceedings in a very near future.



Conference delegates demonstrating the products of the São João da Madeira Hat Museum

# Coming Soon

## Conferences and Congresses

### 2014

Spain - Congress on Industrial & Agricultural Canals, University of Lleida, Lleida  
2-9-2014 to 5-9-2014 <http://www.lleida-canalscongress.eu/index.php>

Portugal - **12th International Conference of the European Association for Urban History, Lisbon.**  
3/9/2014 to 6/9/2014, Cities in Europe, Cities in the world. Industrial Cities from the 19th and 20th centuries and heritage conservation.

Argentina - **4th International Seminar on Agro Heritage (SIPA), San Miguel de Tucuman**  
2/9/2014 - 5/9/2014

UK - Association for Industrial Archaeology Annual Conference, Chester  
5/9/2014 to 10/9/2014. <http://www.industrial-archaeology.org/aconf.htm>

Portugal - Memories of CoalBatalha e Porto de Mós  
11/9/2014 to 13/9/2014 . Interdisciplinary views on the issues concerning the exploitation and historical uses of coal,  
<http://memoriasdocarvao.wordpress.com/>

Italy - 2nd International Conference on Defence Sites Heritage and Future, Arsenale di Venezia, Venice. Cfp  
17-9-2014 to 19-9-2014, Conservation and regeneration of historic military installations.  
<http://www.wessex.ac.uk/I4-conferences/defence-heritage-2014.html>

UK - **Gasholders 'Recording the end of an era', The British Library Conference Centre, London**  
16/9/2014

Denmark - New Directions in the History of Infrastructure, Copenhagen, Denmark  
26-9-2014 to 28-9-2014. The Danish Post & Tele Museum and Aalborg University, interdisciplinary conference on the history of infrastructure. [http://www.ptt-museum.dk/conference\\_2014/](http://www.ptt-museum.dk/conference_2014/)

Italy - **18th ICOMOS General Assembly and Scientific Symposium**, Heritage and Landscape as Human Values,  
Florence, 10-11-2014 to 14-11-2014

### 2015

France - **TICCIH Congress Lille 2015: Industrial Heritage in the Twenty-First Century; 5-14 September 2015. Cfp**  
Second call for papers: Extended deadline to September 15, 2014. TICCIH Congress Lille 2015;  
<http://ticcih-2015.sciencesconf.org>

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](http://www.ticcih.org)

The **TICCIH Bulletin** welcomes news, comment and (short-ish) 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](http://www.ticcih.org).