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The possible new use for the famous roof track on the Lingotto FIAT factory in Turin. Sky Drive proposes a circular 'High Line' as part of a green scheme for the neighbourhood. The Italian industrial heritage association AIPAI/TICCIH Italia uses the Bulletin to express concern about this and another reuse proposal which run counter to TICCIH's conservation principles.

HARNESSING THE UNIQUE POTENTIAL OF OUR INDUSTRIAL HERITAGE

Dr Miles Oglethorpe, TICCIH President

Greetings from your President! It's mind-numbing to think that it is over a year since many of us went into our first CoVid19 lockdown. So much has happened since then, and not a lot of it has been good.

This issue contains several contributions from current and recent doctorate students, and we expect that the Bulletin will continue to provide a space in which early-career research can be publicised. Colleagues supervising research projects can encourage their students to explain their work on this platform.

For me, the last few weeks have been a time for reflection. Many organisations are going through a process of 're-imagining', focusing not only on post-pandemic recovery, but also trying to learn from the ordeal that we have all suffered and to emerge in a stronger position than before. I have written previously about the extraordinary digital revolution that has been a life-saver over the last year and has transformed the way we live and work. Whether we like it or not, very little is going to remain the same and in some respects that is a good thing.

Without doubt, the biggest issue facing us all is our climate crisis. The pandemic has radically altered patterns and volumes of human consumption and changed behaviour. Some of this transformation will be temporary, but some of it will not. In Scotland, our attention is now turning towards the challenge



MILES OGLETHORPE

of hosting the postponed COP26 international climate conference in Glasgow following the UK Government's invitation to the world after the last conference in 2019. For us, the big challenge is to get heritage onto the agenda because we believe that the historic environment has a big part to play in the battle against climate change.

Anyone who engages with the work of UNESCO will know that the UN's Sustainable Development Goals are taking on an increasingly prominent role, especially in relation to our built heritage. This is one of the reasons for the establishment of the Climate Heritage Network in Edinburgh in 2019. Shortly afterwards, Historic Environment Scotland published its Climate Action Plan, a central aim of which is to '...turn our cultural heritage from a victim of climate change into a catalyst for climate action'.

Taking this as inspiration, I am confident that industrial heritage is better placed than most branches of our built environment to help with the battles to come, and to align with many of the UN's SDGs. It is strongly rooted in communities across the world and is either exclusive, excluding or elitist. It is extraordinarily well placed to encourage sustainable development and regeneration based on adaptive re-use, the rescuing of embodied energy and the encour-

agement of a second life for industrial buildings and structures. Projects taking this approach are far more likely to generate or create a sense of place, and to give working communities a renewed sense of pride and a sense of their shared histories and identity.

No other built heritage has quite such a strong bond between the tangible and the intangible, the maintenance of which depends on inter-generational contact and in particular, the passing down of traditional skills and knowledge. This in turn stresses the educational value of industrial heritage. Quite apart from its propensity to promote Science, Technology, Engineering and Mathematics at all levels of education, it is also a useful weapon in fighting the scourge of uncritical, passive mass consumption. If we are going to reduce the impact of climate change, we need to change behaviours, and one way of doing this is to encourage young consumers to take a greater interest in what it is they are consuming, and in the material environment around them on which they depend.

Meanwhile, for many of us who thrive on our passion for our subject, the last year has opened up a treasure trove of new resources, contacts and experiences. I wonder how many of you have either acquired or reactivated your digital scanners and have started mining rich veins of imagery dating back to the very beginning of your immersion in industrial heritage? It's now possible to share your past creative urges with huge audiences across the globe. In the past, many of us will know (or be) people who disappeared, sometimes for days at a time, sucked into a video-gaming black hole. Now, social media sites devoted to industrial heritage can do this just as effectively, if not more so.

But for me, perhaps the greatest unexpected boon of the pandemic has been meeting people in the far corners of the globe. Never before has Aristotle's observation 'the more you know, the more you know you don't know' taken on such resonance. There have been so many amazing meetings hosted by people in places ranging from the Philippines to Nigeria, and from Canada to Australia.

While there is no doubt that in the future TICCIH will learn to operate on a more digital basis, it's also true that we will still need to meet physically in different parts of the world from time to time. With this in mind, I am very grateful to our colleagues in Montreal for rescuing our congress and moving it forward a year to 2022 – it's going to be fantastic to see everyone when the time comes. Prior to that, however, we will explore the possibility of having some sort of virtual event in September at the exact time when TICCIH 2021 should have taken place. This will help us maintain momentum, meet new friends and ensure that when we finally meet up in 2022, the congress will be even better than we could have anticipated.

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ITALY

LINGOTTO: TEST TRACK OR ROOF GARDEN?

Edoardo Currà, TICCIH, President of Aipai and Jacopo Ibello, President of SIH, Board of AIPAI

At the end of 2020, a 'restyling' of the iconic test track on the roof of the former FIAT Lingotto plant in Turin was announced. It is part of a larger project that intends to establish commercial activities in and around the multifunctional complex related to environmental sustainability and electric mobility. According to the team of architects led by Benedetto Camerana, the track will be transformed into an elevated park (or, more properly, a roof garden) inspired by the High Line, the linear park built on an abandoned elevated section of the New York Subway.

The Lingotto is one of the most important works of industrial heritage in Italian and international Modernism. It was built during the First World War in several stages, starting with the Shunting Garage (1916). This was followed by the long building of the Nuove Officine, consisting of two long production wings, five storeys high, around closed courtyards. The famous test track, located on the roof, was built in 1919, is about one and a half kilometres long and was designed to support the simultaneous testing of 50 cars.

The building has a reinforced concrete load-bearing skeleton. The shell is almost completely glazed to illuminate a mass-production line which, as the founder of FIAT Giovanni Agnelli (1866 – 1945) had seen in Ford's River Rouge factory, runs from the bottom upwards. The functional and architectural elements are many and were recognised by contemporaries very early on. The production lines were kilometers long and the finished products were tested in the innovative roof: a suspended track defined by Le Corbusier as 'one of the most impressive spectacles industry has ever offered'.

Over time, other buildings were added, among which the helicoidal ramp, a masterpiece of the complex's designer Giacomo Matté Trucco (1869-1934), stands out for its sensational engineering architecture. The northern ramp, built in 1926, is part of the building that links the Nuove Officine to the Officina di Smistamento.

In detail, the project called **Sky Drive** involves the construction of a park of over 6,000 m² at a height of 28 m. The use of a system of eco-sustainable tanks, which accumulate water and humidity to give the plants the right sustenance, will allow the creation of an apparently spontaneous garden, perfectly integrated into the context.

The arrangement of the green area will follow its own philosophy, with the creation of different thematic areas depending on the proximity of the flower beds to the Pinacoteca Agnelli which will use them for playful-educational activities aimed at children or the restaurant

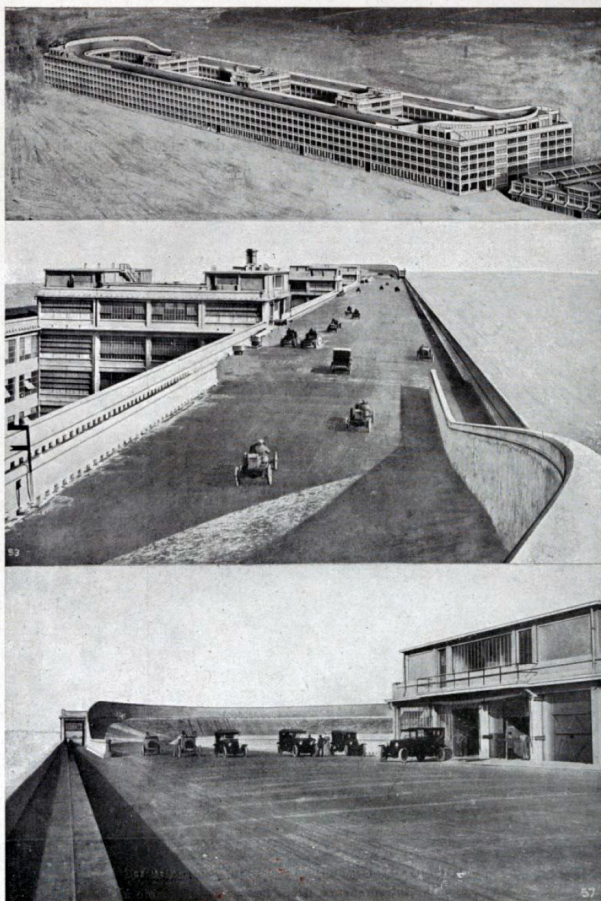


The northern helicoidal ramp of 1926 by engineer Giacomo Matté Trucco.

that will open on the roof of the track and which can be used as urban garden for zero-kilometer aromatic herbs. Or again, a green space that will tell the city's evolution. Sky Drive aims to be much more than a garden: a green-dedicated project showing the world of the New 500, the green interest of the FIAT brand and the new sustainable face of the subalpine capital. It's not all: on the fourth floor of the Pinacoteca Agnelli Casa 500 is planned, the museum dedicated to the history of the FIAT cult car between past, present and future.

The Sky Drive park (which will be accessible by the public) covers 27,000 m² including, in addition to green areas, pedestrian and vehicular paths intended exclusively for electric and hybrid vehicles in EV mode. Camerana motivates the project idea with 'nature that takes possession of industrial architecture' and with the fact that 'before Senator Agnelli decided to build the plant, there was a farmhouse', with reference to the villa of the counts Robilant, in ruins at the time of construction and definitively demolished by FIAT after the Second World War.

Overall, therefore, familiar themes of the archaeo-industrial heritage



Les usines « Fiat » à Turin avec l'autodrome sur le toit.

The plate from Le Corbusier's *Vers un architecture* dedicated to the Lingotto runway (2nd edition 1925).

project, such as naturalisation, reuse, or recovery of the roofs, are called into play in this affair. Legitimate themes in themselves, but which do not seem to be motivated by the rank of the object, the state of conservation or an analysis of the values of the Lingotto runway. Transformed into a roof-garden, it will be impossible to understand how people could race there and dream of future modernity, just as Corbu did in a Fiat car. The vast track of polished asphalt, in the colourful views of the project, becomes a small road (albeit an ecological one) between roof-gardens and cycle paths, complete with lay-bys.

There are principles, affirmed in the TICCIH Nizhny-Tagil Charter or in the Dublin Joint ICOMOS – TICCIH Principles, with which the intervention appears in strong contrast. There are evaluation criteria, and for each criterion specific degrees with which the industrial heritage manifests its own values. Here we are faced with the maximum degree of uniqueness of the industrial and architectural event, the maximum degree of rarity of the object that bears witness to it, the excellent condition of integrity of the work still perceptible, one of the main physical testimonies associated with the history of the economy, work and society of the twentieth century in Italy.

When Renzo Piano Building Workshop 'landed' the floating silhouettes of the Gianni and Marella Agnelli Art Gallery at the edge of the Lingotto runway, the 'Bubble', a completely transparent cantilevered meeting room set as a counterweight to a helicopter runway suspended in the void, a new balance was created that took nothing away from the previous meanings, achieving a new expressive synthesis.

Transforming the test runway of the Lingotto with a roof-garden turns the futuristic roof of FIAT into an ordinary rural street. Perhaps we need to courageously verify that there is still a lack of awareness of the values of the industrial heritage that is not overcome in architectural practice. Nobody, I hope, would permanently put creepers on Antonelli's Mole or rural flower boxes on the balustrades of Palazzo Madama in Piazza Castello, but on the Lingotto it seems normal. AIPAI-TICCIH Italy is obviously and cordially ready for a debate.



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

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

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The foundry hall from 1830/1845 with the old warehouse from ca. 1830 on the right and the factory hall from 1909 on the left. Photo: Florian Fichtner 2019.

GERMANY

HOW TO ASSESS A PLACE WHICH IS UNIQUE - THE SAYNER HÜTTE IRONWORKS

Florian Fichtner, Institut für Industriearchäologie, Wissenschafts- und Technikgeschichte (IWTG), TU Bergakademie Freiberg

For almost twenty years, the city of Bendorf/Rhine in Germany has been working on the development for subsequent use of the SaynerHütte heritage site as an industrial museum and event center. The history of this site includes more than 250 years of historical evolution. Today, it is internationally known for its impressive foundry hall. The designs of the almost entirely cast-iron factory building date back to the 1820s. The older eastern part of the hall has been standing since 1828-1830, the newer western part since 1844/1845. However, a still ongoing study seeks to understand if and exactly how the entire SaynerHütte heritage site differs from comparable sites. For this purpose, a comparative study of SaynerHütte is being made with other major ironworks in Europe.

Comparison criteria

The iron and steel industry has always been of fundamental technical and economic importance to modern industrial society. Numerous production facilities were built wherever the availability of raw materials or the proximity to markets made this possible. Accordingly,

many sites have been preserved as monuments. A central question is that of the historical significance of SaynerHütte and its preserved objects and their relative importance to comparable sites.

At first glance, it is striking that no site with a similarly constructed factory building has survived or is even known from history. This is where the always spontaneous impression of the uniqueness of the SaynerHütte comes from. At a second glance, however, numerous other aspects stand out that are much more difficult to evaluate in comparison. The number of possible comparison objects is also huge, making their selection difficult as well. If the period of comparison is set to the period of early industrialization, i.e. approximately between 1760 and 1860, and we only look at Europe, there are still numerous monuments, individual sites or entire landscapes that bear witness to the development of iron metallurgy. Further selection criteria are therefore necessary, and to determine these, the characteristic features of the sites must be defined. This requires a look at the respective historical significance and the preserved objects.



Inside the foundry hall with the iron slewing cranes mounted with ball bearings on the central columns and the blast furnace at the back. Photo: Florian Fichtner 2019.

Importance of Sayner Hütte

In 1769, the Archbishop and Elector of Trier Clemens Wenzeslaus of Saxony founded the ironworks as a state-owned enterprise. The unique foundry hall and other associated facilities and buildings date back to the Prussian era. The history of the early industrialization of the Prussian iron and steel industry was closely associated with the targeted establishment of model plants as early as the 18th century. However, state-owned enterprises existed in almost every European country both before and during industrialization. State-owned model plants mostly produced weapons or luxury goods. They were specifically established for the transfer of technology, knowledge and experience. These foundations were motivated by early industrial innovations in iron smelting, mechanical engineering and construction. Initially, these were developed and distributed mainly by private companies in Great Britain. Both the considerable costs and the enormous entrepreneurial risk of the desired innovation transfer, and the necessary testing, establishment and dissemination of these innovations in the countries of continental Europe, were a significant initial hurdle. A second hurdle was often the respective economic policies of the individual states. A third was the well-established and profitable traditional charcoal-fired and water powered iron smelting industry in many countries, which remained a key competitor well into the 19th century. Because of these obstacles, central innovations were often slow to spread in Europe. These included coke firing, steam engines, cylinder blowers, puddling furnaces, cupola furnaces, rolling mills, and the use of waste heat. The increased availability of

iron as a raw material then led to numerous innovations in mechanical engineering and building construction.

There was a direct and an indirect way to introduce innovations from another country into one's own (Banken 2005, p. 55). The indirect way meant that publications from other countries could be evaluated in relation to innovations. The direct way meant travelers specifically seeking to visit innovative sites abroad and, if possible, recruiting an expert for use in their own country. This was done in Prussia firstly through state-owned plants, secondly through the exchange of practical experience by travelers or transfers of technical officials and private technicians, thirdly through publications in technological journals and monographs, and fourthly through competitions and national and international exhibitions (Paulinyi 1997, p. 468). It was not uncommon for these four aspects to be linked together, as was the case with the SaynerHütte. With such a model plant, Prussia purposefully softened the hurdles for the private sector.

Comparative examples

There are four important sites or landscapes during the early industrialization of Europe which are currently on the UNESCO World Heritage List. Two locations represent Great Britain as the starting point of most of the innovations. The Ironbridge Gorge in England is certainly one of the best known and most significant sites. It represents, among other things, the innovative introductions of coke-fired blast furnaces and iron as a key building mate-

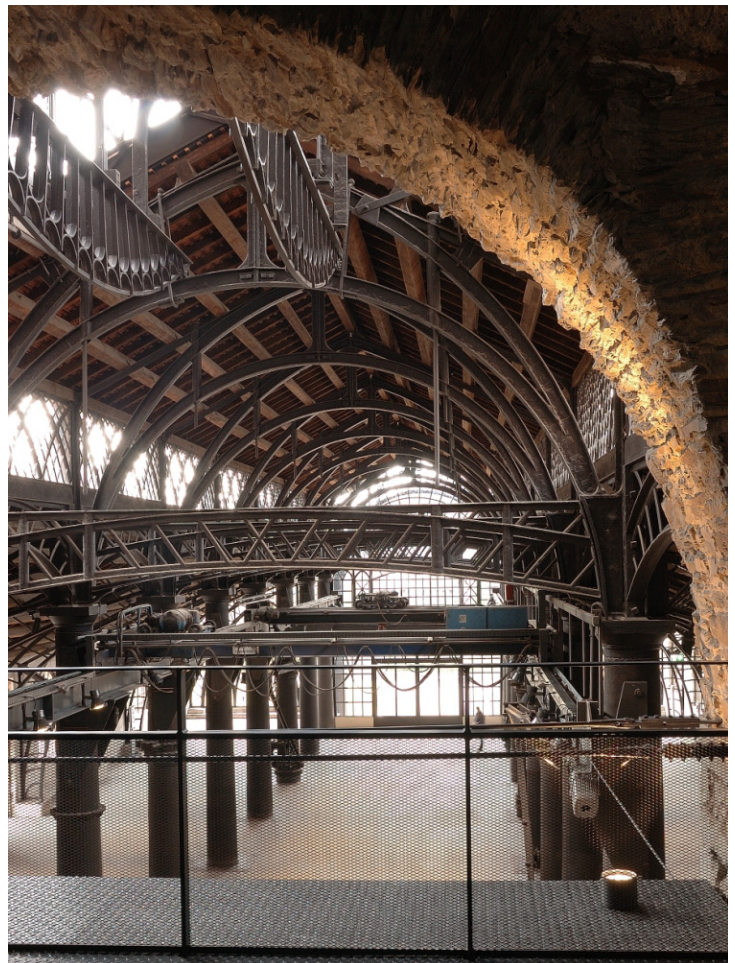
rial. Furthermore, just like the landscapes of the Iron Bridge Gorge, the industrial landscape of Blaenavon in Wales bears witness to the industrial development of a society mainly based on iron and coal processing. As an example of the significant Swedish iron production, the Engelsberg ironworks is inscribed on the World Heritage List. This site still bears authentic witness to the Swedish special path of the lack of introduction of coke firing. The UNESCO World Heritage Erzgebirge/Krušnohoří Mining Region also includes an ironworks site. Apart from various mining facilities, however, only the administration building of the former Erllahammer ironworks has been preserved here. On the UNESCO tentative list are the San Blas ironworks with its magnificent stone-built factory hall as well as remains of the coke blast furnaces from 1846, representing Spain's mining heritage, and the Radwerk IV ironworks, also from 1846, representing the Austrian Iron Trail with Erzberg and the old town of Steyr. The Austrian ironworks, like the Swedish one, was not converted to coke firing. In addition to these UNESCO-listed ironworks sites, there are many others in Europe.

Of central importance for the transfer of innovation in France is the town of Le Creusot. Here, as late as the 18th century, the targeted introduction of English innovations took place through state support. However, no objects from this early phase are preserved here. Probably the oldest production building was built by the the Schneider brothers' private company in 1849. They bought the ironworks in Le Creusot in the 1830s and developed it into both one of the largest and one of the most innovative ironworks in France.

A region that is not so well known but just as important for the intended comparison is the so-called old Polish industrial region. The state of Congress Poland, which was part of Russia, founded and operated a number of ironworks with the aim of introducing British innovations. Among the total of fourteen preserved industrial monuments in the area are the ruins of the Samsonów ironworks from 1818 to 1823 and the former rolling mill hall in SielciaWielka from the same period. In Samsonów, the stone ruins of the coke-fired blast furnaces and other buildings are preserved. The hall in SielciaWielka still contains an iron water wheel preserved in situ, in addition to the stone walls partly supported by cast-iron columns.

Conclusions

As this brief overview of our ongoing study shows, the Sayner Hütte must be understood as more than just the uniquely constructed foundry hall. The construction and maintenance of both the hall and the plant as a whole can only be understood if it is included in the Prussian state's promotion of industry. The SaynerHütte is an outstanding example of this development. The continuing comparison with other sites shows firstly that no other sites have been preserved that illustrates the transfer of innovation from England to continental Europe in such a complex way, and secondly that the Prussian promotion of industry through state-owned model plants sustainably lowered the hurdles to the transfer of innovation during early industrialization.



The foundry hall with the upper remains of the stone-made blast furnace house and iron fish-belly girders on the upper left.

Banken, Ralf (2005): *The diffusion of Coke Smelting and Puddling in Germany 1796-1860*; in: Chris Evans & Göran Ryden [ed.]: **The Industrial Revolution in Iron – The Impact of British Coal Technology in Nineteenth-Century Europe**; Aldershot/Burlington, 2005, p. 55-73.

Paulinyi, Akos (1997): *Die Umwälzung der Technik in der Industriellen Revolution zwischen 1750 und 1840*; in: Wolfgang König [ed.]: **Mechanisierung und Machinisierung 1600 bis 1840**; Berlin, 1997, (Propyläen-Technikgeschichte, Vol. 3).

USA

THE RAILROAD GRIP BAG AND ITS ROVING LEGACY

Z P Liollo

I'll pack my things in a grip
 Take me a long ocean trip
 Out on a great big steam ship
 She'll never see her daddy
 No mo'- no mo'.

—Lyrical excerpt from 'Never No Mo' Blues' (1928) by
 Jimmie 'The Singing Brakeman' Rodgers

For railroaders and roamers, few possessions on the road offer more comfort than the compact, top-handled, grip bag. The bag is defined by its ability to be carried by only one hand. Its construction is not limited to a specific material, and it has been made out of everything from canvas and leather to steel. Some were built with a rigid wooden frame, similar to a small suitcase. Often purchased out of pocket, they were as much a part of the workmen's kits as overalls and moc toe boots. These grips were an expression of individualism, nomadism and self-purchased pride, just like a fine timepiece. The story of the grip bag and its place as the ultimate blue-collar pack begins on the rails.

Travelling bags were not a new concept in the 19th century. Indeed, the term 'grip sack' existed as far back as the earliest decades of the 1800s (prior to 'grip bag'). One archaic definition points to a 'gripsack' not as a bag, but as an instrument. They were described as small trumpets. In terms of carrying one's personal effects, carpet bags, linen travel bags, homemade knapsacks and valises all existed before the late-19th century. Depending on the material, the aforementioned terms may have been used interchangeably with 'grip sack' especially 'carpet bag.'

Arrival of the Iron Horse

After the American Civil War, the United States was reunited on the map by a railroad construction boom. Between 1871 and 1900, 140,000 miles (225,308 km) were added to the nation's network. Prior to this, 45,000 miles (72,421 km) of track existed in total. Accessibility to the western frontiers brought miners, settlers, and corporate interests from across the world. Industries flourished with the newfound shipping capabilities. Ease also led to romanticization for prospective travelers. Relative comfort, style, and rugged conquest took center stage in the public's mind when it came to adventuring. Mass perspective also shaped the image of the railroaders themselves. They became ingrained in American culture.



A railroad conductor preparing to board his train in Chicago, 1942. Image via Jack Delano.

The desire to travel lightly thus increased dramatically after 1870. Rovers adopted the grip bag because of the convenience. Likewise, train crews packed their comforts and necessities in a similar fashion. This piece of kit became an extension of individual comfort while on the clock, with a layer of privacy. The *Railroad Telegrapher* (1904) illustrates this. The union publication humorously noted, 'Bros. Milligan and Bostwick still make their usual Saturday night [train] trips to New York. Sometimes the grip sacks have a suspicious bulge.' One can only imagine what a company manager might've found by peaking inside.

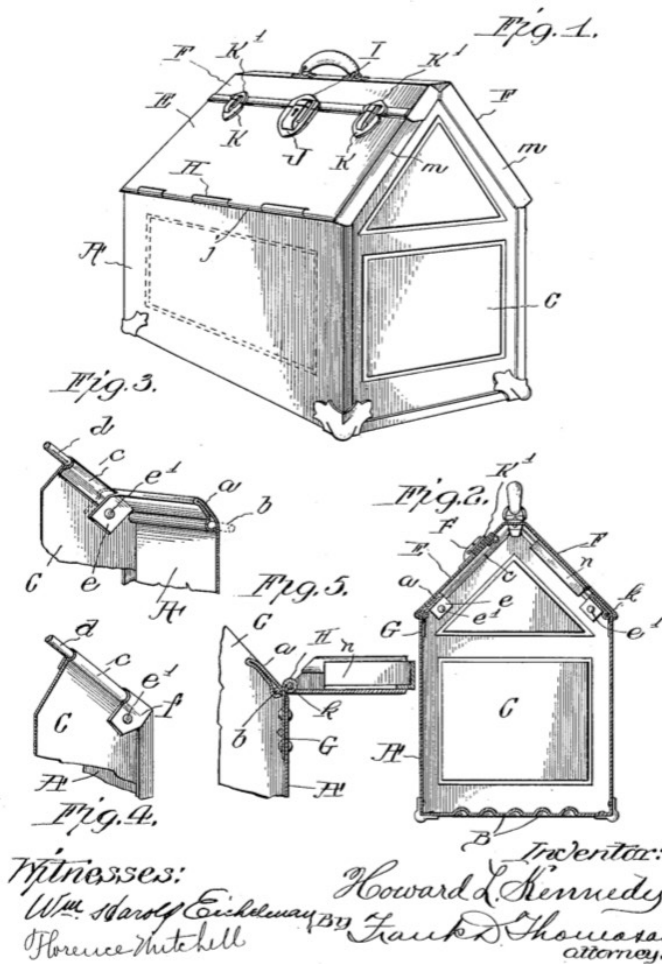
For passengers, luggage was sometimes a source of tension. Much to some ticket holders' chagrin, 'A railroad company may take charge of a passenger's baggage, and put it on and off its train in its own way, even to his grip sack if it should see fit...' This decision, recorded by the New York Court of Appeals in 1882, implied the grip was a traveler's most basic unit of luggage, and outlined the company's ability to move it at will. This opinion may sound familiar to the frequent flier of today and how airlines view carry-on luggage.

The grip sack or bag, in the most modern sense, seems to date from the late 19th century. Several publications have made a direct railroad connection to it, including G.L. Marshall's *O'er Rail and Cross-ties with Gripsack: A Compilation on the Commercial Traveler* (1891). Another familiar guide among many western travelers, Crofutt's *Grip-Sack Guide of Colorado*, also holds it in a special regard. Not much is known about the original author, George Crofutt. A brief biography on the second page noted his background as a miner, a stagecoach company employee, and a railroad man.

H. L. KENNEDY.
TRAVELER'S BAG OR GRIP.
APPLICATION FILED JUNE 8, 1914.

1,143,711.

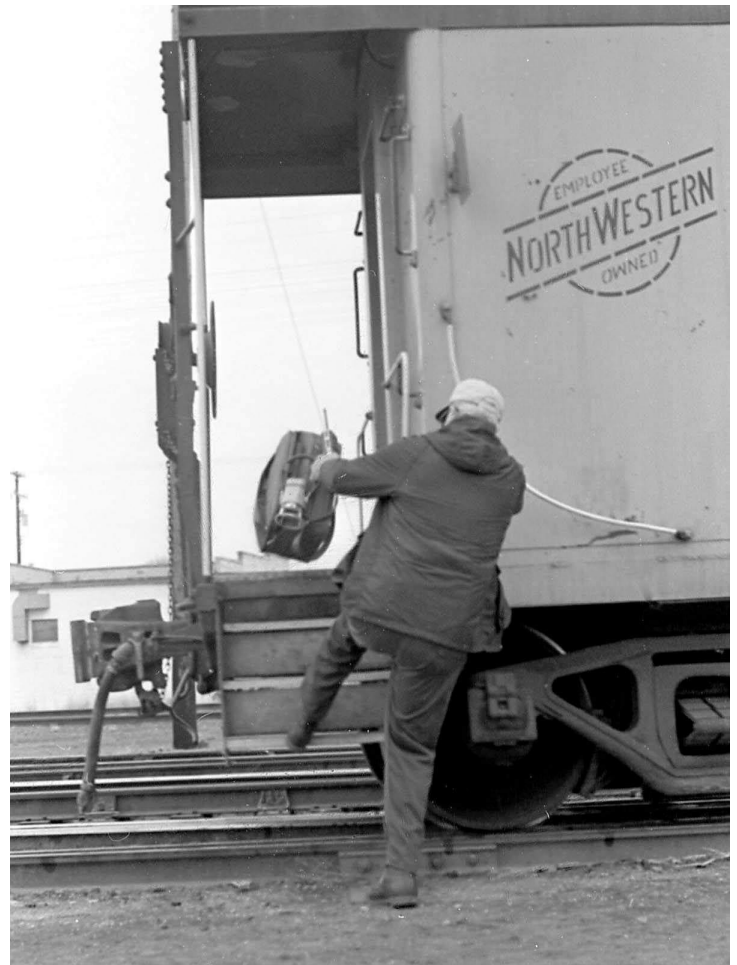
Patented June 22, 1915.



The patent drawings for Howard L. Kennedy's steel grip. Image via USPTO.

Wherever his familiarity with the grip originated, his writing enabled exploration while living out of the simple bag.

As with their preference for durable work clothing, railroaders also valued the relative indestructibility of their equipment. Locomotive engineer Howard L. Kennedy would do for grip bags that which Levi Strauss did for workwear. Around 1899, Kennedy created an all-steel grip which he dubbed the 'Kennedy Kit.' A patent was issued for it in 1915. It was, '...an entirely new departure in grips and carrying bags for engineers, firemen, signalmen, machine shopmen, and others in the many branches of railroad work who use grips.' His innovation was so revolutionary that it would go on to spawn a new industry altogether. In addition to steel, aluminum grips also became a common sight on the railroads. Known for their extreme ruggedness, the metal grips soon morphed into the toolboxes that are so ubiquitous among machinists and mechanics today. Over a century later, Kennedy Manufacturing (established 1911) is still producing exceptional cabinets and toolboxes in Van Wert, Ohio.



A Nebraska trainman hopping aboard a moving caboose in the 1970s, grip bag in hand. Image via Gary Hosek.

Still Holding On

The grip holds the necessary items for both long trips and short excursions. A recent conversation with Benjamin Lytle, Lennox Purinton, Angela Stevens and Con Trumbull of the Nevada Northern Railway afforded some modern railroading perspective. Their bags' contents may include battery lanterns, flashlights, first aid, food, manuals and rulebooks, timetables, tools and other personal items to occupy their down time. One commonality that I noticed between their packing lists is the need for redundancy. This means having a spare flashlight, just in case the first light fails. Multiple pens and pencils allow for the all-important paperwork. Chris Nally, of the Arkansas & Missouri Railroad, also noted that company policy requires some basic documents to be carried with every trainman. An example is a weighty air brake and train handling book. While the exact bag used is the individual's preference, it's evident that having a grip is crucial for routine operations and emergencies.

Outside of the transportation industry, similar iterations are sometimes called 'mason's bags' or simply 'tool bags.' From lawyers packing a bag with crisp contracts and files, to hobos riding the wind with their belongings in hand, the grip symbolizes mobility. In the 1910s

and 20s, ‘...cowboys looking for work behind the camera would gather outside of the [movie] studios. These workers from behind the scenes came to be known by the name of the long-handled bags they all had’ explained veteran motion picture camera assistant and operator David Livesey. ‘[That] was the birth of the peculiar name for a craft, the movie grips.’ This proud job title endures to this day.

Like wristwatches, the grip became an accessory that spans society’s reach. Matched with denim overalls and leather footwear, a rugged and travel ready look is achieved. No matter which style you carry, the grip bag’s hard traveling legacy will forever be on the railroad.



Finca Argovia. Photo: Giesemann family collection.

MEXICO

PRE-FABRICATED COFFEE PLANTATION HOUSES

Ana J. Mejía Robledo, Postdoctoral researcher at the Latin America Institute of the Free University of Berlin, Fellow of the Alexander von Humboldt Foundation

Prefabricated buildings were introduced into the Mexican Socousco, located in the southeastern part of the country, by way of consolidated commercial routes for exporting coffee. The steamships of the Pacific Mail Steamship Company transported the prefabricated parts from San Francisco to the port of San Benito in

the state of Chiapas. Their arrival coincided with the prefabrication boom at the end of the 19th century in the United States, when the railway routes streamlined the shipments and clients received their purchases at their doorsteps. Thanks to the abundant supply of lumber, sawmills and technological developments that accelerated the



The former Finca Santo Domingo, built in 1920.

process of production, prefabrication was very popular and buildings were sold en masse, with interchangeable parts and without the need of specific knowledge for their assembly.

Buyers of the prefabricated houses were coffee planters, European family enterprises that migrated at the final part of the 19th century to the region to cultivate and process coffee destined for international markets. As they did not have time to look for local timber and skilled carpenters to build houses for the coffee plantations, they decided to buy homes through catalogues and put all their efforts into producing the coffee beans. Even though at the present time we may be surprised to discover a prefabricated building in these latitudes, it presented no novelty for the owners of the coffee plantations due to their knowledge of the advantages of prefabrication in the context of colonial settlements.

In the nucleus of the plantation, which is the inhabited space, houses and other components were ordered in a hierarchical manner which permitted a functional development of the work processes. One part of the space was occupied by the homes of the plantation owners, their family and the administrators. This singular zone stands out from the rest because it is where the prefabricated buildings, with their own characteristics and architectural typologies, are located.

They are of a light structure of redwood, with high roofing covered over with red zinc panels and corridors to help fight against the heat and the constant humidity of the tropical climate. The richness of its type is difficult to classify because of the distinct habitational necessities. Its use does not go beyond the decade of the 1920s,

when the Great Depression carried away many companies, and the costs of materials and quality were reduced. From the next decade onwards, the owners of the plantations used local lumber and materials such as reinforced concrete.

They are commonly known as Californian houses, in relation to the type of bungalow that was fabricated on the West Coast of the United States and the place of their unloading. Examples of the prefabrication are scarce and there is rarely any documentation that accompanies the constructions. One singular example that has served as a reference to orient the studies is the Casa Grande (Main House), the principal house of the owner of the Argovia plantation. Fabricated in 1905, model 33 of a sectional house or Portland bungalow conserves a copy of the original blueprints sent by the Readimade Building Company, a small company located in Larrabee and Tillamook Sts. Portland, Oregon, although with branch offices in Los Angeles and Oakland, California.

Of the remaining constructions, we only have clues as to their origins thanks to the dates that occasionally appear about their construction. This lack of knowledge has been evidenced by the reconversion of the coffee plantations into spaces destined for tourism and leisure. In 2000, the Project Rutadel Café (Route of Coffee) was put into operation, and which seeks to revitalize the zone and open the heart of a plantation for its interest and enjoyment. The prefabricated houses have been left out of the tours because of the difficulty in obtaining primary sources of information, and join the scant concern for the conservation of the constructions, even making their permanence more difficult.

The agro-industry of coffee and migration brought about a series of prefabricated houses that now form a part of the landscape of that zone of Mexico. Although the houses formed part of the higher economic stratum, from the hierarchical world of coffee, with time its use has extended itself into the width and length of the region and it is frequent to find homes that imitate the prefabricated style

and model. The homes form part of the history of the region and reflect changes in the prefabricated architecture destined for family use at the beginning of the 20th century. Its knowledge and valorization helps us understand the historic development of the area and the conditions that the men and women lived in the area during the last part of the previous century.

EUROPE

THE STAKEHOLDERS OF INDUSTRIAL HERITAGE REUSE

Dr. Dora Chatzi Rodopoulou, Architect Eng. TUDelft - NTUA

The shift in the conservation field from objective to new, more subjective ways of thinking, and the integration of heritage conservation to spatial planning, severely shook the pool of stakeholders involved in the field (see Fig. 1 for who these are). A wide scholarly base describes an important transition, pertaining to the infiltration of a large number of stakeholders in the expert's zone of professional conservators. From the 1990s, the role of experts was largely doubted while their power of controlling conservation lost its general acceptance. Within a short period of time, the off-limits expert's zone became highly populated by various stakeholders including property owners, commercial developers, the market, local communities and many more. Progressively, heritage authorities saw their power waning while other actors surfaced as powerful decision-makers.

This continuous transition has fuelled discussions across the heritage spectrum around central questions about the action and influence of stakeholders. Topical relevant questions that have risen in respect to industrial heritage and its handling are: Who participates in industrial heritage reuse nowadays? Who influences the practice and how? and Who is and who should be in control of the practice?

In what follows, an attempt to answer those important questions is made, based on the research findings of my PhD dissertation **Control Shift. European Industrial Heritage Reuse in Review**.

An exhaustive list of industrial heritage reuse stakeholders is not easy to compile, as they differ from project to project and from country to country. The factors that dictate this differentiation are the attributes of each site such as its scale, complexity, cultural significance as well as its location and the particular conditions that influence it, such as policy, political, socio-cultural and financial conditions. Is the action and the power balance of stakeholders equivalent in each European country? According to the findings of my research, that is not the case. The care and management of industrial heritage is championed by different stakeholder groups in each country, the voluntary sector in the UK, the private sector

in the Netherlands, the public sector in Greece and the regional authorities in Spain.

In order to understand the current roles and future perspectives of industrial heritage reuse stakeholders it is important to highlight their key achievements and the main challenges they currently face. The achievements relate to the elevated awareness and appreciation of industrial heritage as well as to the enhanced skills and the experience of stakeholders (such as heritage agency officers, architects, developers etc.) in industrial heritage reuse projects in comparison to the early days of this practice. The challenges regard the clash of agendas between stakeholders, the repercussions of their shifting roles, the high levels of bureaucracy, the financial pressure caused by the crisis of the late 2000s and the aging of volunteers. It is evident that since the 1970s, stakeholders' skills developed, their involvement changed while their power balance shifted.

In order to clarify the level of the stakeholders' influence, a new tripartite categorisation was proposed in the research into the main decision-makers, direct influencers and indirect influencers, according to their level of involvement in the process (Table 01).

According to Viñas (2005, 154) 'People's right to impose their views is proportional to their involvement with the object.' Based on this, the interpretation of the Table 1 suggests that the actors in control of industrial heritage reuse are the main decision-makers. The power of direct influencers is moderate while indirect influencers exercise hardly any control on the projects in question.

This interpretation is misleading, as it does not take into account the fluctuations of their involvement, which differs greatly during the different stages of the process. As a result, it can be suggested that all parties play an indispensable role in the reuse process. The action of one is not irrelevant to the action of the others and no contribution is meaningless. On the contrary, stakeholders' actions are interlinked and can be seen as a vulnerable construct. The foundation is usually laid by the civic society and the public institutional

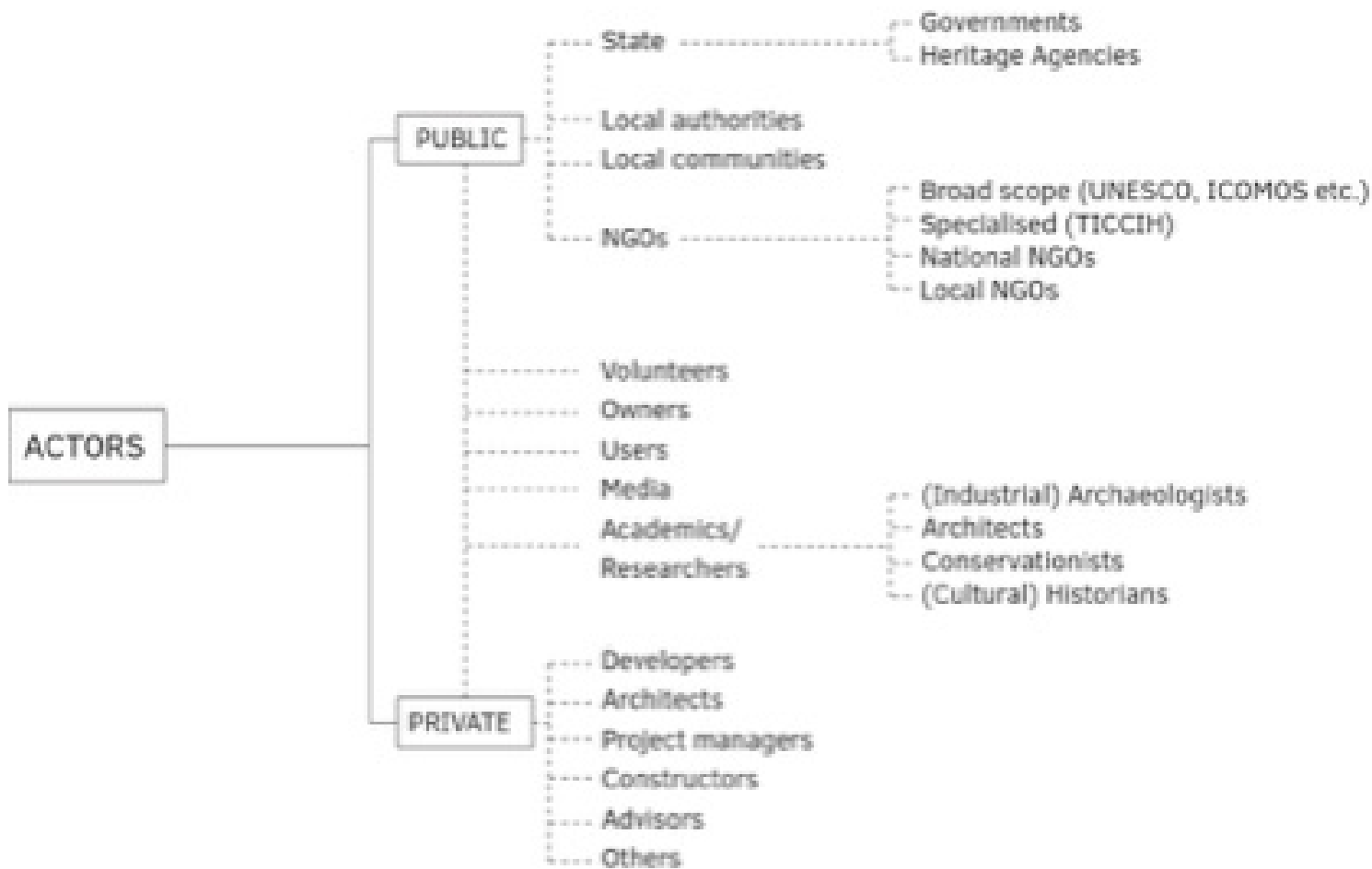


Fig. 1. A map of the main industrial heritage reuse stakeholders in Europe.

parties, the fabric is constructed mainly by specialists while the operation is left to users, volunteers and the local community under conditions.

A review of twenty case studies of best practice, located in four countries across Europe, resulted in important lessons regarding the action of stakeholders in reuse. A number of guidelines are presented, informing future practice and offering a useful springboard for the stakeholders.

Control Shift: Guidelines for an enhanced Industrial heritage reuse practice

- **The action of the party that initiates the project is highly important.** Initiators, who may often not take part in the decision-making, contribute decisively to the formation of pre-conditions that enable or obstruct the creation of the project. These include the promotion of awareness, listing of heritage assets, and pressure on decision-makers to avoid the loss of threatened heritage assets. Hesitation or indifference from initiators can create a climate that hinders successive developments.

- **Interdisciplinarity is crucial**, helping to determine the right balance between preservation, change, financial, social and functionality variables.
- **Continuous training and familiarity with the particularities of industrial heritage** shape the approach of the stakeholders towards the historic site and positively influence their cooperation.
- **The attitude of the decision-makers and their drive is decisive.** Without a positive attitude and convergent drives, the current challenges are likely to lead prospective projects to problems or failure.
- **The coordination of a reuse project influences the action of the stakeholders' team and it is highly important.** A devoted coordinator can reconcile opposing views or contrasting needs, adjust the project when needed without harming its identity and therefore keep it afloat when difficulties arise during the process. A proper coordinator is someone with a can-do attitude and great social skills, who understands the particularities of the project and makes sure all views are heard.


High involvement  Low involvement		Heritage Agency	Local authority	Local community	NGO	Volunteers	Architect	Developer	Owner	User	Funder
	Main decision-makers									When involved in the process	
	Direct influencers	In listed sites				If implicated in the project				When coming after delivery	
	Indirect influencers	In unlisted sites				As advocates					

Table 1. Categorisation of industrial heritage actors based on their involvement in the project. This is broad and can be applied to different national contexts with small adjustments.

- **The social underpinning of reuse projects and the engagement of the local community are essential.** Lack of those can render them vulnerable in times of crisis or not durable after delivery.
- **Determination and tenacity of the decision-makers is important.** Surprises and unforeseen difficulties are in the DNA of industrial heritage projects. Within a climate of financial instability and great bureaucracy, the attempt to convert complex and extensive sites might seem utopic.
- **A good collaboration and supplementary role between stakeholders is crucial.** That involves a solid coordination, good communication, firm contracts between stakeholders involved and mutual understanding between key stakeholders.

In order to ensure the last points three conditions are essential. Stakeholders need to be willing to hand the controls to others when issues arise that are irrelevant to the merits of their expertise or interest. Specialists need to be willing to share their expertise to the rest of their team. And thirdly, stakeholders need to be able to understand the full scope of the project, leaving their area of familiarity. For example, developers and architects should start recognising the significance of cultural heritage values, the heritage sector should start to think more commercially, permit granting authorities should be more practical and owners more flexible in regard to cost estimations and timelines.

Key personalities can keep the project afloat. Securing all the above conditions is rather unlikely. Current challenges seem to aggravate the perspectives for reuse. When the project starts suffering critical setbacks, key personalities are essential for keeping the project afloat. Driven by vision, enthusiasm and passion they are the ones, who despite the difficulties, will not get discouraged nor take ‘no’ for an answer. They can essentially be described as the motors of the reuse.

To sum up, it is argued that a positive stakeholders’ influence depends on three key characteristics. The first one is skills, acquired with training and accumulation of experience through the involvement in projects of industrial heritage reuse. Skills alone however are not enough for bring a project to fruition. The second characteristic relates to particular traits of the stakeholders (determination, tenacity, passion, enthusiasm etc.). Finally, involves harmonious relationships between stakeholders (interdisciplinarity and collaboration) are beneficial.

Doctoral research conducted between 2015 and 2020 in the Heritage & Architecture group, AE+T of TUDelft and the Urban Environment Laboratory, School of Architecture of the National Technical University of Athens.

Viñas, S. M. 2005. Contemporary Theory of Conservation, Oxford: Elsevier



Art works at the Akkats hydropower facility as seen from the passing driver's perspective.

SWEDEN

PERSPECTIVES AND MEMORY MAKING IN HYDROPOWER COMMUNITIES

Felicia Söderqvist, Luleå University of Technology Department of History

This article presents a PhD project on the effects of hydropower development on local communities in Sweden. It is part of a larger research investment dealing with the consequences of natural resources extraction for people and arctic environments.

Industrial development has left its mark in many countries and has been a considerable part in the shaping of local communities. In Sweden, hydropower development was a major part of the strategy to ensure national energy access throughout the 20th century and has as a result become a central aspect of the Swedish river landscapes and their communities. The northern half of the country features more large-scale rivers compared to the south, and major parts of this area is located on land featuring indigenous groups, such as Sápmi, the land of the indigenous Sámi populations. Contexts of hydropower development have differed, depending on which part of the country one is looking at. Today, in a time when hydropower facilities are managed, seen, and visited in relation to local or national cultural and industrial heritages, there re-

mains a lack of knowledge as to how these differences impact the view of the facilities as heritages, and major parts of the societal effects of Swedish hydropower development remains unexplored.

In Sweden there remains little research on the effects that these major hydropower facilities have had on the societies where they were built, and research has commonly focused on a few major cases such as the Olidan and Porjus. In-depth comparative perspectives of different parts of the country also remain largely unseen. The cases that have been decided upon in this project are Akkats and Laholm hydropower facilities, located in different parts of the country, were built during different phases and are both characterised by their contextual cultural environments.

To combat the pressing demands for energy at the end of the 19th century, in Sweden it was decided that this situation should in part be mitigated through hydropower development. The result was a number of large-scale hydropower facilities, starting with Olidan



The river downstream of the Harsprånget hydropower facility. A common consequence of hydropower development is dried-up rivers.

hydropower station in Trollhättan (1910), as well as the formation of the state-owned power company Vattenfall as a means to manage power production on behalf of the state. The state, private companies and municipalities took the initiative to develop rivers as well. Hydropower development was closely linked with the electrification of the railroad, and while it was initially more challenging to undertake major development projects in the northern half of the country, partly due to larger distances, harsh weather conditions and difficult terrain, improvements in technology and demands to make it increasingly viable and desirable to transport power also from more inaccessible places. The 1950s and the 1960s are known as a major epoch in Swedish hydropower development, where major parts of the more northward rivers were developed.

The overall development period lasted well into the 1970s and meant that landscapes and communities went through significant changes. Rivers, ecosystems, economy and populations were all significantly impacted as hydropower production became a cornerstone of the Swedish energy system, as it remains today. Large hydropower facilities have become major aspects defining societies and their local history and have as such also become landmarks and places of industrial heritages. The local tourist industry, including hydropower companies, local interest groups and the municipal authorities, has taken opportunities to market these places for visitors. Hydropower proponents such as hydropower companies are in part stewarding these facilities and offer tours for visitors. In Sweden and other countries, hydropower proponents also steward features of the landscape and the community in which the facility and production is located. One such activity is the breeding of species of fish (commonly salmon) to be released into the rivers in order to compensate for the impact of hydropower installations on the marine ecosystems and fish populations.

Laholm hydropower facility is located outside of the town of Laholm on the west coast. It was built in the early 1930s by the private and

municipal hydropower company Sydkraft and was part of a broader vision to develop and integrate the entirety of the Lagan river system. The facility was built in an area featuring medieval castle ruins, and much effort was spent on customizing the buildings to fit into the historical environment, resulting in a 'templelike' structure. The facility is at times referred to as the temple of hydropower in Lagan river and is as such singled out as a local and regional cultural marker.

Akkats was instead built during the late 1960s and early '70s at the end of the great hydropower development epoch. The facility is located outside of Jokkmokk in the north and was part of Vattenfall's plan to develop Lilla Lule river, which is part of the Lule river system. Hydropower in these areas was built largely on indigenous territories, often in areas where reindeer herding and other livelihoods and cultural practices have been carried out. Hydropower made it significantly more difficult to continue these practices. In early 2000 large artworks adorning the facility made by famous Sámi and Sámi inspired artists, and agreed to by Vattenfall, depicting traditional Sámi symbols and motifs were inaugurated. This was not entirely popular. Some saw this as beautiful and as protecting the land, others as if their cultural motifs were now adorning a symbol of Swedish colonial exploitation which had been destroying so much of their culture already. As such this facility remains today a visual representation of parts of the political and cultural heritage climate in this part of the country.

Both of these facilities are today displaying industrial as well as other local cultural heritages. Both have also had a history of being examples of hydropower and the local context shown outwards. Laholm has continued to be the subject of guided activities, and in itself Akkats is now designed and marketed to be something for visitors to behold. The role that these facilities have had for their surrounding communities, their effects on society and on the physical and mental landscape, and how the different societal, cultural and political landscapes factors in are key aspects which this project aims to explore.



The current condition of the Grande Silos Granario, Gravina.

ITALY

CONCRETE GRAIN SILOS AT RISK FROM 'FACADISM'

Edoardo Currà, President of AIPAI, and Antonio Monte, Vice President of AIPAI, TICCIH ITALIA

An important historical document, the Grande Silos Granario in Puglia, southern Italy, is in danger of being demolished, or perhaps worse, of being constructively emptied! The Silos Granario is an important memory of the well-known Battle of Grain launched in 1925 to support national wheat production and a symbol of the functional architecture of the 1930s.

A building permit issued by the municipality of Gravina authorised a sterile façadism to the entire factory, limiting conservation to only the structures of the elevations and allowing internal demolition. Moreover, the intended use is ill-suited to the structural typology of a silo, having above all decided to build a condominium of traditional

flats, without even going through the post-industrial interpretation of the loft.

The affair is incredible, considering that it takes place in Apulia where there is a specific Regional Law for Industrial Heritage that AIPAI helped to draft: the Law n° 1 of 2015. The city of Gravina in Puglia, 150 km east of Naples, could lose a valuable testimony to the social, economic, and industrial development not only of the city, but of the entire region. This loss would be aggravated by the fact that the silo is the only one left intact in southern Italy.

AIPAI - TICCIH Italia supports a daily battle for the Silos, as for



The Grande Silos when first opened in 1938.

many assets, and has done so through two direct actions: on 25 October 2019, AIPAI sent to the Soprintendenza Archeologia, Belle Arti e Paesaggio for the Metropolitan City of Bari, a Request for declaration of cultural interest, on the basis of the construction characteristics and the archaeo-industrial peculiarities of the silo, in order to avoid the demolition of the structure and start a process of protection of the asset. Subsequently, on 11 April 2021, since the partial demolition project had in any case been authorised, AIPAI activated a more intense action asking that the main prescriptions, that are incompatible with the permission to demolish the interiors of the building, be respected: preserving in the executive project the peculiar constructive-architectural features; respecting the prescriptions of L.R. n. 1/2015 on the industrial heritage; preserving machines and equipment (circular distributor group for filling the cells, the distributor belts, etc.) in order to safeguard the components linked to the conservation of the memory of the places.

Despite its state of neglect and decay for many years, the silos were characterised by both a precise architectural language and

technical-constructive innovations. The use of reinforced concrete, the Monnier and Hennebique patents, influenced the engineers and architects who designed and built the silos between 1932 and 1940. It is moreover a structure rich in history, architecture, and memory: an emblem of the rural economy of the Murgia area as it is an integral part of the agricultural landscape of Gravina and the surrounding area.

The 'Battle of Grain' imposed the need to have large buildings constructed on Italian territory to store grain. Beginning with the notorious Law of 10 July 1932, which encouraged the construction of silos and granaries, both imposing mechanised structures and modest installations were designed and built. Technologically advanced installations were built in the centres of major wheat production and in some large cities, including Venice, Rome, Piacenza, and Foggia. Between 1932 and 1939, seven hundred and sixty installations were built for the storage of wheat.

The 'Grande Silos Granario' of Foggia was inaugurated in 1937 and



One of the rotating distributor units for filling cells in the Silos, with the characteristic Hennebique reinforced concrete structure.

was considered one of the largest grain silos in Europe, capable of storing up to 45,000 tonnes. Gravina was known as the granary of Apulia and the 'grandiose building' was built to replace the traditional underground storage, through 'Pianidelle fosse' (plains of pits) distributed in numerous centres of Terra di Capitanata and of the Tavoliere. During the Second World War, the silo was destroyed in its upper part and later partially rebuilt.

The 'Società Anonima Magazzini Generali dell'Italia Meridionale ed Insulare', set up by the Banco di Napoli, promoted the construction of two silos in Apulia to store the large quantities of Apulian grain coming from the countryside in the provinces of Foggia, Bari, Matera, Stigliano and Taranto. The one in Foggia, mentioned above, was completed at the end of 1936, while the one in Gravina was built between 1932 and 1934 and was one of the first in Italy to be built after the 1932 law.

Obviously built near the existing railway station, the silos stored 6,000 tons of wheat from local production and from nearby Basilicata. The imposing architectural work is 26 metres high and consists of two hundred and twenty-two cells which were directly filled with wheat through four hoppers and distribution conveyors. The

perfect integration between the silo structures and the machinery makes the whole object a machine-building in which it is impossible to separate the structural components of the silos and the reinforced concrete hoppers from the mechanical pathways of the wheat in the sifting, storing and bagging process.

The structure was equipped with an ultra-modern mechanical system supplied by the well-known OMI-Officine Meccaniche Italiane of Reggio Emilia, and was driven by closed, independent, externally ventilated electric motors. As far as we know today, it is the only one of the many silos built in Italy that is still complete with machinery (see, for example, the one in [Foggia](#), which was completely destroyed). Today, original machinery can still be seen inside, including the circular distributor unit for filling the cells, the distributor belts and other machines that deserve to be recovered and preserved.

The case of the Silos in Gravina is a typical example of how a building is one with its industrial function. Recovery can therefore only take place through a design culture interested in exploring these values, which are also a guide for the identification of a compatible use.



The photograph shows the dynamic of the railway system and also the 'dilemma' of railway heritage. Around 1920, the steel Day river viaduct in Switzerland of 1870 on the left is being converted to concrete with a facing in natural stone, on the right, with steam rail which will be replaced by electrification. In 2010, the 'third generation' adaption from this bridge saw the restoration of the masonry and enlargement of the railway platform. Photo: SBB Historic

SWITZERLAND

CONFERENCE ON THE PRESERVATION OF RAILWAY MONUMENTS, ZURICH, 25-26 NOVEMBER 2021

Toni Häfliger, TICCIH Swiss Coordinator

As one of the most revolutionary inventions of the 19th century, the railway shaped the world perhaps more than any other technical achievement. It revolutionised movement in space across the borders and was a key driver of industrialisation. Closely interwoven with technical progress at any time period and constantly changing economic, social and cultural processes, it still drives change today and is equally subject to it. This dynamic of change raises a wide range of questions in the context of national and international railway heritage preservation and becomes of high relevance in 2021 in the European Year of Rail.

In order to highlight and discuss the challenges and opportunities of this strong branch of heritage preservation, the heritage preservation department of the Swiss Federal Railways SBB is initiating an international conference on the occasion of its 20th anniversary. Partners are the Chair of Structural Heritage and Monument Preservation of ETH Zurich, the Swiss Federal Office of Culture and ICOMOS Suisse. The Foundation 'SBB Historic', which was also founded 20 years ago, is represented with a conference contribution.

The focus is on questions concerning the preservation of railway monuments in an international comparison, the science-based recordings of the inventory or the contribution of monument preservation to the sustainability of the railway system and the historical heritage. Also of interest is the question of

what are the specific requirements for railways classified as World Heritage Sites.

Covid: Depending on the course of the pandemic, the conference may be postponed.



Construction of the Ovoid Sewer Aqueduct over the Barwon River; Breakwater; c.1915, photo; J M B, [Geelong Heritage Centre Archives](#), Australia GRS 2009/419

AUSTRALIA

BARWON RIVER AQUEDUCT

Miles Oglethorpe, Head of Industrial Heritage, Historic Environment Scotland

Elsewhere in this issue I have mentioned meeting up digitally with TICCIH and ICOMOS Australia friends and colleagues. This was especially valuable because, as some readers will recall, the ICOMOS 2020 General Assembly was supposed to have been hosted in Sydney, but fell victim to the CoVid19 pandemic. TICCIH Australia was

involved and I was due to make my first visit down under because there was a strong industrial heritage interest.

So it was good to be able to have a virtual meeting and catch up on topics of mutual interest. It was also a big relief to know that Sydney



The **Forth Bridge**, Scotland, south approach viaduct girder-span and end pier in construction, the central towers of the three piers are at full height and the double cantilevers under construction, 10 May 1888. Crown copyright. National Records of Scotland, BR/FOR/4/34/299

will now host the ICOMOS General Assembly in 2023 instead. I hesitate to say that I intend to be there because last year was not my first attempt to reach Australia. Back in 2010, I and many others failed to reach Broken Hill in New South Wales because of vast ash cloud from an Icelandic volcanic eruption (I still can't spell the name of the volcano – Eyjafjallajökull).

During our meeting, I was alerted to the existence of some extraordinary reinforced concrete structures in Victoria. I subsequently contacted the magnificent Geelong Heritage Centre who shared with me a wealth of fascinating information.

Needless to say, my attention had initially been grabbed by the amazing Barwon River Ovoid Sewer Aqueduct, not only because of its remarkable resemblance to a famous engineering icon in Scotland, but also because of its construction. Described in a 1994 issue of *Engineering Heritage Australia* as 'Geelong's Parthenon', the aqueduct dates from 1915 and comprises 14 double-cantilever reinforced concrete towers carrying a sewer pipe over the Barwon River for over 800 metres. Designed by architect Edward Giles Stone and inspired by the Forth Bridge in Scotland, it was constructed using the Considère reinforced concrete system. The Geelong Heritage Centre has some outstanding photographs of the aqueduct under construction which are very reminiscent of the construction scenes on the banks of the Firth of Forth thirty years earlier.

The sad news is that this extraordinary structure has been in decline for many years, despite campaigns to save it. Currently, there

is a proposal to take down four of the 14 towers. It is claimed that the costs of conservation are too great to save the aqueduct, which is disused and considered unsafe.

Those of you who know your concrete may be familiar with the outstanding work of Melbourne-based architectural and engineering historian, Miles Lewis. He cites the sad fate of what was known as the 'Bow Truss Building' in Geelong (the Dennys Lascelles Wool Stores), which was also designed by Stone. The Geelong Heritage Centre has collected an impressive record both of the building, and of the passionate campaign to save it in the 1980s. Despite being given statutory protection and even put forward as a candidate for inscription onto UNESCO's World Heritage list, it was demolished in 1990 amid great controversy.

So, it is especially sad to hear that almost a third of the Barwon River aqueduct is to be sacrificed in a process that raises questions as to what eventually will happen to the remaining ten spans. Clearly, just as many of us are clamouring to address the serious conservation challenges that face large mild-steel engineering structures like the Forth Bridge and the Giant Cranes on the River Clyde, there are perhaps even more severe issues facing the conservation of reinforced concrete. Thanks to the leadership of Dr Alison Wain (also in Australia) via Big Stuff, some of us have recently been exchanging ideas about de-watering solutions for steel structures with EwaWentland, who is based in Berlin. Although focused on steel, there may be a potential application to reinforced concrete too, given that the steel is usually the guilty party here also.



General view of the Fábrica São Pedro in 1911. Photoalbum FAMA Museu

BRAZIL

RESTITUTION OF HISTORIC MORTAR AND COLOR COATINGS

Jéssica Aparecida de Paula and Vinicius Martins de Oliveira, Boa SP Arquitetos Associados

The Spinning and Weaving Company São Pedro (SWCSP), also known as São Pedro Factory, was founded in 1911 on the banks of the Ytuna Railway in Itu in the Brazilian state of São Paulo. The architect and master builder Louis Marin Amirat designed the project. Other blocks were built over time to meet the needs of the factory, including the implantation of a set formed by peripheral warehouses parallel to public roads and a focal point whose roof is formed by sheds covered with ceramic tiles in the oldest sections and fiber cement / asbestos at the 1940 enlargement, which characterizes typical factory architecture of the time. The site grew until the 1950s and 1960s, self-sufficient in terms of energy efficiency it established itself as a new urban landmark in the landscape, marking the city's development.

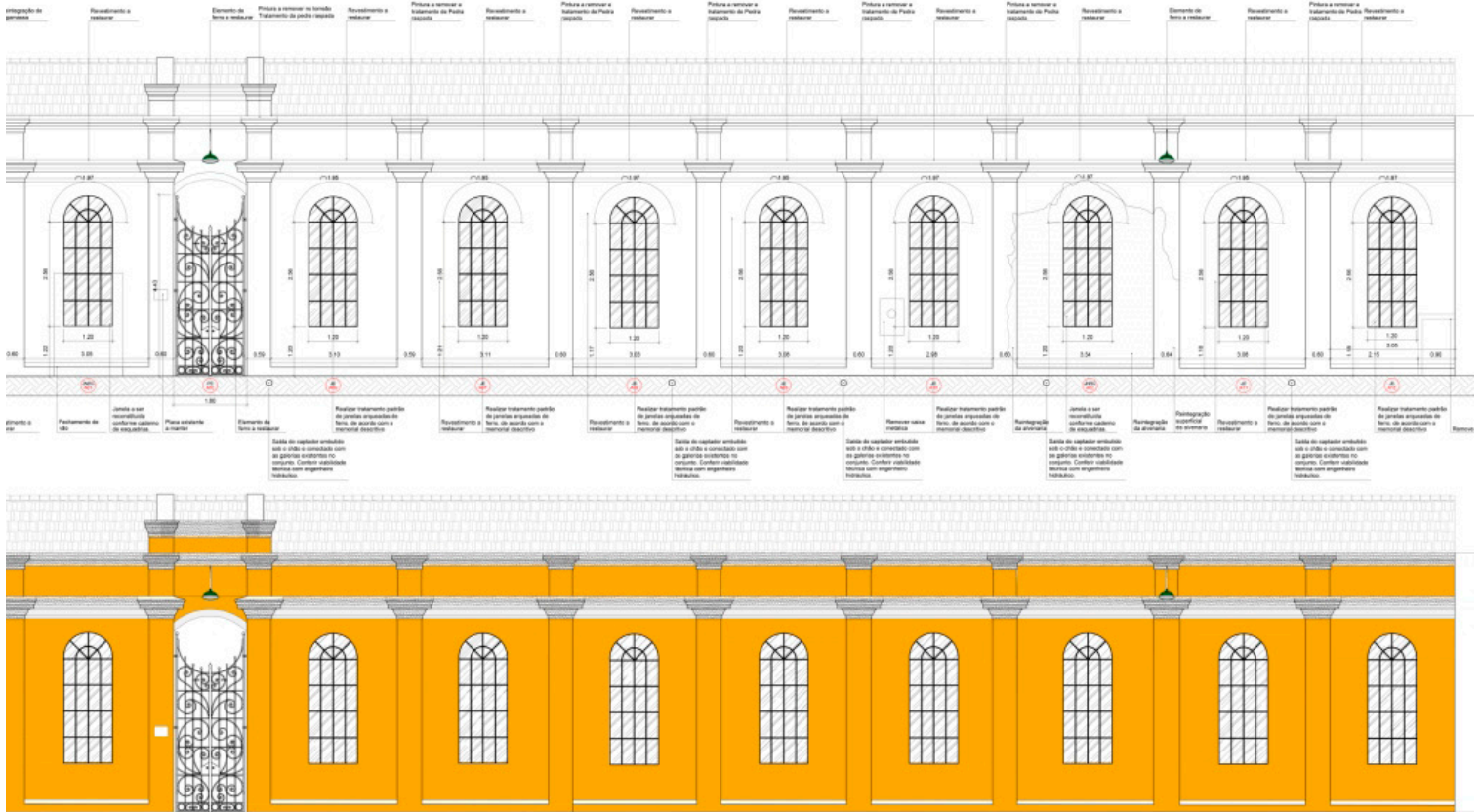
The Factory sits on a 25,000 m² plot of land near the historic city center, where the old weaving shed alone reaches 9,423.92 m², and

its roof has sheds on large wooden truss and tilt frames to ventilate and illuminate the workspaces, as well as streamlined pillar mesh to receive machinery (such as spinners and cotton processors), large circulation spans, and high arched windows. The striking design of its roofs and chimney exemplify the industrial imaginary that persists in the city's affective memory to this day.

The Boa-SP office has been researching the history and architecture of the SWCSP since 2019 and oversees its Conservation Plan and Restoration Project. The site was designated as Cultural Heritage by the State-level Council for the Defense of Historic Heritage (CONDEPHAAT) in the early 2000s, after the state deferred the process following an Inventory of Industrial Architecture Identification in 1986. The level of preservation falls under Degree of Protection No. 02, which eases the criteria for building preservation and



Infographic - test for reintegration of mortar. Photo: Boa SP architectes



Studies for restoration of facades. Photo: Boa SP architectes

restoration to preserve their enclosure (facades and roof) while making changes to the interior.

Between the years 2019 and 2020, tests were carried out at the SWCSP on the restoration of chromatic paint on facades, reintegration of coating mortar, trace determination tests and granulometry. The samples came from the old weaving shed, with the goal of ob-

taining safe parameters for repairing the mortar on the walls and the best paint tone for future repainting of the facades based on the prospects already completed.

To determine the approximate composition of the historic mortars on the facade, including aggregate and binder ratios, qualitative tests were performed on some samples, with six chosen at the time,

one from each end of the facade. They were removed and sealed in clean, dry plastic bags. The packages were labeled with an identification and position code. The work script followed the Institute for Technological Research (IPT-SP-Brazil) and the Brazilian Association of Technical Standards (ABNT) testing methods, as well as the Mercosur Standard (NM). The entire process was developed by the Boa-SP technical team in a laboratory funded by the FAMA Museum and located inside the factory as part of the construction site.

After the approximate determination of the trace for the coating mortar, the same was applied in a 30 x 30 cm test window to verify aspects of adhesion, in a stretch with exposed bricks (where there was detachment of mortar), thus avoiding damage to the building. Mortar and paint reintegration (30x10 cm windows) was created with samples of white, eco-silicate mineral paint manufactured in Brazil and pigmented in three ochre tones (I30C, Oxide YX45 and Oxide YX54). The restoring mortar used in this window had a trace ratio of 1:3:1, consisting of 500 g of slaked lime paste, 1.5 kg of fine sand, and 500 g of red mud collected on-site.

The current study is motivated by the concern for the preservation of the facades. Investigations into the science of conservation and restoration have been conducted and are based on the concept of treating the cultural values and meanings of the asset, as seen in the Burra Charter (ICOMOS, 1999) and the guidelines present in the 2003 TICCIH NizhgyTagil Charter. We believe it is critical that the professional architect understands that what is restored is materiality itself; therefore, to remedy the pathological manifestations of

buildings, one must seek minimal knowledge in the fields of physics and chemistry; in the case of surfaces, this is what allows us to distinguish and classify types of materials, pigments, and their binders.

The SWCSP is significant for regional development because it is a one-of-a-kind example of operational heritage with cultural use of private management. Its denomination as a cultural heritage, combined with investment policies in its works and research in restoration areas undertaken by FAMA Museum is of great importance for the Brazilian industrial heritage and inspires future actions in other assets. Among the methodological procedures used, cognitive stages were considered, with the proposal of an in-depth investigation of the site, followed by all scientific findings that were only then made available for us to proceed with the Project and, in the future, the execution. This type of work and documentation helps to preserve the building and its traditional construction methods.

The site now houses the Marcos Amaro Art Factory - FAMA Museum, which was acquired in 2018 by the Museum's collector and patron, businessman and artist Marcos Adolfo Tadeu Senamo Amaro, and serves as a space for a significant collection of Brazilian art, with an emphasis on Modern and Contemporary Three-dimensional aspects. Furthermore, it promotes various actions that bring a art and occupation combined with the importance of memory and local history, allowing us to reflect on how this change in use brings new life to an industrial heritage.

Contact

TICCIH NEWS

TICCIH NEWS

TICCIH 2021 BECOMES TICCIH 2022

The organizing committee of the **Recharged Industrial Heritage** conference has decided to postpone the TICCIH 2021 conference by one year. The evolution of the pandemic and vaccination does not allow us to hope to host the conference on the scheduled dates in adequate conditions and with the inclusiveness and accessibility that remain at the heart of our objectives.

The new dates for the TICCIH conference in Montreal are **28 August to 3 September 2022**. We hope that everyone will be able to participate as was planned in 2021. The entire organizing team looks forward to welcoming participants in the Montreal tradition of cordiality. The pandemic that affects us all calls more than ever

for differentiated readings and innovative reflections on industrial heritage. This is what this congress Industrial Heritage Recharged in Montreal promises.

The National Reports will also be postponed until next year, so that a four-year collection will be presented at Montreal in 2022. The Bulletin Editor will be contacting national representatives and coordinators next month with the revised guidelines and production dates.

Finally, the special session on the oil heritage in Oil Springs, Ontario, will take place immediately before the main Montreal event.

TICCIH NEWS

TICCIH TEXTILE SECTION

We will host a meeting on Wednesday 9 June 2021 that will follow through from the one held in April 2020. Again it will be a virtual meeting by Zoom. The presentations given in 2020 are here: [Notes from the expert meeting on textiles](#).

The three organisers, [Heike Overmann](#), Bartosz Walczak and Mark Watson, particularly welcome new contributions about textile mills, textile landscapes and their communities in Africa, North and South America, Asia and Australasia. Please contact Heike Overmann to propose a contribution on 9 June.

The comparative study will be revised from the draft here which resulted from meetings of the TICCIH Textile Section earlier this century [Sections](#). The proposed meetings in 2021 in Lodz and in Montreal are cancelled due to the pandemic, but the TICCIH Textile Section will aim to present the completed report to the TICCIH congress in 2022. To do so, we would be glad to have participants who might be present in Montreal, perhaps early career researchers, but mid and late career too, in North America. They will be glad to hear from you whether or not you can participate on 9 June 2021, by contacting mark.watson@HES.Scot.

EDUCATION

EDUCATION

RAILtoLAND CULTURAL LANDSCAPES OF RAILWAYS

Ana B. Berrocal Menárguez and Clara Zamorano Martín, project directors and professors at ETSI Caminos, Canales y Puertos, UPM

The European project [RAILtoLAND](#) aims to explore the social and educational value of European cultural landscape in general, and of the railways in particular, as a common heritage and as a catalyst for processes of the consolidation of a European identity, social cohesion, the formation of local cultures and human well-being.

Financed by the Erasmus + KA203 Strategic Associations for Higher Education European funds, it will last 35 months and end in June 2022. It is led by the Polytechnic University of Madrid (UPM) with six partners from Italy, France, Spain and Portugal, each on a point of reference in different areas linked to the objectives of the project. Moreover, the project integrates four higher education public institutions (UPM, UAM, UPEM and UNIVPM), an applied research center (CCG) and the UIC, which represents and coordinates all the railway companies in the world. Renfe Operaciones and Comboios de Portugal (CP) collaborate as non-formal partners in the proposal, especially in the application of the project on a pilot railway line connecting the cities of Porto and Vigo.

To achieve the aims of the Project, activities include the design of a MOOC (massive open online course) Micromaster (designed to be a bridge between a bachelor's degree and a master's degree,) for the appreciation and communication of European Cultural Landscapes and their Railway Heritage, accessible free of charge; a RAILtoLAND educational content guide, applied to the Oporto-Vigo line, and a virtual laboratory that allows you to recreate a

trip and that serves as the basis for the design of the rest of the intellectual results.

The project fits with the aims of the European Landscape Convention, involving the target population in decision-making and design processes for understanding, appreciating and conserving landscapes. In particular, it proposes formal and informal learning dynamics that prioritize structured dialogues with young people and mutual learning in an international and intercultural context. It tests educational innovation methodologies, such as Design Thinking or Learning by Doing, aimed at improving horizontal skills and competencies in communication, creativity and critical thinking. It uses the Open Learning platforms of the partner university institutions to expand their training offer in the field of valorization, management and protection of landscapes, specifically of Europe, and their built heritage, especially the railways. The railways constitute, in effect, the thread tying together the intellectual results. This is due to its way of structuring and the territory, because it serves as a platform for the appreciation of cultural landscapes all over Europe, and because the railways are one of the key elements in the construction of modern Europe.

What is more, the railways are the most sustainable and efficient form of public transport through low emissions and the reliability of its service. It is expected to be the most appropriate way of making sustainable mobility policies around the world.



ABOVE: The AVE viaduct across the Valle en Soto del Real (Madrid). Photo: Pedro Molina

RIGHT: Studio recording of the Micromaster on European railway heritage. Photo: UPM

Despite the many examples of scenic and themed trains, the role of railways in the tourism sector is still expanding. Numerous railway companies such as the Swiss SBB, the Italian Trenitalia or the Spanish RENFE are carrying out important campaigns to expand their market share in a sector that moves multimillion-dollar figures. Traditionally, tourist packages, as well as the consumption habits of the average tourist, were oriented towards experiences at the destination, or multiple destinations, the journey being relegated to a purely logistical plane. However, the growing appreciation of the aesthetic and cultural values of the territories beyond the main centers of tourist attraction represents an opportunity for a different model, sustainable and less congested, which favors the economic distribution between the territories.

This also presents an opportunity for the rural environment, has been suffering an inexorable process of degradation and abandonment. The railway also allows landscapes inaccessible to other modes of transport to be appreciated, due largely to the geometric limitations of its route. This is an advantage for the traveler looking for a scenic experience of high aesthetic quality. Last but not least, the railway is a heritage in itself, due to its tangible and intangible cultural values, and due to the effects on the construction of ter-





Recording the Porto-Vigo line in September 2020. Photo: CCG.

ritories derived from its implementation. The railway has played a key role in the physical and cultural construction of a common European space since the end of the Second World War.

Accompanying this teaching material of a more theoretical or conceptual nature, other digital intellectual products have been designed that try to optimize the possibilities to transfer to ordinary citizens with a more informative profile (although with high

quality content), more dynamic (videos, 3D landscape modeling and augmented reality). These are integrated into a computer application, RAILtoLAND, downloadable on iOS and Android that works by geopositioning the train along the different units or types of landscape identified. Due to the specificity of the contents and the operation of the application, it is designed for a pilot project, the Porto-Vigo line.

EVENTS

LINKS TO ONLINE EVENTS CALENDARS:

- **TICCIH** Conference Calender
- **ICOMOS** Conference Calender
- **UNESCO** Events

To add events to the TICCIH Calender please send details and a link to ticcih@mtu.edu



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