



CONTENTS

REPORT

- INITIATIVES IN INDUSTRIAL TOURISM:
Gabriele Bosi

WORLDWIDE

- BETTY'S HOPE HISTORIC SUGAR PLANTATION: *Dave Blaine*
- BATTERSEA POWER STATION RECHARGED: *James Douet*
- A CARVED STONE TRAIN: *Paulo Oliveira Ramos*
- ADAPTIVE REUSE POTENTIAL OF İSTANBUL GRAIN SILOS: *Kutay Karabag*
- MELBOURNE'S SEWERAGE FARM COMMUNITY: *Monika Schott*
- A LEGACY OF LAL IMLI MILLS: *Tahzeeb Fatima Rozy*
- THE OLD JAMNAGAR RAILWAY STATION: *Priyanka Panjwani*
- KORDIN UNDERGROUND GENERATORS: *Robert Ghirlando*

TICCIH NEWS

- NEW TICCIH BULLETIN EDITOR: *Miles Oglethorpe*

CONFERENCE REPORT

- THE INDUSTRIAL HERITAGE OF THE BAY OF HAVANA: *Clara Susana Fernández Rodríguez*

BOOK REVIEW

- Einfach Leicht. Vladimir G. Sukhov 1853-1939, by Rainer Graefe, Ottmar Pertschi, Erika Graefe, Andrij Kutnyi (eds.): *Patrick Viaene*

EVENTS CALENDARS



Assembly of the steel frame of Battersea Power Station B around 1939, the complete station A on the right. The protracted re-use of this massive building in central London is discussed on [page 8](#) (Crown Copyright: Sir William Arrol Collection, HES Image No. SC554987).

MESSAGE FROM YOUR PRESIDENT

A NEW FUTURE FOR TICCIH

Miles Oglethorpe, TICCIH President

First of all, I must wish our members and the readers of our *Bulletin* a belated Happy New Year. Most of us will be hoping that 2023 turns out better than last year; that we are able to put the disruption of the pandemic behind us and to find a way of ending the conflicts that are blighting many parts of our planet.

2022 was, however, a good year for TICCIH, the highlight being our wonderful congress in Montreal. In addition to the visible conference programme, a lot of work was done behind the scenes on modernising and improving our organisation. We began the process by introducing a new subscription system that is based on affordability. We have some way to go before we can be satisfied with the geographical balance of our membership, but we are

attracting new members in parts of the globe that were previously unrepresented. The prospects are good, even if we have more work to do.

However, the growth in our membership is not as fast as we would like, and it was disappointing that many of the delegates in Montreal were not TICCIH members. This is especially surprising when our subscription fees are low, certainly in comparison with similar associations. Equally surprising is the proportion of the contributors to this Bulletin who are not in fact members. In future, anyone outside the organisation wanting to publish in our newsletter will be expected to join.

Apart from the importance of networking, there is a significant financial imperative. We are very fortunate to have a secretariat fulfilling the administrative needs of TICCIH, based in Michigan Technical University and supporting key activities such as membership, our website and publications. To support these services and maintain them at a professional level, we need to generate income. Recruiting new members is the most important way in which we can do this, so we need to do better in the coming months to ensure we can continue to operate sustainably.

My message to you is, if you are reading this and are not a member, please visit our website ([TICCIH Membership Sign Up & Renewal](#)) and join TICCIH. Equally, if you know others who share your interest in industrial heritage, please urge them also to join. The future of TICCIH depends on new members and on the new energy and ideas they can bring.



Members of TICCIH Japan at the site of the historic Takanawa Railway embankment (see TICCIH Bulletin #97).

Our membership campaign is one of several strands driving forward the modernisation of TICCIH. Secretary General Marion Steiner has been spearheading the establishment of 'Commissions' led by Board members, the purpose of which is to take forward key activities. One of the most important is the

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

The **TICCIH Bulletin** is the only international newsletter dedicated to the worldwide conservation of the heritage of industrialisation, and is sent direct to members four times a year. The Editor welcomes all news, critical comment and articles related to our field. Everything published in the Bulletin can be accessed in a searchable [Articles Index](#) on the TICCIH web page.

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

& ON SOCIAL MEDIA:



modernisation of TICCIH's statutes. Other significant initiatives include updating our Nizhny Tagil Charter, which celebrates its 20th anniversary this year. We are also working on programmes to take forward fundraising, our publications, education and mentoring, communications, conservation and the curation of industrial heritage sites and collections.

2023 promises to be an exciting year, not least because the next TICCIH Latin American congress will be held in October in Monterrey, Mexico. I have wanted to visit Mexico for far too long and I am looking forward to it. It also ties in with another TICCIH initiative, to develop Spanish language events and publications. By the time of the Monterrey congress, we anticipate our plans will have taken shape and we will be able to share our ideas with a large audience.

Finally, reflecting on 2022, I would like to express my thanks to the many people and organisations who invited me to their countries and share their thoughts and expertise. Reinforcing Aristotle's observation that '...the more you know, the more you realize you don't know...' I have seen amazing places, met extraordinary people and experienced generous hospitality. The personal impact of this in the immediate aftermath of the pandemic has been profound. Especially memorable episodes were in Paris, Rome, Austria, Czech Republic, Canada (Montreal and Oil Springs), and Luxembourg. Most recently, I was fortunate to visit Tokyo, and was delighted to meet so many members of TICCIH Japan and staff at the Information Centre for Industrial Heritage. If all of us can emulate the work of our Japanese friends and colleagues, TICCIH will flourish in the years to come.

REPORT

INITIATIVES IN INDUSTRIAL TOURISM

Gabriele Bosi, Assessore ai Servizi per i cittadini, patrimonio e turismo del Comune di Prato

Prato, a city in Tuscany, Italy, with over 200,000 inhabitants, is known for one of the most important textile manufacturing districts in Europe, based historically on the good practice of the circular economy and the reuse of rags. As the Prato writer Curzio Malaparte claimed, referring to the system of reusing rags from all over the world: 'It is in Prato where everything ends up: the glory, the honour, the piety, the pride, the vanity of the world.'

Despite having very important works of art and monuments in its historic centre, Prato has never developed its own tourist vocation to its fullest potential. In part this is because it was totally concentrated on textile production, and in part because nearby Florence overshadowed our city. Prato for many years did not see tourism as a sector in which to focus and invest.

Yet the tourist flows after the pandemic period tell us that Prato has the great opportunity to intercept a growing demand for a new kind of tourism offering the possibility of living, original experiences. It is the well-known 'experiential tourism', increasingly sought after by those who are not satisfied with visiting cities marked by mass tourism, often in a short time, but who are looking for places that are less well-known but rich in activities and original experiences linked to the local history and identity.

For this reason, as a municipal administration we decided to create a new tourist product, aimed precisely at enhancing the identity and history of our textile district. For many years the presence of a textile district in Prato was seen almost as a limit to our tourist



attractiveness. So, we have tried to transform a limit into a resource, creating a tourist offer which focusses on the historical production places and the operating companies engaged in the circular economy processes. Through the union between the past, the present and the future of the textile district we think that Prato can offer an original kind of industrial tourism, that is unique among the various experiences that exist in Italy.

The **TiPo-Industrial Tourism in Prato** project was born from this ambition, thanks to the collaboration between various actors in



A concert in the Centro per l'arte contemporanea Luigi Pecci (2016) was part of TIPO - Turismo Industriale Prato, launched in the major Italian textile centre: 'inside and outside from industrial archaeology to the factories in operation, to touch fabrics and their history first-hand.' Foto: Floornature

our District: companies, economic categories, tourism operators, cultural institutions and our scientific partners, the Textile Museum and the Foundation CDSE (a foundation specialized in historical and anthropological studies of our territory).

The project includes a programming of events, the first edition of which was held from September 2021 to May 2022; the second season, which began in October 2022, is currently underway. There are three types of events in which people interested in industrial tourism can participate: concerts and theatrical or artistic performances in the significant places of the Prato textile industry; guided tours of the companies in the district and of industrial archeology sites; workshops for children with the aim of transmitting the culture of textiles to the youngest.

The construction of the program also involved tourism professionals present in Prato, in particular tourist guides, 20 of whom took part in a specific training course on the history of the Prato manufacturing district. TiPo will allow tour operators to create activities always linked to industrial tourism, promoting this image of the city and also creating new job

opportunities for a sector that has suffered the consequences of the pandemic crisis.

A significant aspect of company tours is the presence and involvement of the entrepreneurs who, with great passion, competence and pride, show tourists their workplaces, the history of their company, and the processes that allow the creation of high quality products famous in all over the world. In this sense, we believe that industrial tourism is an important opportunity for positive communication of our textile district, highlighting the ability and quality of work by local businesses, very often focused on the environmental sustainability.

The first season had very positive feedback in terms of interest and participation. Over 1,500 people were involved, both local citizens and tourists from outside Tuscany. In 2022, the network Friends of TiPo was also born which offers companies, tourism operators, associations and cultural institutions the possibility to join the project and become its official active partners, contributing with their ideas and proposals to realize the program.

For the second edition, we are cooperating with a local tour operator and working to expand the program with new initiatives. For example, we will introduce the experience of augmented and virtual reality. From next spring it will in fact be possible to walk a route, along the most significant places of the Prato district, and with a special App that will work via QR Code to be able to access digital contents (with video, audio, texts or images) on smartphones. A virtual reality project will also allow participants, through a viewer, to see the former appearance of an important place in our city, the city public library, which was originally a textile factory.

Other objectives that we have set ourselves are to integrate the itineraries with the typical food and wine offer of the area and to involve students, especially from schools outside of Prato. In fact, industrial tourism has a very important educational potential.

The next most important appointment in 2023 will be the TiPo Festival in April, for which we want to offer conferences, concerts, guided tours, workshops to compare ourselves with other experiences of industrial tourism in Tuscany and in Italy. The results of the first season and of the last appointments of TiPo encourages us to continue working on Prato's industrial tourism, with the ambition of being able to become an important point of reference for the sector, not only in Italy but also in Europe.

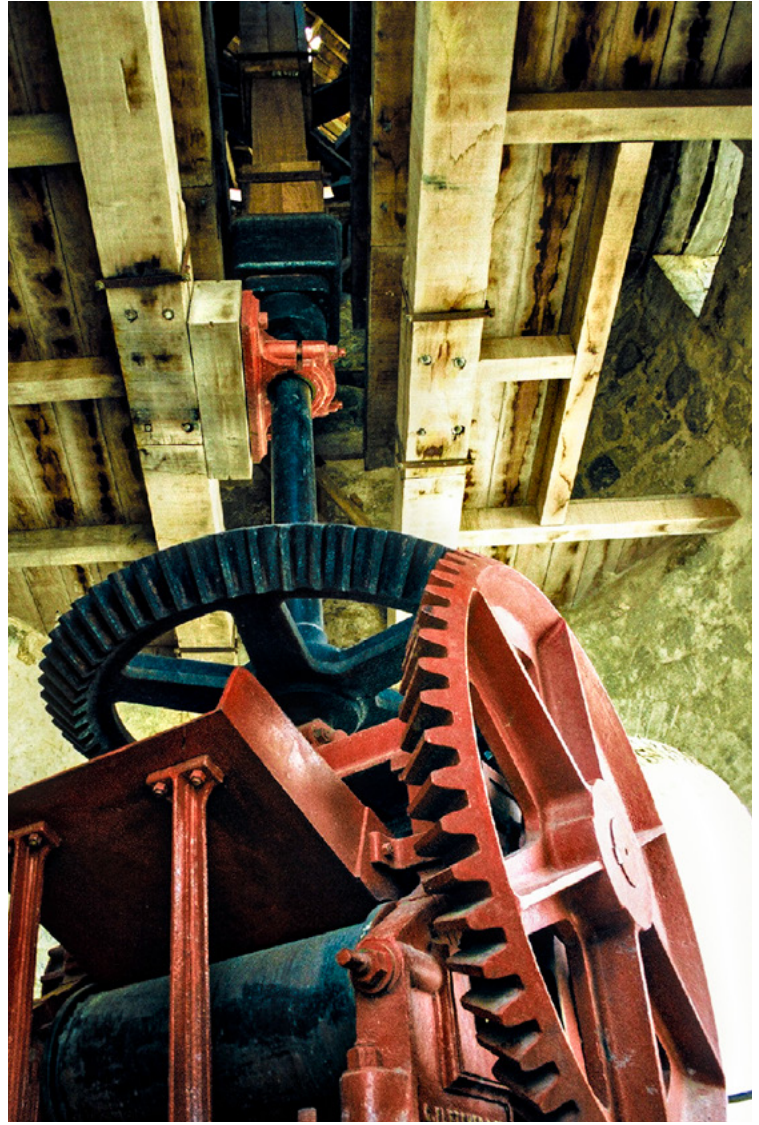
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Photo: Matthew Christopher: www.mccommercial.com



Betty's Hope Windmills, left, and one of the windmills' internal machinery. Photo by the Author: June 1, 2001.

ANTIGUA

BETTY'S HOPE HISTORIC SUGAR PLANTATION

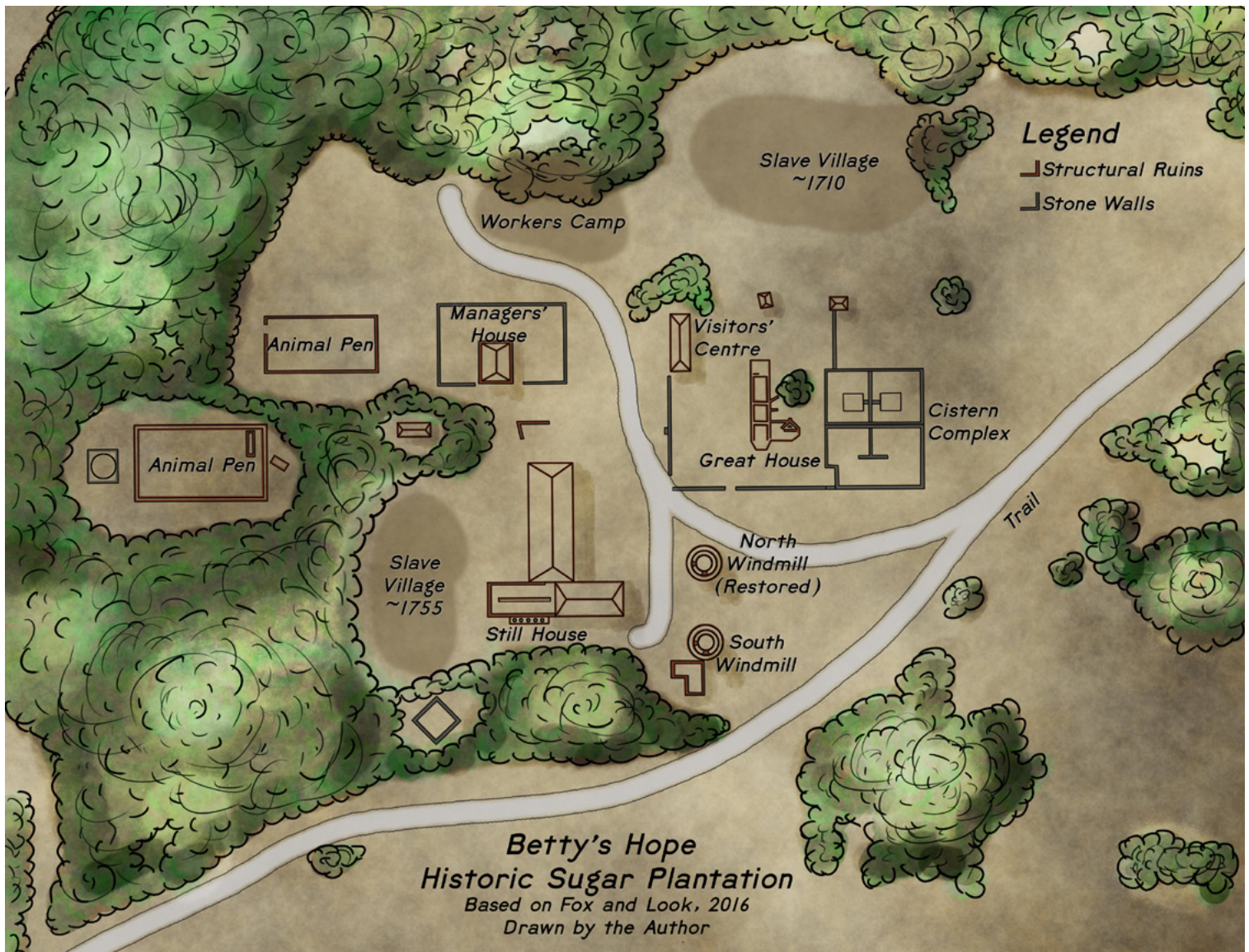
Dave Blaine

Betty's Hope Sugar Plantation is on the island of Antigua, among the northern Leeward Islands of the Lesser Antilles. Under the ownership of the Codrington family from 1674 to 1944, Betty's Hope's nearly three centuries of continuous operation constitutes a virtually unbroken historical legacy spanning intervals of technological, economic, and social change. But it is a bitter-sweet history.

The island's low elevation, low annual rainfall, and little groundwater contributes to a generally dry landscape with very few streams, and subject to frequent droughts. However, a constant offshore breeze from the northeast trade winds tempers the island's tropical climate and provides its most abundant natural power supply. As such, windmills became a significant feature of the Antiguan colonial landscape, with some 90 of the stone towers surviving to this day.

Wind power became such a fixture of the Antiguan sugar industry that by the late 18th century there were 175 windmills on the island, at least one per plantation, and there were two at the Betty's Hope estate. They are so important to the national image that a windmill tower commemorates the country's agro-industrial history on the national coat of arms.

The heritage development of Betty's Hope Historic Sugar Plantation incorporates the findings of archaeological investigations that



Layout of Betty's Hope Historic Sugar Plantation.

have run almost continuously on the site since restoration was initiated in 1988, as well as inputs from heritage resources management, public outreach, and the tourism industry. This long-term project serves not only as a rich case study in the history of Caribbean sugar production, but also as a model for other developing countries in how collaborative approaches – between professional academics and avocational volunteers; between government agencies and communities; and between archaeologists and heritage scholars – can help balance motives for conservation and development in the context of potentially lucrative heritage tourism in the Caribbean.

Restoration of Betty's Hope began with the decision to reconstruct one of the island's surviving windmills to operational condition as a national heritage conservation project. Since then, archaeological investigations have greatly extended the understanding of daily life at Betty's Hope. Excavations supplemented with research into the extensive Codrington archives have led

to the identification of pre- and post-emancipation (ending of slavery) labourer villages; preliminary discoveries in the vicinity of the Still House, indicating that Betty's Hope may have been the largest rum distiller on the island; dietary insights derived from the discovery of livestock pens and butchering sites; a delineation of the courtyard and the ground floor of the plantation owners' Great House; and a host of mid-nineteenth century steam-powered equipment upgrades.

As investigations reveal more about the activities at Betty's Hope, the site allows visitors to possibly imagine what life may have been like on a British sugar plantation. It is noteworthy that the restoration project that launched the site as a heritage destination prioritized its preindustrial state for conservation. This is an important consideration, as the singular moment chosen for restoration out of such a long interval of occupation says a good deal about the interpretive priorities of a heritage site. Had

Betty's Hope been restored to a mid-nineteenth century state, complete with its then-extensive network of narrow-gauge railways, immense boilers, and a duo of unusually tall, conical storage sheds that might once have been windmills, the much longer, earlier legacy of the site and the thankless toil of its inhabitants would necessarily have been minimized if not outright discarded. By elevating the often-brutal narrative of Betty's Hope's human-powered past, the site can rightly serve as a destination for Antiguan and visitors to reflect on that tumultuous and painful epoch when sugar was king.

Betty's Hope has proven to be a successful, long-term project because of the significant community investment in the site as a part of Antiguan national identity. Operated as a non-profit organization, its goal has been to manage the heritage site as an outdoor museum and attraction for both locals and visitors alike. Sites like these present extremely meaningful cultural spaces because, as **Stoddard and Cornwell** note: 'The Caribbean has evolved from monocrop sugar agriculture which caused the creation of a very harsh form of plantation slavery, which brought together European masters and African forced laborers for hundreds of years in an environment alien to workers, owners, and crop.'

This harsh reality means that sugar became the nexus of many Caribbean concepts of postcolonial nation-building and identity. This is further complicated by the fact that ideas about sugar heritage diverge widely across the Anglophone, Francophone, and Hispanophone Caribbean, depending on their unique historical contexts of geography, settlement, development, rebellion, and independence. Generally, attitudes fall within a spectrum that ranges from a desire to retain a living cultural tradition on islands where sugar is still produced, to rejecting a degrading colonial past on islands where the industry has since diminished. The fact that sugar heritage tourism is a popular attraction across the Caribbean only serves to muddy the waters further.

In the example of Betty's Hope, the advocacy for the site, and the decades of resolved community engagement and management reveal that – on Antigua at least – sugar heritage serves as a symbol of cultural solidarity and resilience. In purely practical terms, it seems fitting that while the plantation was operational it contributed significantly to the – then sugar-oriented – primary industry of the island; and it continues in this role in modern times as one of the island's premiere tourist destinations.

UK

BATTERSEA POWER STATION RECHARGED

James Douet

The biggest, longest, costliest, and most anxiously-awaited repurposing of a major industrial building was finally completed at the end of last year in central London. The gigantic coal-fired electricity generating station at Battersea on the banks of the river Thames, containing more bricks than any other building in Europe, was built in two stages between 1919 and 1955. It worked at full capacity for 25 years until being decommissioned in 1975. 40 more years were to pass before a way was found to adapt the great carcass of the power station for modern needs, and to devise a development project to cover the conservation costs of 1.07 billion pounds (1 billion euros). But the new Battersea Power Station has been greeted with almost unanimous approval.

For conservators and industrial archaeologists, there is satisfaction and relief that the qualities of the building have been recognized and respected. The project architects, London's **WilkinsonEyre**, worked with an admirably open-minded conservation agency, Historic England, to adapt the building. The massive walls have been carefully pierced in order to bring light into areas to which it had never previously reached. Original bricks were sourced and matched, fa-

ience and marble cleaned and restored, and surviving switch rooms and control centres incorporated into new conference rooms and restaurants. The overall volumes, and of course the chimneys, have retained their visual predominance, the four concrete shafts taken down and rebuilt, while the glass-walled apartments added on to the upper levels slip into the background, especially when seen in London's grey and watery daylight. Inside, references to the power station's operation are indicated by, for instance, the footprints of the great turbines, while the project website hopefully points out the presence outside of 'several core pieces of original plant that once helped the Power Station operate, their sculptural style highlighted in bold colour'. Visitors can access much of the restored building, and even ascend from the Art Deco Turbine Hall A to emerge 109 m up at the top of one of the chimneys, in a distant repetition of the route of the flue gasses which once warmed the air of the metropolis.

It is reasonable to ask what is so remarkable about an industrial building which has few of the attributes we usually expect to justify such a prolonged and expensive intervention. It was only listed in 1980, five years after being decommissioned, was not especially outstanding from a technical standpoint, nor was the site associated with any historical drama or personalities. The justification for **des-ignation** simply says it was 'a monumental example of an inter-war utilities building, designed by a leading architect of his day'. This was Sir Giles Gilbert Scott (1880-1960) who, in 1929, after construction had begun, was invited to refashion the exterior because of the building's visual prominence in a fashionable neighbourhood.



The roofless and hollowed-out shell of the power station two years into the project, in 2012. Foto: Laurence Mackman, CC

Despite this, the most frequent word used to describe Battersea, by everyone from bloggers to architectural historians, has been 'iconic'. My dictionary, printed before 'iconic' itself became iconic, says the word means having the character of an icon. Today, we understand iconic to mean universally (or at least globally) recognized, so credit for the building's status should be shared with the engineers of the London Power Company who arranged the flue shafts of the boilers at the four corners of the building, above the washing towers which removed the dust and sulphur from the smoke.

During the decades-long search for an appropriate, and viable, new use for the building, the dead-end suggestions included a theme park, a local sports centre, an event space, a new stadium for Chelsea FC, and social housing. Some hoped it might become the industrial offshoot of London's Science Museum, appropriately displaying 'big stuff' in the immense turbine halls, in the same way as Scott's other thermal power station at Bankside, a little downstream, became a triumphantly successful (publicly funded) adjunct to the Tate gallery art museum, known as Tate Modern.

In the end, London's gargantuan property market carried the proj-

ect over the line, a Malaysian consortium winning a competitive bid in 2010 to redevelop the 17 hectare site while preserving the building envelope. The total project budget came to £9 billion (€10.1 billion), and over £1.1 billion in public money went toward a connection of the Underground railway to the site.

As well as the physical conversion of the power station, the project architects are proud of the nature of the mixed-use scheme that they devised. So-called 'mixed-use' adaptations often devote 80% of the space for housing with just a few shops on the ground floor, but here the division is roughly half and half between residential and commercial users. There are more than 100 shops, restaurants and cafes, an events venue for 1,400 people, 254 apartments and more than 46,500 m² of office space. In the critical pre-letting process that accompanies big commercial developments, a key step was the decision by Apple to relocate to Battersea, taking six whole floors. WilkinsonEyre's concept of mixed use was to make Battersea a place which is lived in and used during the day, in the night, and throughout the year, sustainable not just in terms of the embodied carbon of the building, but by gathering all these activities within the same area so reducing travel journeys. Interestingly, in a time of



The power station as completed, new windows cut through the brickwork and the glass-walled apartments in the space between the chimneys.

workspace dispersion, Apple's CEA expects the concentration of its people within the power station to 'maximise opportunities for collaboration as well as employee wellness'.

The new blocks of apartments clustered on the west side of the power station have won **least applause**, at least outside of the property development sector. The new towers crowd and jostle the power station, as the promoters tried to maximize the return on their investment. The blocks by the celebrity architects who were brought in, Norman Foster and Frank Gehry, seem to have been designed site unseen, so little do they relate to the austere brick verticality of Scott's design, or respect its space. The French project director, Sebastien Ricard, diplomatically stepped past criticism of his fellow architects by **claiming** their towers were consistent with London's 'organised mess', contrasting it to the consistency of Paris. Meanwhile, by the end, the proportion of social

housing on the site was only 9% of the total, whittled down as each new proposal was presented to save the power station.

I cycled home along the Thames Embankment and over Chelsea Bridge during the 1980s, and Battersea Power Station was, with the landscape of abandoned engine houses in Cornwall, one of the reasons I became emotionally attached to industrial heritage. The riverside Nine Elms district in which Battersea sits has been annihilated in the last decades, a throng of banal and rootless towers turning it into precisely the Singapore-by-the-Thames that the former mayor Boris Johnson promised he would prevent. That the process of preservation and re-use of an industrial building can salvage something of genuine dignity and benefit to the public realm gives real satisfaction. All credit to the local campaigners, conservationists and historians who kept the faith in a wonderful building.



The re-carved capital in the Madre de Deus Convent, perhaps the earliest depiction of the first trains circulating in Portugal.

PORTUGAL

A CARVED STONE TRAIN

Paulo Oliveira Ramos, *Instituto de História da Arte, Lisbon*

In 1509, Queen Leonor, the wife of King John II of Portugal, known as the 'Perfect Prince', founded the Madre de Deus Convent on the rural outskirts of the city of Lisbon. It would live on this way for centuries to come until in the mid-19th century, the nature of the area which surrounded this convent underwent a profound transformation due to the establishment of many mill buildings, mostly devoted to textiles, leather-tanning, sugar refining, pottery and tobacco, followed by the arrival of the railway.

Just a stone's throw away from the convent, the iron bridge of Xabregas over the public road was built in 1854 by the Brit-

ish engineer John Sutherland Valentine (1813-98) for the first section (36,5 kms / 22 miles) of the rail line from Lisbon to Santarém, which opened on 28 October 1856. Two years later, Valentine wrote about this in the *Minutes of the Proceedings of the Institution of Civil Engineers*: "The railway which forms the subject of this Paper has nothing remarkable about it, except being the first line constructed in Portugal, a country which is lamentably deficient in all facilities for internal communication, whether by land, or water".

With the death of the last resident nun in 1869, the convent then passed into the possession of the Portuguese State, which lent it to a charitable organisation (the Maria Pia Asylum) that was already installed in the adjoining *Palácio dos Marquizes de Niza*. From 1871 onwards, the convent was rehabilitated following a conversion project by the Portuguese architect José Maria Nepomuceno (1836-95), giving it its still current format.



The Xabregas Railway Bridge, the train, the Niza Palace and Madre de Deus Convent in two engravings by Coelho, published in *Arquivo Pittoresco*, in 1855 and 1862.

It was around that time that an anonymous but highly-skilled worker, surely impressed with the sight of the early smoky trains that he could witness crossing over the Xabregas Railway Bridge roughly 150 meters away, decided to re-carve one 16th century capital of the small cloister, and thereby making an unprecedented and surprising contribution to the industrial history of Lisbon.

And thus, where once stood a capital featuring “vegetal ornamentation of our sixteenth century”, according to the 19th century writer Ramalho Ortigão, there now was a naïf illustration of a steam locomotive pulling a tender or coal-car, with three passenger carriages and a baggage car, about to enter a tunnel.

Writing in 1896, the already mentioned Ramalho Ortigão expressed his profound regret at “this astonishing phenomenon of archaeological pathology”, in a book dedicated to the *Comissão dos Monumentos Nacionais* (National Monuments Commission). It should be mentioned that he was followed by many other authors throughout the decades.

From the point of view of the industrial archeologist, however, the interest of this bas-relief cannot be overstated. It is worth emphasizing that in this case, a small 16th century capital was indeed lost, but what was gained in its place was to be one of the earliest depictions of one of the first trains to have ever circulated in Portugal.

TURKEY

ADAPTIVE REUSE POTENTIAL OF İSTANBUL GRAIN SILOS

Kutay Karabag, Researcher, Istanbul Bilgi University

Haydarpaşa Train Station has gained a solid place in the urban/national memory as the city gate of Istanbul throughout the last period of the Ottoman Empire and the entire history of the Turkish Republic. The striking station building, stretching from land to sea, offers a unique experience by dropping passengers from Anatolia and Middle East, almost in an instant in the middle of the magnif-

icent Bosphorus. Besides the historical Station building, the entire Haydarpaşa district, representing the various stages of the westernization and industrialization adventure of the Ottoman Empire and the Republic of Turkey, presents a rich urban heritage area in terms of space, content and diversity.

When approached from the Bosphorus, the four buildings of Haydarpaşa silos is a linear composition marking the area. Connected each other by railway tracks, the historical station, wagon terminal and the ferry terminal are located on the south of this line of buildings, while Haydarpaşa port lies to the north. Following the initial investments for the Anatolian Railway and the early docks in Haydarpaşa in the second half of the 19th century, the first two silo buildings were constructed in 1903 and 1905, almost simultaneously with the break-



The 'unintentional monumental' façade (Alois Riegl's classification) of the Haydarpaşa silo buildings.

water, the initial harbour and the modern station building. These two buildings demonstrate a transition language of industrial architecture from classical to the modern, with their masonry building envelope and gabled roofs similar to the many examples of 19th century industrial buildings in Europe. Standing on masonry base structures, the grain storages and the structural components are mostly in steel and disconnected from the façades. Due to the rapidly increasing requirements a third silo building with a larger capacity was built in 1907 between two previous buildings, yet this time contemporary concrete building technology and circular storage form was preferred. Later in the first half of the 20th century, investments were paused due to decreasing production and political instability until the foundation of the modern Turkish Republic in 1923.

This long urban transportation dock of the entire Haydarpaşa district is completed to an L-form extending inland for an area of railway heritage consisting of service and maintenance buildings. On the south is the historical Yeldeğirmeni neighbourhood, established basically for the accommodation of foreign technical staff working in the construction and operation of industrial facilities, whereas on the northeast stands on a higher ground the Scutari Barracks (Selimiye Kışlası), initially built in 1800 for the new order of the westernisation of the Otto-

man military. Other components of this ensemble include the historical breakwater on the sea and smaller obsolete buildings of Power Station and Police Station on the land side of the silo buildings, as well as the open green space of the British Cemetery. Moreover, the context of the silo buildings is completed with an additional layer of qualities aroused by the archaeological site discovered recently.

The Ankara government prioritized westernization and industrialization policies and began planning efforts to organize grain production and distribution on a national scale, shortly after its establishment. In line with this goal, legislations regulating the wheat production were followed with the establishment of TMO (Turkish Grain Board) as an agency for central organization. Initially in the 1930s, a number of grain silos were built in production centres across Anatolia in order to reduce losses. These investments, in the light of the new Republic's social and public policies that emphasized agricultural production and the village concept, should also be read as a precaution against the famine concerns of the war years. The phrase "The Office (Board) is the farmer's black-day friend", which utilizes the high silo facades visible from everywhere as a propaganda billboard, aims to convey the sense of security to the public.



View of the rear elevations of the silo buildings in Haydarpaşa.

The last silo building in Haydarpaşa represents a different period of liberal economic policies and foreign-oriented planning after 1950. The largest building located at the north-western end of the silo line at Şa, was built in 1957 by Germany-based builders, using state-of-the-art modern techniques of reinforced concrete and slipform construction. The building is composed of 60 cylindrical silo units 540 cm in diameter and 30.5 m in height, standing on a concrete base 6 m in height. The entire structure, enabling a capacity of 34,000 tons, is supported on piles anchored to the submarine soil. The building is accompanied by a 12-floor rectangular block for office functions.

Although the loading and unloading systems have largely disappeared today, silo structures were not just massive buildings when they were active. On the contrary, they operate as giant machines, with railways on both sides, automatic wagon loading and unloading systems employing spaces above and below ground level, and horizontal conveying systems accessing the ships. The silo buildings

were continuously upgraded in terms of their loading and docking systems and grain elevators, until they became obsolete in 2005.

On the shores of Haydarpaşa, that exhibits a horizontal topography and mostly low-rise buildings, the 4 silo structures assemble a striking urban façade 250 m long with a variable height of up to 45 m. The dominant effect of this façade on the Bosphorus silhouette together with the valuable potential of the location for enabling effective urban terrestrial and maritime transportation connections suggest the possibility of the silo structures constituting the new conceptual city gate. Settling on 5,000 m² area on the ground, large enclosed volumes of the silo buildings, together with the varied qualities of open spaces in scale with the monumentality of the buildings, and the coastal potential of these spaces, constitute an important opportunity for the city of Istanbul, which complains for the shortage of public open spaces and particularly coastal use. Reflecting variations of language, construction techniques and materials of 20th century industrial architecture, the buildings offer diverse

and unique opportunities of spatial experience with not only their typological vertical and geometric storage spaces, but also subterranean volumes of distinct tectonic qualities, vaulted pedestal volumes reminiscent of the Egyptian hypostyle halls, and striking views at high elevations.

The most important example of the transformation of dysfunctional grain silos in Turkey has been the adaptive reuse of the TMO silo in Eskişehir into a hotel in 2006. Apart from such unit space-based accommodation functions congruous with the planimetry of the silo volumes, examples such as the **Zeitz Museum** designed by Thomas Heatherwick, **Minsheng Wharf** by Atelier Deshaus, and **Museum Küppersmühle** by Herzog de Meuron, stand out in terms of the intervention strategy and spatial experience they offer when adapting for culture-based public functions. Even though it is not a grain silo, Ricardo Bofill's adaptive reuse design of the cement factory for his own residence and office in Barcelona is also worth mentioning as a reference for his approach utilizing the particular tectonics of industrial geometry, patina and traces together with the landscape for creating a unique timeless space.

Apart from a few qualified examples of adaptive reuse of industrial heritage by public educational and cultural functions such as SantralIstanbul, Koç Museum and Kadir Has University; Haydarpaşa Silos, as the long-term witness of the industrial and commercial system of the Republic, are among the few sites that still stands as the material evidence of the industrial character and keep the potential for public use in İstanbul. The entire Haydarpaşa region represents an urban site consisting of various layers of inter-connected components of architectural and industrial heritage symbolising modernisation, industrialisation and westernisation policies and should be handled in an integral way. Although the restoration works have started in the station building as a distinct component, Haydarpaşa silo buildings possess an attractive potential of adaptive reuse which can lead and guide the transformation of the entire site with urban-scale decisions and public functions.

Contact

AUSTRALIA

THE METROPOLITAN SEWERAGE FARM COMMUNITY

Dr Monika Schott, writer and researcher

Abandonment, scattered remains in knee-high weeds, a place that once thrived in human activity and was far grander than the relics left behind, where complete homes of yesterday rest buried deep beneath the earth. I'm in the top-end township of Melbourne's Metropolitan Sewerage Farm (MSF). It's one of four settlements that grew after the Melbourne and Metropolitan Board of Works (MMBW) established the MSF in 1892, on 8000-plus hectares of land 30 kilometres from Melbourne on the city's western outskirts. Land and grass filtration sewage treatment was established on the windy open plains to treat the Australian city's sewage.

A poetics of creative writing research methodology has been the basis for uncovering and investigating the almost lost social history of the MSF community, and resurrecting it via the establishment of **The Faraway Land of the House and Two Cows** Facebook page where past residents and their families and friends reconnected, shared stories and received information. Through evocative storytelling, the MSF social history has been rebirthed through my literary nonfiction book, **The Faraway Land of the House and Two Cows**, and new song, "A Land Faraway." The song was a collaboration with singer-songwriters, Elle Murphy and Mitch Ribly. Both interpret the haunting truth of the MSF as a first social history of

its kind, in a paradoxical aesthetic that highlights the beauty and strength within abject sewerage town communities in a wistful nostalgia.

It was British journalists dubbing Melbourne in the 1880s as Marvellous 'Smellbourne' because of the city's unsanitary waste disposal that resulted in the MSF's development. Melbourne was considered the smelliest city in the world. Mortality rates from diphtheria and typhoid numbered 86 for every 100,000 inhabitants, compared with 16 in London and 66 in Paris.

With transport by bicycle, train, horse or foot, workers of the sewerage farm and their families began living in cottages the MMBW was slowly building across the isolated MSF. It leased the cottages at a modest cost to its workers, along with two cows for families to make butter, cream and cheese. Single men instead shared sleeping quarters or camped in tents on site, going home to their families living in neighbouring towns up to 30 kilometres away on their days off. Cottages were in short supply for the quickly growing workforce, resulting in some families camping in tents on the MSF for many years, until a cottage became available.

As Melbourne grew, so did the volume of sewage and the work force required to manage it, leading to a community growing on site. Such settlements developed into sewerage town communities.

Like any community, services grew to sustain it: a school in each of the four settlements, and a church, community hall, park, post office, general store, swimming pool and sporting and recreation facilities in the top-end township. The community lived alongside paddocks



Top-end township, one of four settlements on the Metropolitan Sewerage Farm, 1950. Photo courtesy of Melbourne Water.

being watered with raw sewage and channels transporting sewage and effluent around the site, seven days a week.

The community was behind the making of one of the largest and most important **civic works projects** undertaken in Australia in the 19th century, which provided job security for many men during the 1890s economic crash and 1930s depression. The settlement grew to a peak population of over 600 in the 1950s — over 100 homes spread across the MSF while around 100 men lived in the New Australian Camp at the top of the MSF, housing people employed from migrant camps dotted across Australia in the post-war boom.

This is the typical nature of sewerage towns: men (and in the modern era, women) working for a company or organisation in the industry of sewerage, living with their families on site or beside a sewage treatment facility, and community amenity growing around them. Early workers' towns like these were known as construction

camps in Australia, where workers and their families lived beside large construction projects. Today, we hear more commonly about mining and company towns.

Modest populations of sewerage town communities also existed at the Sunnybrae Farm in Adelaide and on the Botany-Rockdale Sewage Farm in Sydney. Self-sufficient, small communities similar to the MSF were found on sewage pumping stations in London, and in Esholt, England.

These communities have a unique set of conditions: that of living around sewerage.

When last visiting the MSF (now Western Treatment Plant) in December 2022, few physical structures remained. The swimming pool built in 1944 with meagre resources due to World War II restrictions and rations, was filled to repurpose as a rain garden, a stark contrast to its glory days. Its associated change rooms were demolished in



Metropolitan Sewerage Farm and Werribee combined women's football team, 1951. Photo courtesy of the Hassett family.

2021 and rebuilt as toilet facilities in the same style, although austere compared to the original change rooms. The community hall has been refurbished and the sports oval and pavilion remain untouched.

All four schools, the jetty, reservoir, tennis courts and croquet green are gone. Most cottages and their sheds, more than 100 structures, lay buried in deep holes beneath where they once stood. Some homes were relocated into nearby Werribee and Little River.

The vast lands of the MSF continue to treat over half of the sewage generated by Melbourne's population of 5 million on 10,500 hectares, which is about the size of the Greek island of Mykonos. It is now known as the **Western Treatment Plant** and is operated by Melbourne Water.

A Land Faraway was launched in 2022 and accompanies *The Faraway Land of the House and Two Cows* audio book. Both paperback and hardcover versions were published in July 2022.



Sewage channel on the Metropolitan Sewerage Farm, date unknown. Photo courtesy of the Pengelly family.

INDIA

A LEGACY OF LAL IMLI MILLS

Tahzeeb Fatima Rozy, PhD Research Scholar, Department of Architecture, Jamia Millia Islamia, New Delhi

Bombay (Mumbai), Calcutta (Kolkata), and Madras (Chennai) were the major port cities and industrial centres in India during the British colonial period for trading, and Cawnpore (Kanpur) was the only active inland industrial centre. However, Kanpur

and its important heritage industries are somewhat ignored and missing from scholarly works. This affects the level of understanding and awareness of the dynamic historic and industrial context of Kanpur and ultimately hinders the conservation of these industrial heritages.

Kanpur city is situated on the banks of the river Ganga, as one of north India's major industrial centres with its own historical, religious and commercial importance. The city was described as the 'Manchester of the East' as one of the biggest producers of textile and leather products. It hosts the world-famous Lal Imli



Exterior View of the north-eastern facade of Lal Imli Mills. Photo: Ar.Tahzeeb Fatima Rozy

Woollen Factory which was once the pride of India along with other major mills and tanneries including the Harness and Saddlery Tannery (1860), Elgin Mills (First Cotton Mill, 1862), North West Tannery Co. Ltd (1881), Muir Mills (1882), and Victoria Mills (1885).

Cawnpore (Kanpur) was one of the major centres during the First War of Independence in 1857 in India. The Satti-Chaura event (1857) resulted in the colonisation of the city into a fortress and the establishment of a large cantonment base for the British armies and police. After that, the needs of the army and the police prompted a high demand for textiles and leather in the form of saddlery, tents, shoes, woollen clothing, and canvas clothes. To meet these demands, the British established major textile manufacturing units in the tanneries along the river Ganga in Kanpur. These mills were composite in nature operating at a larger level, exhibiting an exquisite form of architecture and socio-cultural values of that era. These mills were the economic basis for the development and the growth of communities in the city and contributed significantly to the image of the industrial city of Kanpur.

Cawnpore Woollen Mills, known as Lal Imli Mills

In 1876, five Englishmen, W E Cooper, George Allen, Dr Condon, Bevan Petman and Gavin S Jones erected a small mill for the manufacturing of army blankets. The Cawnpore Woollen Mills had a period of continued expansion from 1884 to 1922 under the management of Sir Alexander MacRobert. In the years 1914-1918, during the World War, the entire productivity of the mills was utilized as per orders issued by the East India Company.

It was the first woollen mill in 1876 in Asian Sub-continent, to cater for the needs of the British Armed Forces in India. It was known for its high-quality products. The Lal Imli Mills is located along the Central Business District and major institutional and commercial zone. The mill came under the Ministry of Textile and was managed by British India Corporation. India gained independence in 1947 and management of the textile mills was transferred along with other factors that contributed to the sickness of major textile industries all over India. Among them was Lal Imli Mills which continued to incur heavy losses. The



Exterior View of the Clock Tower: The clock was made by the King George Burner Company, is the only one of its kind in the entire country. Photo: Ar. Tahzeeb Fatima Rozy

last production happened in 2014. Presently the mill is declared closed completely.

Lal Imli Mills as industrial heritage

The Lal Imli Mills is unique because of its integrated process of production, and the surviving evidence of architectural, technological, material innovation and evolution of building technique. It was a composite mill, all the activities going under one roof starting from the collection of raw materials to the packaging of the finished products. The raw material was imported from Australia, Punjab and Tibet. The scouring and drying of wool was done and distributed to the carding and combing department from where it was sent to dyeing department. From dyeing, spinning, weaving it was distributed to different buyers and indirectly into the markets of the city, and after final packaging the products were distributed to the Armed Forces and the local markets.

It is great example of Colonial Revival Architecture from the early 20th Century, an exemplary site of exposed brickwork utilitarian building, in which the aerial walkways, industrial stairway steel sections and cast-iron were imported from England. It retains the infrastructure and machinery of late 19th century like old powerhouse, sprinkler system, French combing department, etc. clock tower, the tallest building of 1900s.

The jack arch roof was first of its kind in the country, though prevalent during 1900s in England. It was made of the first class brick

obtained from the clay from the bank of Ganga supported by iron members which allowed wide spans in the mills. The unique French Combing Technology was used in the CWM mill for combing of the wool to produce fine quality of fibre which was developed in England in 1846 and is one of its kind in India.

Kanpur almost became one of the pillars of industry and economy. However, the city could not maintain its position, due to changes in the different government schemes and policies related to the industries and corruption. The peak of industries Like Lal Imli Mills was during World War I and II, and after that most were either closed or in ruins.

Lal Imli Mills was the first woollen mill in the Asian Sub-continent, and has the significant values and authenticity which qualify it to be included in the UNESCO World Heritage Site as Industrial Heritage of India. Kanpur city has major Industrial heritage which has enough potential to be conserved and reused for preserving the industrial legacy of the city. The official guidelines for conservation of industrial heritage are still non-existent in India which strongly affects the perception of whether to consider these places as heritage or not. This article is an attempt to raise awareness, accelerate the scholarly debate and contribute towards the research focusing on these forgotten industrial heritages the Kanpur in India.

Contact

Jamnagar Railway Station
(archival)Jamnagar Railway Station
(archival)Jamnagar Railway Station
(2010)Bandra Railway Station
(2012)

Vinoo Mathur (Jamnagar station archival images from Western Railway publication, 'Heritage - Tradition & Legends'), Y. Masuria on Google maps (bottom left: Jamnagar station 2010), N. Gala on Flickr (bottom right: Bandra Station 2012)

INDIA

THE OLD JAMNAGAR RAILWAY STATION

Priyanka Panjwani, conservation architect

Bedi Bundar was the chief port of Jamnagar, a former princely state on the west coast of India. In the late 19th century, the rulers of Nawanagar built the Jamnagar & Dwarka railway to transport goods from this port. A meter gauge railway line was built from Jamnagar to a significant center in the Saurashtra region, Rajkot, and it opened in 1897 with a short extension to the Bedi Bunder Port. The historic Jamnagar railway station was a blend of Victorian and vernacular architectural styles with many distinct features. A central clock tower with a pyramidal roof dominated the two-tier roofscape, dormers with ornamental scrollwork and pinnacles flanked the roof on either side, and the station was adorned with beautiful columns, arches, door surrounds, ornate cornice details, and cast-iron columns with intricate brackets on the platforms.

The station building's symmetrical form and aesthetics are similar to the Grade I heritage designated Bandra railway station in Mumbai built in 1888.

Today, Jamnagar railway station lies abandoned and derelict in its skeletal form, as seen from the images captured by rail enthusiast Kaushik Dharwadkar on his recent visit to Jamnagar in November 2022.

The old Jamnagar station came to be isolated after the conversion of the route from meter gauge to broad gauge, due to which a new Jamnagar station was built in the town outskirts in 1984. Subsequently, the region experienced a devastating earthquake in Bhuj in 2001. This caused critical damage to life and property, even in Jamnagar. It was reported that in the post-disaster period, several heritage structures in Saurashtra (like the station building) faced severe vandalism under the pretext of the earthquake reconstruction, especially for precious Burma teakwood. Consequently, the Jamnagar station site, which is said to be among the oldest railway stations in India, was featured in the Heritage at Risk Register of



Kaushik Dharwadkar; 2022

INTACH, the Indian National Trust of Art and Cultural Heritage. For several years, INTACH made attempts at its revival but in vain. In 2019, the NGO published an [online inventory of railway heritage](#) in collaboration with the Indian Railways, including a note on the risks to the old Jamnagar railway station.

Information from newspapers reveals that the railway station site is deeply undervalued compared with other historic and infrastructure projects in the area. The Gujarat Ancient Monuments and Archaeological Sites and Remains (AMASR) Act, 1965 (Amended 1978) prohibits construction in the protected zone (Approx. 100-300m) of the monument, and the state has the power to acquire land in the protected area. However, there is no legal construct to protect heritage buildings such as the old Jamnagar railway station that lie beyond this buffer zone. In 2010, a report suggested that the old Jamnagar station was to be converted into a hotel as planned by the Railway Land Development Authority (RLDA), a statutory Authority set up under the Ministry of Railways. However, the 2019 brochure of the Jamna-

gar Parliamentary Constituency of the Indian Railways focused extensively on renovating the new Jamnagar station with a new façade, passenger amenities, etc., and the RLDA website suggests that this upgradation is currently under the design and planning stage. As recently as October 2022, India's PM generously launched and funded several development projects related to irrigation, power, water supply, and urban infrastructure in Jamnagar, calling it the emerging hub of manufacturing and coast-led development. However, these governance initiatives do not give a clear idea of the current status or plans for the old Jamnagar station.

While the world's attention was diverted towards another heritage at risk in the state of Gujarat (Louis Kahn's Indian Institute of Management in Ahmedabad- December 2022 [ICOMOS's renewed alert](#)), there were unforeseen and devastating losses to Gujarat's industrial heritage such as the 2022 collapse of the historic Morbi bridge (built in 1877, about 100km East of Jamnagar). To prevent this fate for the beautiful Jamnagar railway station, the custodians must

proactively assess the existing inventory and stabilize the historic sites at risk. A management approach 'to value urban heritage as a key resource for economic development and social cohesion' must be devised using UNESCO's 2011 Recommendations for Historic Urban Landscapes. In 2021, the Ministry of Railways prepared a 'Master Circular on Railway Heritage,' and the Indian Railway Stations Development Corporation Ltd (IRSDC, part of RLDA) introduced a series of Manuals, including a **Working Policy for Railway Heritage Assets**. Both are positive steps toward conserving railway heritage and can drive sensitive development if implemented swiftly and efficiently. Although the Gujarat AMASR Act advises on forming a State Advisory Board to preserve monuments, state-wise working

groups technically adept at maintaining and adapting heritage assets are evidently a critical and urgent need.

Last but not least, it is well known that India's most prominent industrialist, Reliance Industries, has christened its Jamnagar manufacturing division as the world's largest petroleum refining hub in recent times. Therefore, it is a hope that a funding program aimed at corporate social responsibility to preserve industrial heritage sites (such as the old Jamnagar railway station) is initiated, at least in places where industrial business is thriving.

Contact

MALTA

KORDIN UNDERGROUND GENERATORS

Prof Robert Ghirlando, Chairman of the Industrial Heritage Platform of the University of Malta and Vice-President of Malta Industrial Heritage Association

The Grand Harbour of Malta, an island republic in the very centre of the Mediterranean Sea, is a fine natural anchorage. In the centre is the rocky Corradino or Kordin promontory that houses some interesting underground installations, such as the tunnels in which the machine shop and workshops of the nearby Royal Navy dockyards were held during WWII, fuel tanks excavated in the rock to supply warships, bomb stores, and a complete power station built to generate electricity to the British Forces stationed on the island.

The power station is still there and complete, although suffering the effect of over 30 years of neglect. It houses three steam boilers, two turbo-generators and six unique diesel engines. I understand that even the boilers are quite special since they are compact designs to fit in destroyers, and also in tight places like the tunnels of Kordin.

The engines are General Electric Fullagar two-stroke opposed-piston engines of just under 1 MW each. What makes them unique is the mechanism employed to drive the second piston. In opposed-piston engines, there is no cylinder head. The combustion chamber is formed by two pistons moving against each other in the cylinder. Most opposed-piston engines have two crankshafts geared together, although engines with only one crankshaft to drive both pistons have also been built. But in the Fullagar engines, the cylinders come in pairs. While the bottom pistons are directly linked to the crankshaft, the top pistons are linked to the bottom piston of the adjacent cylinder. Pirault and Flint in their book *Opposed Piston Engines* list the customers that had installed Fullagar engines.

Max Farrugia, writing in 2005 in *EnelInfo*, the inhouse magazine of Malta's electricity company Enemalta, gives a short history of this

power station. Construction work started in 1935, with the first two engines being delivered in the first days of the war. The second set of two engines were installed in 1942, with a third set installed in 1945. The station supplied electricity to the British military installations on a grid that was only connected to the national grid in 1964. British Service personnel kept operating it until 1979 when it was handed over to Enemalta who kept operating it until the late 1980s. For a time after that, it was used as Enemalta's training centre until rocks falling from the tunnel roof of the that had taken a pounding with all the construction work that had taken place on Kordin forced Enemalta to relocate the Training Centre to another site.

It is interesting to note that one of the engines had been ordered in 1938 by the Channel Island of Guernsey, but had instead come to Malta, presumably because in the meantime, Guernsey had been occupied by the German army in WWII. Max Farrugia describes this station as 'unique world engineering heritage' and suggests that 'this building can be converted into an electricity Museum, which will be an attraction to locals and visitors.' I believe that the site deserves to be included in UNESCO's list of World Industrial Heritage Sites.

Malta Industrial Heritage Association

In June 2022, a group of enthusiasts led by two Maltese TICCIH members, Prof Ruben Paul Borg and Prof Robert Ghirlando set up the Malta Industrial Heritage Association (MIHA), an NGO with the specific aim to promote the conservation, appreciation and study of Malta's Industrial Heritage.

Soon after its foundation, members of MIHA embarked upon their first project, saving a Portable Boiler from ending up as scrap iron. A number of these boilers had been brought to Malta by the British Admiralty to work in Malta's naval dockyards. These portable boilers provided low pressure steam to ships in drydock for domestic purposes (washing, cooking and space heating).

These were fire-tube locomotive type boilers originally fired with coal but later converted to oil. A feed-water tank placed under-



One of only 115 General Electric Fullagar generating diesel engines, in the Kordin power station.

neath the boiler provided make-up water through a steam-driven feed-water pump attached to the boiler. It would have been attended full-time by a stoker when in operation.

The Portable Boiler saved by MIHA was deposited in a scrapyards more than 40 years ago. It was recovered through the timely intervention of MIHA during August 2022. The Portable Boiler was purchased through donations of MIHA members. It was transported

with the support of Polidano Group, a local construction company. Palumbo Shipyards supported through blasting and the application of protective coats of paint. It was placed on public display at the University of Malta as a representative element of Industrial Heritage with the support of the University of Malta.

This Portable Boiler is intended to communicate the importance of the Industrial Heritage of the Maltese Islands.

NEW BULLETIN EDITOR

Miles Oglethorpe

After 100 issues, James Douet will step aside as editor of our TICCIH Bulletin in May, and we are delighted to announce that the new editor will be our Belgian colleague, Dr Joeri Januarius, who has agreed to take over from issue #101. Joeri is a historian and journalist, currently the coordinator of the Centre for Industrial Heritage ETWIE in Ghent, Belgium, and teaching at the University of Antwerp.

TICCIH is greatly indebted to James for his outstanding work on the Bulletin as well as a variety of other TICCIH publications - editor of *Industrial Heritage Re-tooled*, the TICCIH Guide to Industrial Heritage Conservation (2012), the National Reports of the congresses in Taiwan, Santiago de Chile, Lille and Montreal, and the two thematic studies of the international heritage of the water and petroleum industries. James has overseen a major transformation of the Bulletin. Beginning in 1998, the early issues were printed and posted out by hand from president Eusebi Casanelles' museum in Spain. President Patrick Martin moved it onto a digital format from 2016, easier to read, produce and of course distribute and with colour images and Internet links, while the Bulletin was revised and updated to the current format three years ago. All our members are grateful to James for making it into the varied and stimulating publication that we receive every three months, with contributions from all around the world. We are now delighted to welcome Joeri to the role, with the opportunity it presents to freshen and broaden the participation and perspectives of our quarterly newsletter, and we are all very much looking forward to working with him in the future.



JAMES DOUET



JOERI JANUARIUS



The old thermoelectric generating station Antonio Maceo in Havana Bay. Photo: Kiovet Álvarez

CUBA

THE INDUSTRIAL HERITAGE OF THE BAY OF HAVANA, CUBA

MSc. Arch. Clara Susana Fernández Rodríguez, Master Plan of the Office of the Historian of the City of Havana

Last November, the XVIII International Meeting on Management of Heritage Cities was held in Havana. One day was dedicated to The Challenges of Industrial Heritage in the Contemporary City, inaugurated by Ilka Pell, specialist of the National Council of Cultural Heritage of the Ministry of Culture, with an overview of the most representative assets of the industrial heritage of Cuba. At the end of the program, the new Plan for the Protection of the Industrial Heritage of the Bay of Havana by the architect Clara Susana Fernández was presented at the Cuban Art Factory, an old industrial facility converted into a cultural-recreational center.

It has been necessary to develop this protection plan because of the transfer of the traditional port of Havana Bay to Mariel, resulting in

the obsolescence of many of its facilities. To establish the legal basis that supports the protection of the industrial heritage that it treasures, Havana Bay was declared in 2014 as a Protection Zone of the Republic of Cuba. This gave us an opportunity to carry out studies and plans of the site, with a comprehensive vision.

The **Master Plan of the Office of the Historian of the City of Havana** has foreseen the future of the area through three urban plans: the Management of the Cultural Landscape (2017), the Perspective Development Plan (2020) and the Protection Plan and Industrial Heritage Atlas of (2022), of the Havana Bay. The first considers landscape management as cultural heritage; the second, the physical and social relationship of their urban settlements, geographical and natural resources; and the third, the protection and reuse of its industrial heritage.

The Havana port was an important place of the Carrera de Indias in the 16th century. Its transformation into an exporting port towards the end of the 18th strengthened its definitive character as a mercantile centre, stimulating the birth of various industrial systems linked to commercial and maritime traffic. The definition of



The entrance to Havana Bay. Source: former Secretaría de Obras Públicas

industrial systems has been decisive for the study and classification of industrial heritage, associated with cultural landscapes and the typological character of the most representative elements and sets. Among them, the naval industry, port and commercial activity, the tobacco industry, energy, food and those related to communication and transport.

Havana Bay witnessed the construction of warehouses, port and naval infrastructures over the years, with different materials and technologies. It was also the place for the manufacture and commercialization of tobacco, above all of twisted tobacco, internationally recognized as 'habano'. Another of the industrial sectors present since the 19th century is that of energy, with old docks for the collection of coal, gas, oil refineries and thermoelectric plants. At the same time, the presence of infrastructure for the reception, storage and processing of food since the 1950s is significant, notably silos, fishing terminals and for oil treatment. Meanwhile, communication and infrastructure systems that it was necessary to develop towards the interior of the port area are intertwined with the origins and progress of the city, in favor of the transport of goods, products and passengers.

The Atlas of Industrial Heritage

Through a register of this scale, sites, ensembles, processes and industrial manifestations in the area were registered and documented, through the digital Industrial Heritage Forms, where a wide range of information was concentrated in an open and progressive database. It is an essential consultation instrument that opens the way to initiate the definition of the degrees of protection or declarations of the goods considered in the registry. It is structured in three blocks: Cultural Landscape, Material Heritage and Intangible Heritage.

The selected elements and sites were agreed with the National Council of Cultural Heritage of the Ministry of Culture, the governing body for the protection of the nation's cultural heritage, and with the Archaeology Cabinet of the Office of the Historian of the City of Havana. 142 heritage assets and 30 processes related to industry; of which 130 files have been produced. Meanwhile, the Cultural Landscape was developed in the publication Cultural Landscape Management Plan Havana Bay, where twenty units of the cultural landscape are proposed.

Industrial Heritage Protection Plan

The Atlas has been a starting point for the design of a comprehensive management plan for the protection and safeguarding of the industrial heritage of Havana Bay. This plan considers seven lines of action that allow the registration and cataloguing of assets; the diagnosis and study of risks; the preparation of technical documents; dissemination; formulation of emerging and definitive projects; and control of the plan.

From these lines, a hundred actions are derived to be completed in five years, where national and municipal entities linked to the subject are involved with the will to recognize and protect this industrial legacy and value disused real estate and transform them in favor of the communities and the city.

The Protection Plan for the Bay of Havana will be published shortly, thanks to the cooperation project 'Habana Salvaguarda Industrial-HaSI: Strategy for the recognition, safeguarding and enhancement of Havana's industrial heritage in the face of future challenges', with the collaboration of the Tecnalia Research & Innovation Foundation, accompanied by funding from the Basque Agency for Development Cooperation.



*EINFACH LEICHT: VLADIMIR G.
SUKHOV 1853-1939*

Rainer Graefe, Ottmar Pertschi, Erika Graefe, Andrij Kutnyi (eds.) Firmitas Band 3.1 & Band 3.2, Geymüller Verlag für Architektur (www.geymueller.de), Aachen, 2021, 1008 S., Hardcover, €119

Reviewed by Patrick Vianne

Vladimir Grigorevic Suchov (1853-1939) was one of the most prominent structural engineers of the late 19th and early 20th centuries, spanning the latter days of Tsarism in Russia and the first decades of the Soviet Union. He was a pioneer of modern building who managed to achieve during his career a groundbreaking synthesis between the new constructions of engineers and the most daring designs of the architects of the time. His position remains unique, as both the inventor of numerous technical innovations in the construction industry but also as a designer of various machines and installations: pumps, tankers, steam boilers, pipes and reservoirs for petroleum.

Part I explains how Suchov laid the foundation for the development of modern petroleum hydraulics and for the 'cracking' of petroleum. The authors discuss Suchov's architectural constructions, such as the tensile structures of his suspended roofs, striking shell constructions and towers composed of metal rods. All these constructions are characterized by lightness, simplicity, transparency and elegance. This explains the main title of the publication 'Einfach Leicht', in English 'Simply Light'. The designs and realizations of V.G. Suchov conclude a period of early experiments in 'light-weight-building' and they herald a new era with - from around 1920 - even more advanced experiments. Suchov designed numerous 'light con-



structions' such as bridges, silos, blast furnaces and harbour cranes. These daring and intelligently designed constructions still appeal to our imagination today.

Band 2 deals in more detail with Suchov's gossamer wire and rod constructions, as well as his net and membrane constructions, used in hall-shaped buildings, cooling towers and lighthouses, among others. It concerns the constructions in which he introduced the complex design language of hyperboles. Suchov's designs for new typologies of water towers, for stacked or interlocking hyperboles are also discussed. Suchov applied these principles in a stunning way to the Sabolovka Radio transmitter tower in Moscow and to his designs for the NiGRES power supply towers on the Oka. The second part of the publication also describes and explains Suchov's design methodology, the building process and the design of his progressive, for that time very daring constructions.

Einfach Leicht is the result of a groundbreaking research conducted by more than twenty experts in architectural history and building technology, from Russia and several other countries. Their interdisciplinary research but also their palpable enthusiasm resulted in a beautifully illustrated standard work. The more than 2000 illustrations include historical and recent photographs. There is also an abundance of graphics, building plans and graphs, with (at the end of part two) even a complete 'tower chronology' that spans the period 1895 to 1933.

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TICCIH

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