



ASIAN NETWORK OF INDUSTRIAL HERITAGE

亞洲產業文化資產平臺

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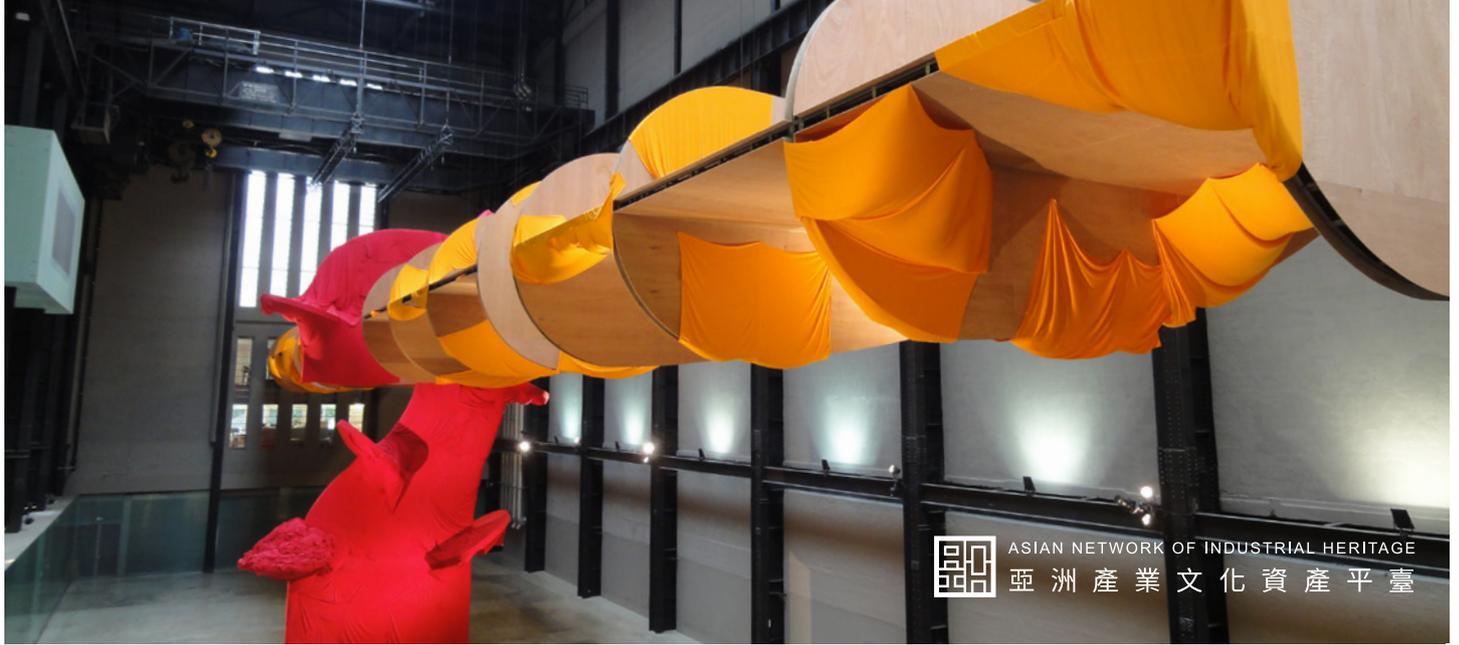
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REPORTS

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The Creative Force of Industrial Heritage:
Art, Innovation, and Space-making

產業文化資產的創造力：藝術、新創與空間營造



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Ruhr Museum (the former Coal Washery), Essen, Germany.
Photo by Chao-Shiang Li(2017).
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The above Photos by Chao-Shiang Li.

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Editor's Preface 編者的話

— Chao-Shiang Li (Associate Researcher of Cultural Properties Research Center/Adjunct Assistant Professor of Department of Interior Design, China University of Technology, Taiwan)

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The 18th International Conference of the International Committee for the Conservation of Industrial Heritage (TICCIH) will be held under the theme "Industrial Heritage Reloaded" in Montreal, Canada, in August 2022. The conference is designed to encourage reflections on the development of industrial heritage since the 1950s. The present moment has ushered in a plethora of emerging issues and unprecedented challenges. Besides conserving heritage sites and passing on historical legacies, it is time that we move on to the next stage of interdisciplinary collaboration: using the universal value of industrial heritage as our strength while incorporating digital technologies, art, design, and tourism into our field of work. Such an approach will promote innovative practices and contribute to the future viability of the heritage sector.

The theme of this issue of ANIH Bulletin is "The Creative Force of Industrial Heritage: Art, Innovation, and Space-making," in line with TICCIH 2022's vision of re-examining industrial heritage and promoting innovative regeneration. This issue focuses on three development models that drive the practice of industrial heritage conservation. It also includes thematic discussions, international trends, and book reviews from the Netherlands, Belgium, the United Kingdom, Germany, Poland, Japan, Australia, Indonesia, and Taiwan. Furthermore, it features a case study about the revitalization of an old German brewery, which echoes with the Taichung Brewery (today's Cultural Heritage Park), where ANIH is currently headquartered. Built in 1916, the Taichung Brewery has become one of the most iconic examples of heritage revitalization in Taiwan.

The first article of the Bulletin was contributed by Drs. Hildebrand P.G. de Boer, the founding vice president of European Route of Industrial Heritage (ERIH). Highlighting the theme "Blurring Boundaries in Europe – Industrial Culture on the Move" and the concept of "shared heritage," Drs. de Boer introduces the genesis, development, and creative practices of the European Route of Industrial Heritage by exploring Europe's

2022年8月將於加拿大蒙特婁舉辦的第18屆的國際工業遺產保存委員會 (The International Committee for the Conservation of the Industrial Heritage, TICCIH) 會員大會暨國際研討會，大會以「工業遺產重載 (Industrial Heritage Reloaded)」¹ 為題，反思自1950年代迄今的發展，嶄新篇章已在醞釀，新興議題正在發酵，面對接踵而來的挑戰，如何以工業遺產的時代意義為利基，從場域保存、知識傳承進化到次階段的跨域整合，包括數位、藝術、觀光與設計等領域，以開展工業遺產的未來性與可能的創新實踐。

承接 TICCIH 2022 對工業遺產的重新檢視與創生前瞻，本期專刊主題為「產業文化資產的創造力：藝術、新創與空間營造」，聚焦三種驅動產業文化資產保存實踐的發展模式，引介荷蘭、比利時、英國、德國、波蘭、日本、澳洲、印尼，以及臺灣等地的專題探討、國際動態與書評等，其中亦不乏舊酒廠的案例分享，與亞洲產業文化資產資訊平臺 (ANIH) 的所在基地一肇建於1916年，作為臺灣工業遺產場域活化的前導案例之一的臺中酒廠，更可相互參照、輝映。

第一篇是歐洲工業遺產路徑 (European Route of Industrial Heritage, ERIH) 創始副主席希爾德布朗·德波爾先生的「弭平疆界：流動的歐洲工業文化」²，以「共有遺產」破題，從鉅觀的產業型態，導入微觀的人機互動，陳述「歐洲工業遺產路徑」創辦沿革與創生實踐。

接續由比利時根特市工業博物館研究員—海德·蘭格亞特帶來「博物館變身創客基地：工業遺產與共創空間」，以前身為1830年代紡織廠的工業博物館為例，呼應前篇「人機互動」，引入公民參與和跨界合作，落實「活的博物館」之公共性。

¹ TICCIH 2022 International conference. <https://patrimoine.uqam.ca/evenements/ticcih2022/>

² ICOMOS 2020 大會主題，<https://icomosga2020.org/>

industrial development from a macro-perspective and human-machine relationships using a micro-perspective.

The second article, "The Museum as a Makerspace: Industrial Heritage and Co-creation," was contributed by Hilde Langerart, a researcher at the Museum of Industry in Ghent, Belgium. Echoing Drs. de Boer's article that alludes to human-machine interactions, Hilde Langerart discusses the practice of the Museum of Industry, which is located in a former cotton mill, as an example of a "living museum" that welcomes the public. She also highlights the importance of public engagement and interdisciplinary collaboration.

Industrial heritage sites related to Japan's Meiji Industrial Revolution have been recognized as some of the most iconic world heritage cases in Asia. Dr. Ichihara Takeshi, a lecturer at Faculty of Commerce, Kumamoto Gakuen University, Japan, explores the significance of intangible cultural heritage such as festivals and rituals by introducing the Tagawa Coal Mine Festival and Nejichoco, a festival souvenir, both of which came into being thanks to the concerted efforts of the local communities.

Germany was once home to 28,000 beer breweries in the 19th century, yet only 1,200 of them remained in 1988. The astonishing number of abandoned breweries signifies the starting point of industrial heritage revitalization in the country. In the fourth article, Mr. Ralf Ebert, chief urban planning consultant at STADTart in Dortmund illustrates the transformation of the Centre for International Light Art in Unna, Germany. In just a few years, the centre was transformed from a decommissioned brewery into a leading art museum that spearheads the development of light art in the world. He also highlights the centre's significant contribution to the development of tourism and urban planning in the region.

The last article in this Bulletin is "Sharing Experiences - The Way to Build an International Community of Mining Museums," written by Jan Godłowski, Director of Cracow Saltworks Museum Wieliczka, Poland. The article introduces the museum's unrelenting efforts to enhance the experience and interpretation of its historical mining space in recent years. Furthermore, the museum has served as an international exchange platform for heritage communities and professionals worldwide, encouraging

「日本明治時代工業革命遺產」是亞洲極具指標性的世界遺產之一。日本熊本學園大學商學部教員的市原猛志博士，從無形文化遺產的慶典與儀式觀點，介紹源自地方礦工舞的「田川炭坑節祭」以及「螺絲巧克力」伴手禮，兩者皆因社群力量凝聚而誕生。

19世紀德國一度擁有28,000座酒廠，至1988年時僅剩1,200座，驚人的消逝數字，也揭開德國工業遺產活化的序幕。第四篇邀請到德國都市規劃顧問羅夫埃貝何(Ralf Ebert)先生分享由舊酒廠轉型的翁納國際光影藝術中心，它如何在短短數年間成為國際光影藝術的領航者，甚至改變當地觀光生態與都市規劃進程，將在此篇短文娓娓道來。

最末一篇專文由世界遺產一波蘭維利奇卡市克拉科夫鹽礦博物館館長，楊·歌德沃夫斯基先生以「共享經驗：建立礦業博物館之國際社群」分享該館近年來致力於提升礦業文化空間的體驗與詮釋呈現，並進一步將各地礦業博物館的在地經驗全球化，成功扮演礦業產業文化資產專業社群國際交流平台的角色。

國際動態的部分，瓦豆光田總監江佶洋先生針對臺灣產業文化資產的光環境設計進程進行反思、澳洲遺產協會副主席彼得·羅梅先生則述說三處壯觀的產業文化景觀如何成為都市綠地空間再生的搖籃；面對疫情衝擊，羅里·亨特主任介紹世界遺產英國鐵橋谷如何運用創意節慶、機械工藝與數位科技等新興詮釋方式以因應自如；夏洛特·金斯頓主任精彩的短文，呈現英國國家鐵道博物館因應疫情衍生出鐵道人物誌展示，細緻地刻劃出產業文化感性的一面。此外，本期專刊並收錄一則產業文化資產專書書評，由印尼鐵路史學會(Indonesia Railway History Society, KSPI)會長W·維德尤科，針對傑拉德·德·葛拉夫的《荷屬東印度的礦業鐵路》，這部全方位研究印尼礦業史與礦業鐵道的專書帶來精華節錄與評論。

時代的巨輪持續向前，產業文化資產歷經超過半世紀的發展，除了空間上的可適性再利用，也應當思考在營運模式上適時地軸轉(pivot)，基於遺產地價值優先的原則，不斷地調整、建構創新且具潛力的策略目標，讓產業文化資產的資源與人力能夠更妥適地、更有效地運用。本期的諸位作者，精彩地引介各國產業文化資產在藝術、新創與空間營造等多元面向的整合思維與案例實踐，值得作為產業文化資產永續發展藍圖擘畫之參考。

mining museums in different regions to share their experiences with each other on the global stage.

In the International Trends section, Mr. Chi-yang Chiang, Director of We Do Group, reflects on the evolution of lighting design for heritage sites in Taiwan, while Mr. Peter Romey, Deputy Chair of AusHeritage, gave three Australian examples of turning spectacular industrial landscapes into urban parks and green oases. In the face of the impact of the epidemic, Rory Hunter, Special Projects Director at the Ironbridge Gorge Museum, details how the Ironbridge Gorge, a World Heritage site in the UK, provides innovative interpretation of industrial heritage through innovative approaches such as creative festivals involving mechanical puppets and digital technologies. The article by Charlotte Kingston, Head of Interpretation and Design at the National Railway Museum, UK, introduces her museum's recent project Railway Heroes, an exhibition that underscores the personal and emotive aspect of the heritage railway sector. In addition, this Bulletin also features a book review by W. Widoyoko, Chairman of the Indonesia Railway History Society (KSPI). The review introduces Gerard de Graaf's monograph *The Coal Mine Railway on Dutch East India*, a comprehensive study of Indonesia's mining history and mining railways. Excerpts from the book and Widoyoko's comments are also provided in the review.

The development of industrial heritage has withstood the tides of time for over half a century. In addition to adapting and reusing historical spaces, it is time that we "pivot" and rethink our business models. Based on the universal value of industrial heritage, we should continue to adjust and formulate innovative, visionary, and strategic development goals, so that the resources and manpower of the heritage sector can be utilized more wisely and effectively. The contributors to this Bulletin give in-depth introductions to the comprehensive planning, interdisciplinary thinking, and case studies about industrial heritage sites across the world, illustrating the use of art, creative power, and place-making approach in the process. These examples provide a valuable frame of reference as we plot our path towards a sustainable future for the continuous development of industrial heritage.

Blurring Boundaries in Europe – Industrial Culture on the Move

弭平疆界：流動的歐洲工業文化

Hildebrand de Boer (Founding Vice-President European Route of Industrial Heritage;
International Secretary Europa Nostra Industrial & Engineering Heritage Committee)

歐洲工業遺產路徑創會副會長創始副主席暨

「我們的歐洲」工業與工程遺產委員會國際秘書 希爾德布朗·德波爾

Shared Heritage

The history of industry is an important part of the European heritage. Nothing has influenced the European continent more than 200 years of 'industrial revolution'.

The story was similar across Europe: working and living conditions differed little between countries during the industrial era – a miner in the German Ruhr Area or in the valleys of South Wales dug the same coal, used the same tools and experienced the same conditions. These miners migrated across Europe in their search for 'black gold'. Industrial history is therefore a heritage shared by all European people: it forms part of common European identity.

Europe: unity in diversity

Since the beginning of the 18th century, the development of industrial society and the resulting industrial culture have been part of the inestimable culture of Europe. In Europe, the industrial revolution meant a new world perspective as a multitude of new industries and associated infrastructure spawned the rapid growth of large metropolitan areas across Europe. In the last decades of the 20th century, many large industries - with the resulting physical, social and economic decline - failed or became part of the digital transformation process. As a result, former industrial complexes have often been demolished, regardless of the cultural significance of our shared industrial past. Towards the end of the 20th century, however, there was a growing interest in industrial heritage and its importance for European identity and the pride of entire regions in Europe.

The question is whether industrial culture, with its cross-border complications and identity-determining

共有遺產

工業史是歐洲重要的文化遺產，過去兩世紀以來，工業革命是對歐洲大陸影響最大的形塑力量。

放眼歐洲各地區有共同的工業歷史，工業革命時代，歐洲各國的工作與生活條件所差無幾，如德國魯爾區與英國南威爾斯山區的礦工挖的是同樣的礦，他們使用的工具一樣，工作條件也相同。為了尋找「黑金」，這些礦工在歐洲大陸各地遷移，工業史因而成為歐洲人共有的遺產，形成歐洲人共享的身份認同。

歐洲：一體多元

自十八世紀開始，工業社會的發展與隨之而來的工業文化，已成為極其珍貴的歐洲文化。歐洲的工業革命帶來全新的全球視野，新產業與相關基礎建設帶動了歐洲都會區的快速發展。二十世紀的最後十年間，產業、社會與經濟萎縮，許多大型工業因而倒閉或成為數位轉型的一份子。先前的大型工業建築無論對我們共有的工業史有多重要，也難逃淘汰與拆除的命運。然而，到了二十世紀末，越來越多人對工業遺產產生興趣，也了解到工業遺產對歐洲的身份認同有多重要，認知到工業遺產是歐洲的驕傲。

工業遺產常橫跨多國，對身份認同也有重大影響，而現在的問題就在於：工業文化是否能讓歐洲攜手茁壯？工業社會 4.0 是否能引導我們用必不可少的全新角度，看待異中有同的歐洲？基本上，許多工業時代流傳下來的習慣仍然不變，如工業生產之延續、對時間的使用與關注、工業與瞬息萬變社會之並進、人與工具之相輔相成、以及對幸福的無止盡追尋。

歐洲：工業化大陸的濫觴

工業革命前的數百年，若要取得糧食、衣物與燃料，人們必須依賴自己國家的產物。

用風力和水力產生能源則是個例外，不過風力與水力並不穩定，常有無風或乾旱的風險。如果當地可取得泥炭，則泥炭就是較為可靠的能源來源。工業革命前，除了英國，

influences, can continue to contribute to common strength and cooperation in Europe. Will the industrial society 4.0 be able to direct the necessary, renewed appreciation of the European continent as a unity in its diversity? In essence, much will remain recognizable: the historical continuity of industrial production, the omnipresent time awareness, work in an ongoing society, the interaction between people and their tools, the timeless search for human happiness.

Europe, the first industrial continent

In the centuries before the industrial revolutions, humans were directly dependent on the country's products for food, clothing, and fuel.

Exceptions were the use of wind and water for energy generation, although this was not a constant factor in wind or drought. A more reliable source of energy was peat, if it was locally or regionally available. With the exception of England, coal was hardly used or not at all on the eve of the industrial revolution. The majority of the European population lived in the countryside and often lived below the subsistence level. Compared to the later industrial period, the population grew only moderately, as crop failures and disease had a negative impact on population growth.

In contrast, technological developments related to the improvement of the energy situation and the quality of agriculture in Europe led to an increase in the population: according to a rough estimate (excluding Russia) from 75 million in 1600 to about 150 million, on the eve of industrial development in 1800, to more than 300 million inhabitants around 1900. The population-generating effect of past industrial development can be derived from these figures.

After England, Wales and Scotland, extensive industrial regions emerged on the European continent in just a few decades, with a strong presence in Belgium and, from the middle of the 19th century, also in Luxembourg, France, Germany, Austria, Bohemia, the Scandinavian countries and the Netherlands. In the course of this development, the transport options by waterways were improved and a dense railway network was created in the industrial regions. The legacy of this infrastructure is very much alive and well integrated into today's modern transportation systems for people and goods.



Figure 1. Derby [United Kingdom], Derby Silk Mill, one of the first industrial mills in the world, 1718 (Photo credit: Hildebrand de Boer)

圖 1：英國德比，德比絲織廠，世上第一個工業廠房。(希爾德布朗·德波爾提供)

鮮少有人使用煤炭。大部分的歐洲人都居於鄉野，生活也常低於生存水平。與後來的工業革命時期相比，此時的人口成長速度緩慢，糧食匱乏與疾病肆虐都對人口成長產生負面影響。

相較之下，科技發展讓能源生產效率增高、農業品質提升，因而帶動歐洲人口成長。根據粗估資料（不含俄羅斯）顯示，歐洲人口在 1600 年是七千五百萬，1800 年工業革命前夕已增至一億五千萬，到了 1900 年，歐洲已有超過三億人口。工業革命引發的人口變化，從這些數據便可見端倪。

繼英格蘭、威爾斯與蘇格蘭之後，許多歐洲工業區也在數十年間崛起，其中最為強大的是比利時；十九世紀中期開始，其他國家也陸續加入，如盧森堡、法國、德國、奧地利、波希米亞地區（譯註：今捷克中西部）、荷蘭、北歐五國。隨著工業發展，工業區的水路運輸隨之興起，鐵路網絡建設也愈發密集。時至今日，這些建築遺產仍持續活用，並融入現今的運輸系統當中。

十九世紀具革命性的工業發展，讓歐洲成為第一個工業化的大陸，也成就了歐洲今日的繁榮與進步。

依鐘而作，按錶而息

自第一次工業革命（約 1700 年到 1870 年）開始，社會從農業與手工業主導，轉變為深受工業生產影響。過程中，時間分割必然越趨精細，精準的機械鐘錶成為必要。

如果工業生產流程無法持續二十四小時，原因只有一種，就是受制於機具、能源或機械使用的方式。相較於農業活動總受制於天然條件（如擠奶、割草、播種、收成），

The revolutionary industrial developments of the 19th century mark Europe as the first industrial continent and to this day form the basis for prosperity and innovation.

Work by the clock

The gradual transition from the first industrial revolution (approx. 1700-1870) from a predominantly agricultural and craft society to a society influenced by industrial production processes required a refinement of the temporal meaning, which made the use of relatively precisely functioning mechanical timepieces generally necessary has been.

If the industrial production process did not take place continuously 24 hours a day, it was subject to the independence with which the mechanical tools, energy sources and machines could be used. In contrast to agricultural processes in which natural events led to action (milking, haying, sowing, harvesting), operators of industrial companies could independently initiate, delay or end the production process and this, as a rule, regardless of weather conditions and seasons.

The human work rhythm was the subject of this decision-making. But not only that. The production processes as such also had a certain time-sensitive rhythm, the consequences of which had to be optimized or maximized through efficient, time-related work.

During the second industrial revolution (approx. 1870-1970) the technological development culminated in mass production with the help of production chains. The increasing use of the conveyor belt began to determine the pace and rhythm of the production process. As a result, human work was almost completely subordinated to the compulsory progress of the production process and the results could be measured precisely and time-related - such as the start of work, lunch break, toilet visit and end of work - by clearly functioning operating clocks and were visually perceptible or acoustically audible through sound signals.

Interaction between humans and machines

Innovations have always determined the interaction between man and machine. A classic Dutch example is the invention and development of the overhead windmill (1605) by Jan Adriaanszoon Leeghwater [1575-

工廠經營者可不顧天候或季節，自主制訂規則，決定何時動工、延期或停工。

人類的工作節奏是這項決策的重點，但也不只如此。這樣的工業生產流程也有特定的時效性節奏，必須分秒必爭、保持效率，才能有最好的品質或產量。

第二次工業革命期間（約 1870 年至 1970 年間），生產線使得科技發展一飛沖天，進入大量生產的階段。輸送帶使用越趨頻繁，逐漸主導了生產的步調與節奏。因此，人類工作模式幾乎完全受制於制式的生產流程，生產結果能精準測量，這也與時間脫不了關係，如上工、午休、如廁與下班時間，工廠都用運作精良的鐘錶，透過視覺或聽覺訊號提醒工作者。

人機互動

人機互動往往取決於創新。荷蘭的大型風車便是經典一例。此風車由揚·萊赫瓦特（Jan Adriaanszoon Leeghwater，1575~1650）發明，可以讓風輪與葉片對準風的方向，達到最佳的風能效益。在此之前，科里尼斯·科內里松·范·奧特海斯特（Cornelis Corneliszoon van Uitgeest，1550 年～約 1607 年）就曾研發曲柄軸，並於 1597 年申請專利。他將曲柄軸用於鋸木機系統，曲柄軸旋轉的動力讓鋸子得以前後擺動。

以上兩種針對風力的創新，使得鋸木可以利用風力進行以創造出最大效益，荷蘭造船業也因而快速成長。有了鋸木機，傳統鋸木的方法改變了。相較於人工鋸木，機器鋸木板只需要花費三十分之一的時間。人機關係所有基本要素在工業革命之初便已就緒，如專業知識、經驗、特長、使用機械的經驗、機器對人有何風險的掌握，最後兩者可能會對商業或社會造成負面影響。

隨著時間推移，使用機器已成趨勢，以追求最大工作量，達到最大產能。直到工業革命後期，才將安全作業的概念納入法規之中，許多安全機構也才逐漸制度化。

工業遺產形塑未來

今日歐洲各地的社區都十分看重工業遺產與歷史工業區，這些遺產被視為過往歲月的象徵，受到悉心維護。

然而，這些工業遺產存在的意義，並非只是提醒我們過去的技术成就與歷史發展，這些工業遺產也有助於確立社群與個人的身份認同。這些工業遺產影響我們的身份認同，也形塑了我們的未來。這些歷史工業區、甚至是許多仍在進行生產的工業區，應該如何妥善處置，在歐洲各地是十分重要的議題。

1650]. This invention made it possible to point the rotating hood of the mill and the windings slightly into the wind in order to make the best possible use of the wind. Previously, Cornelis Corneliszoon van Uitgeest [1550-around 1607] had developed a crankshaft (patent 1597), which he integrated into the mill system. Rotation of the crankshaft was converted into forward and backward motion for the saw.

Both innovations led to the fact that wood could be sawed with the greatest possible benefit from the wind, for example for the rapidly growing series shipbuilding in the Netherlands.

The traditional job of the wood saw changed through the work on the sawing machine, and the production time of a sawn wooden board was only 1/30 of the time compared to manual sawing. All elementary requirements in the relationship between man and machine had been in place since the beginning of the industrial revolution, such as: the need for specialist knowledge, the importance of experience and specialization, the continuous interaction with the machine and its risks for people. The last two aspects can be interpreted negatively commercially and / or socially.

In the course of time, work on the machine has increasingly developed into work with the machine in order to advance the workload as much as possible in the interest of production output. It was only in the late industrial phase that the increase in production safety was taken into account in legal provisions and regulations and institutionalized in safety institutes.

Heritage shapes Future

Today, across Europe, communities value their industrial heritage and many former industrial sites and areas are protected and maintained as symbols of a bygone era.

However, these are not just reminders of our technical achievements and social history; they also help to define the identity of communities and individuals – they influence who we are and they shape our future. The future of these former industrial regions is an important issue across Europe, and many of these areas still have a role to play in providing work.

二十年來，歷史工業區的重生已經成為轉型與活用的標竿，有些成為博物館，有些規劃為住宅，有些則搖身一變成為「文創產業區」，吸引眾人目光。「工業遺產再生」成為現今的火熱議題。



Figure 2. Attractive for the people: Duisburg [Germany], Industrial Landscape Park. (Photo credit: Hildebrand de Boer)

圖 2：引人入勝的工業遺產：德國杜易斯堡工業景觀公園。(希爾德布朗·德波爾提供)

引人入勝的工業遺產

除此之外，歐洲各地有許多「工業遺產聖地」成為熱門旅遊景點，每年吸引數百萬旅客造訪，顯示工業遺產旅遊並非小眾，而是成為重要的旅遊行程。

如何維護舊有的工業遺產並給予新的詮釋是個挑戰，需要以創新的角度思考。工業遺產無須被視為絆腳石，因為已有許多案例證明，遺產場域可以變得充滿魅力與活力，為城市帶來正向的影響。

歐洲工業遺產路徑：總體規劃

歐洲工業遺產路徑 (European Route of Industrial Heritage, 簡稱 ERIH) 由歐盟資助營運，藉由交流與聯銷，鼓勵大眾欣賞、理解、保護並宣揚歐洲的歷史文化。

歐洲工業遺產路徑 (ERIH) 為工業遺產發聲，倡導工業遺產旅遊，提升所屬景點與其他舊有工業區的形象、帶動當地經濟，今日歐洲工業遺產路徑擴及全歐洲，已然成為工業遺產與工業遺產旅遊的公認品牌。

催生 ERIH 的第一階段工作為進行「總體規劃」(2000 年至 2001 年)，此計畫制訂了特定的計畫與活動，以宣傳歐洲工業遺產旅遊。在 2005 年，「歐洲工業遺產路徑」於歐洲西北部的規劃正式推出，這是路徑圖中第一個完成的部分。自此，歐洲工業遺產網絡逐漸擴張，至今已涵蓋大多數歐洲國家。

Over the past twenty years, former industrial sites have often become symbols of change and have adapted to new uses. Some have become museums or been transformed into housing. Others have become a focus for new industrial uses including the 'Creative Industries'. 'Regeneration through Heritage' has become a popular theme.

Attractive for the People

Also, across Europe, many of the 'cathedrals of work' have become major attractions of cultural tourism attracting millions of visitors a year. This demonstrates that industrial heritage tourism is no longer a niche market but has grown into a major tourism sector.

The maintenance and interpretation of former industrial sites is often a challenge which needs innovative solutions. They need not be regarded as a burden because experience has shown that such sites can often be transformed into attractive and lively areas which make a positive contribution to our cities.

European Route of Industrial Heritage – The Master Plan

Funded by the European Union, the ERIH network (the European Route of Industrial Heritage) was established to encourage the appreciation, understanding, protection and promotion of our common European history and to facilitate this by the exchange of experience and by joint marketing.

ERIH has become a voice for industrial heritage sites and a champion for industrial heritage tourism with the aim of improving the image and the economic wellbeing of ERIH sites and former industrial areas. ERIH has become established as a Europe-wide brand for industrial heritage and industrial heritage tourism.

The first stage was the preparation of a Master Plan (2000-2001) which identified specific proposals and activities to develop the marketing of industrial heritage tourism within Europe. In 2005, the first part of the 'European Route of Industrial Heritage' was launched in North-West Europe. Since then the network has gradually expanded so that by today it includes most European countries.

歐洲工業遺產路徑：創立協會

「歐洲工業遺產路徑」於2008年依法成立法人協會，負責管理歐洲工業遺產之網絡。

「www.erih.net」網站是協會營運的重點項目，網站上列有全歐洲將近兩千個景點、一百一十處提供高品質體驗的「錨點」(Anchor Points)、以及二十個「區域路徑」(Regional Routes)。其他資訊欄包含十五條涵蓋不同工業別的「歐洲主題路線」(European Theme Routes)、十八個不同工業的歷史故事、四十七國的工業史紀錄、一百八十七個人物故事，另有工業大事記、實用資料庫、以及超過三千個相關資訊連結。

歐洲工業遺產路徑就是品質的保證、頌揚遺產的最佳途徑，更象徵歐洲文化的重要元素。在該協會的管理與努力下，各地民眾慕名而來。這些景點很多都是位於舊有工業區內，但皆提供了優質的旅遊體驗。歐洲工業遺產路徑提供了歐洲最棒的工業遺產點與最高品質的永續旅遊，除了建議絕佳景點之外，也確保旅客能在這些景點獲得最棒的體驗。

今日，歐洲工業遺產路徑已公認是最為完整的歐洲文化網絡。

由於歐洲工業遺產路徑協會的大力推廣，許多工業遺產的知名度與能見度都獲得大幅提升。歐洲是第一個工業化的大陸，所以工業遺產是非常珍貴的歐洲資產，對歐洲歷史亦十分重要。在歐洲工業遺產之中，民眾得以親臨歷史變革、機械化、機械運作與工業生產發生的場域，亦可在歷史建物中發掘歐洲文化遺產之美。



Figure 3. Pilsen [Czech Republic], ERIH excursion in the beer cellars of the Pilsen Brewery, during an ERIH Annual Assembly. (Photo credit: Hildebrand de Boer)

圖 3：捷克皮爾森，歐洲工業遺產年會之旅遊行程：參觀皮爾森釀酒廠之酒窖。（希爾德布朗·德波爾提供）

European Route of Industrial Heritage – The Association

In 2008 a legal association was set up which now manages the organisation of the network.

Central point of the association is the website www.erih.net, consisting comprehensive information of almost 2.000 sites all over Europe, as well as 110 high level Anchor Points and 20 regional route networks of industrial heritage. Further information blocks relate to 15 European Theme Routes about the different branches of industry, history of 18 industrial branches, industrial history of 47 countries, 187 biographies, an event database, a best practice database and more than 3000 links.

ERIH is a quality benchmark that celebrates our industrial heritage as a major element of European culture. The result is an exciting and varied range of visitor attractions, many of them in former industrial

areas, but all with a common seal of excellence. ERIH stands for the very best in European industrial heritage and sustainable tourism, identifying destinations and assuring the visitor of a high quality experience when they get there.

Today ERIH can be considered to be the most comprehensive European cultural network.

Thanks to the activities of the European Route of Industrial Heritage (ERIH e.V.) association, the extensive industrial heritage has become known and recognizable. In fact, it is an extremely valuable European property and of great importance to the history of Europe - as the first industrial continent. This European possession makes it possible, depending on personal interests, to experience the sites of historical innovation, mechanization, work, production or, in monumental buildings and infrastructure, the treasures of the European cultural heritage.

The Museum as a Makerspace: Industrial Heritage and Co-creation A Cotton Mill as a Meaningful ‘Memory Space’

博物館變身「創客基地」：工業遺產與共創空間 棉織廠：獨具意義的「記憶基地」

Hilde Langerart (Conservator of Industriemuseum Gent)

比利時根特市工業博物館研究員 海德·蘭格亞特

Located in the centre of Ghent, within a stone's throw of Vrijdagmarkt square, the former cotton mill Desmet-Guequier is now the site of the Museum of Industry. With over 30,000 items, the Museum's collection tells the story of the industrial development from 1750 to the present day. The collection includes machines, work clothes, promotional materials, interviews with managers and workers as well as finished products from various sectors. Eye-catchers are a twiner dating from 1789 and a spinning mule or Mule Jenny dating from ca. 1800, two unique machines marking the take-off of industrialisation and the modern textile industry. Both have been recognised as important cultural heritage by the Flemish Community.

Ghent's history is closely linked to that of the textile sector. Thanks to entrepreneur Lieven Bauwens, Ghent developed into one of the first industrial cities in Europe. Ghent remained an important centre of industry until the mid-20th century. The cityscape was dominated by smoking factory chimneys and densely populated working-class areas. The heyday of Ghent's textile industry ended with the economic crisis of the 1970s. One factory after another closed down. Many traces of the first and second industrial revolution have disappeared over the years. The Ghent authorities have made efforts to conserve machines and objects. The first museum showcasing the symbols of the industrial culture, then called the Museum for Industrial Archaeology and Textile, today the Museum of Industry, was established in 1976. Its collection grew steadily in the 1990s and 2000s. At its core are the museum's textile and printing collections. Both sub-collections are technically and historically coherent and complete, contain a few unique objects and are internationally renowned. Other sub-collections such as energy,

戴斯梅特·葛奎爾 (Desmet-Guequier) 棉織廠位於比利時根特 (Ghent) 市中心，與星期五廣場 (Vrijdagmarkt square) 僅有咫尺之遙，這座棉織廠現已化身為「工業博物館」(Museum of Industry)，超過三萬件的館藏訴說著自 1750 年至今的工業發展史，包括工業機械、工作服、宣傳品、與工廠管理階層或員工的訪談資料、以及不同種類的工業製品。館藏中最引人注目的是 1789 年的繞線機 (twiner) 與約 1800 年的紡騾珍妮紡織機 (Mule Jenny)，這兩組獨特的機械象徵了工業化與當代紡織業的起飛，佛拉蒙人 (Flemish，譯註：佛拉蒙人集中於比利時北區，語言為荷蘭語) 也將之認定為重要的文化遺產。

根特的歷史與紡織業密不可分，因為有企業家李文·包文斯 (Lieven Bauwens) 的貢獻，根特得以成為歐洲最早工業化的城市，處處可見吞雲吐霧的工廠煙囪及人口稠密的勞動階級居住區，直到二十世紀中葉，都持續坐穩工業發展的龍頭地位。根特紡織業的全盛時期因 1970 年代的經濟蕭條劃下句點，工廠連接歇業倒閉，許多第一次和第二次工業革命的遺跡也逐漸消失。根特市政府致力保存相關機械與物品，於 1976 年成立了「工業考古與紡織博物館」，是比利時第一座以工業文化為主題的博物館，也是今日「工業博物館」的前身。1990 年代至 2000 年間，館藏量持續成長，重點館藏為紡織與印刷相關文物，完整表現當時的工業技術與歷史，有些獨一無二的館藏在國際上享有盛名。其他館藏則包含能源、冶金、電信科技、行銷與宣傳類別，這些藏品除了作為參考資源外，更增添了重點館藏內容之豐富性。

博物館化身自造基地

幾年前，博物館發起大型翻修計畫，更新所有的常設展，並將現有的工作坊改造為設備齊全的創作空間。2018 年，博物館更名，主展覽「人與機器」伴隨「巧手創意工作室」(Tinker Studio) 盛大開幕。遊客可以在這裡用不同的材料、嘗試各式各樣的技術、探索機械如何運作。2019 年新增「平面印刷三百年」展 (Three Centuries of Graphic Industry)，同時展出實際運作的印刷間；2020 年

metallurgy, telecommunications as well as marketing and publicity serve as reference collections or support the contents of the core collection.

Museum as a place of creation

A few years ago, the museum initiated a large-scale revamp operation: all permanent exhibitions were updated and the existing workshops were integrated into well-equipped places of creation. In 2018, the museum was renamed and the main exhibition entitled 'About people and machines' was launched with a creative Tinker Studio. It is a place where visitors can experiment with different techniques and materials and, in so doing, discover how machines work. The brand-new exhibition 'Three centuries of graphic industry' was added in 2019 and includes a lively pressroom. Finally, the exhibition '100% Textiles' was opened in 2020, including a see-through textile workshop at the centre of the exhibition. With this, the City of Ghent was proud to present a fully updated Museum of Industry in 2021, covering about 3000 m² of displays and multifunctional workshop spaces. The revamped museum is therefore not just an exhibition space, but also a dynamic workplace where new ideas and creations are conceived and shared. In addition to a new name and revamped exhibitions, the museum also resolutely opted for a new working method. Two museum floors, the textile and printing departments, serve not just as exhibition spaces but also as places of work and creation. Museum collaborators (staff and volunteers) and the public (visitors, makers, artists-in-residence) give meaning to the extraordinary, fully-functioning textile and printing collection. They make use of historical machines and age-old techniques to develop new creations.

The Museum of Industry has presented itself as a 'living' museum for many years and thus occupies a special place in the museum landscape. It intends to further reinforce this focus on experience and co-creation in the future. Priority is given to creativity, experiment and knowledge exchange. By seeing tools being used or machines in action, it is much easier for visitors to understand how they function and what the technology is behind them. This offers high experiential and educational value. It is also inextricably linked to intangible cultural heritage: the transfer of techniques and knowledge by skilled people. People of all ages

則推出「紡織百分百」展 (100% Textiles)，展區中央打造了全透明的紡織工坊，遊客得以一覽製程。2021年，根特市榮耀呈現煥然一新的「工業博物館」，包含約三千平方公尺的展區與多功能工作坊空間，歷經全新翻修的博物館不僅是展覽空間，更是可容納與分享創意的動態空間。除了館名和展覽更新，「工業博物館」的營運模式也令人耳目一新，館內有兩層空間是紡織部和印刷部，這裡不只是展覽空間，更是創作基地，博物館人員（館員與志工）和民眾（遊客、創客、駐村藝術家）可以使用歷史機械設備和古早技術創作新作品，獨特又實用的紡織與印刷館藏在活化利用下，被賦予了全新的意義。

多年來，「工業博物館」一直以「活的博物館」自居，在博物館界獨具特色。未來，博物館希望可以繼續發展遊客體驗並共同創作，著重創作、實驗與知識交流。遊客親眼觀看過工具與機器的運作方式後，就更容易理解生產的程序以及背後的技術原理，提供親身體驗與教育價值。此外，館內也有由職人傳授技術與知識的體驗，與無形文化遺產有著緊密的關連，遊客不分老少，都可以來館學習並體驗職人工藝技術，並將之傳給下一代，這樣的作法讓觀眾深刻體驗文物之重要性，也讓拉近館藏與現代人的距離。

與遊客、創客和專家共同創作

工業博物館的新願景可用一句口號概括，即「與遊客、創客和專家共同創作」。博物館十分珍惜館藏創造的社會參與價值，不僅注重工業科技之呈現，也十分關注社會經濟層面。開館以來，規模龐大的文化遺產社群（從私人收藏家到公司行號皆有）一直在協助博物館蒐集館藏，並決定了館藏的價值，這些館藏訴說著不同世代與背景的个人故事，故事同時又與工業社會環環相扣，工業館藏讓我們珍視過去、現在與未來，也開創對話交流的契機。

在館中創作的創客與藝術家，從古老的技術與機械中獲得靈感，發想新的創作。例如，一位日本織品設計師的創作靈感便是來自根特芙特曼 (Voortman) 棉織廠出產的樣品，另有多位平面設計師利用印刷部的木製活字與鉛字館藏精進凸版印刷技法、打造當代風格作品。博物館團隊亦善用館藏創作織品、紙品與印刷作品，並於博物館商店販售。透過這些做法，讓古老的機械與手工藝技法得以活用。館藏與原為工業建物的博物館建築，為眾人的創作提供源源不絕的靈感。

老少咸宜的博物館活動

工業博物館提倡共融，深信每一個人都是創客、熱情與創造力有益健康。創客可以用不同身分參與博物館活動，如遊客、志工、設計師、或藝術家。博物館鼓勵遊客

are introduced to creative and technical craftsmanship and pass it on to the next generation. This increases the significance of the objects and makes the museum's collection relevant in our times.

Co-creation with visitors, makers and experts

The museum's new mission can be summarised in the slogan 'together with visitors, makers and experts'. The Museum of Industry cherishes the social and participatory value created by its collection. Since the museum was founded, the wide heritage community (ranging from private collectors to companies) has helped shape the collection and determined its value. The Museum of Industry's focus is not just on technology, but also on the socio-economic aspect. The collection presents the personal stories of people from different generations and backgrounds in connection with the bigger picture of our industrial society. The collection thus provides a valuable perspective on the past, present and future as well as a basis for entering into a dialogue.

Makers and artists draw inspiration from age-old techniques and machines for their new creations. For instance, a Japanese textile designer was inspired by the samples of the Ghent cotton mill Voortman, while graphic designers used the wooden and lead type pieces from the printing collection to master letterpress techniques and create contemporary designs. Internally, the museum's team also works with the collection to create their own textile products, paper and printed material, available in the museum shop. To do so, they make use of historical machines or artisanal techniques of yesteryear. The collection and the industrial building that houses the museum are their principal source of inspiration.

Accessible activities

The Museum of Industry strives for inclusive activities and adheres to the principle that anyone can be a maker. A healthy dose of enthusiasm and creativity will get you a long way. Makers can participate in the museum's activities in several ways: as a visitor, as a volunteer, as a designer or an artist... Museum visitors are encouraged and inspired by demonstrations and interactive installations in the museum to set to work themselves during their visit. They can build things in the Tinker Studio with the materials available and the



Figure 1. Industriemuseum Industriefestival. (Photo credit: © Corlazzoli)

圖 1：「工業博物館」：工業遺產嘉年華。(資料來源：© Corlazzoli)

創作，透過技法示範與互動式裝置獲得創作靈感。他們可以到「巧手工作室」，在館方人員的技術指導下，利用館方提供的材料創作；也可以參觀印刷史展覽，印製獨特的手作小誌 (minizine)。除此之外，博物館也開設工作坊，讓參與者深入學習各式各樣的紡織與印刷技法，紡織部與印刷部有非常多的志工，他們充滿熱情、功夫了得，且背景各有不同，有退休工人、也有讀藝術的學生。他們負責維護博物館的機械館藏，也會用這些館藏來進行示範，並持續實驗不同的印刷與紡織技法，志工會互相交流，博物館和志工也會互相學習，確保技藝延續不失傳。非屬博物館的設計師與藝術家，同樣也可以用各種不同的方式，在紡織部與印刷部大顯身手，他們可以使用引人注目的印刷機、令人驚豔的字體藏品、以及迷人的紡織工具與機械進行創作。館方在購入全新 TC2 半自動緹花織布機 (semi-automatic Jacquard loom, the TC2) 後，與駐村藝術家開始進行試驗，如在 2021 年春季，織品設計師湯瑪斯·魯瓦 (Thomas Renwart, 筆名「蒙席」 [Les Monseigneurs]) 和珍妮·吉斯特林 (Janne Gistelinc) 受邀來到本館利用新機具創作，一面在駐村期間探索設計的各種可能，另一方面也讓館員也更了解展覽中的新機器，博物館未來將會持續與藝術家和設計師合作。

持續跳動的館藏之心

對博物館館藏或主題有興趣的創客，都可以到本館附設圖書室閱覽各式各樣的出版品、文件與物品。博物館中有以技術、科學與工業遺產為主題的「ETWIE 技術、科學、工業 - 專業創客屋」(The expertise cell for technical, scientific, and industrial heritage, 縮寫 ETWIE)，協助有興趣的創客找到適合的伙伴，如此一來，知識與館藏皆得以持續更新。館藏與研究相關的活動亦需要非常多人參與協

techniques that are explained, or they can print, prepare and fold a unique minizine while visiting the exhibition about the history of printing. In addition, the Museum of Industry offers an extensive workshop programme which introduces participants to various textile and printing techniques. The numerous volunteers in the textile and printing departments are enthusiastic and skilled people who have a passion for their craft. They come from diverse backgrounds, ranging from retired industrial workers to art students. They demonstrate and maintain the museum's machinery collection and constantly experiment with different printing and textile techniques. The volunteers learn from each other, the museum learns from the volunteers and vice versa. This way we ensure that knowledge is not lost. External designers and artists can also get creative in the textile and printing departments in various ways. They work with impressive printing presses, a wonderful type piece collection and fascinating textile tools and machines. Since the purchase of a brand-new semi-automatic Jacquard loom, the TC2, we have experimented with receiving artists-in-residence. In this spring of 2021, textile designers Thomas Renwart (Les Monseigneurs) and Janne Gistelinck weave fabrics in the Museum of Industry. On the one hand to explore all possibilities of artists-in-residence and investigative design, on the other hand to introduce the museum staff to the new machine in the exhibition. On the basis of their findings, the museum will continue to collaborate with artists and designers.

助，如相關產業工作者以及教育或研究機構，藉由交流日與公開的意見交流，民眾可以就特定主題深入討論。當個人或企業捐贈照片、物件與紀念品，館方也會將之納入館藏或規劃成為展品，並使之數位化、公開於博物館網站，讓館藏更具價值。

跨界合作

歷經改造，現在「工業博物館」的織品部與印刷部 (textile and printing departments)，最大的特色就是強而有力、由下而上的創作過程，工作空間充滿活力，創客在這裡扮演「遺產活化」的角色，將過去的傳統、技藝與知識傳給下一代。博物館辦理的活動，讓館藏的功能得以擴充，也形塑出無形文化遺產的樣貌。博物館、私人收藏家、創意產業與教育機構之間的動態互動，讓博物館得以研究與收藏各式各樣的工業遺產技藝與傳統，不管是 Linotype 自動排字機（譯註：可一次鑄造整行鉛字的排字機，是印刷史上的重要發明）、飾帶鑲邊編織工藝 (passementerie)、飛梭織布 (flying shuttle) 或植物染 (vegetable dyes) 皆可網羅。

身為「活的博物館」的多年經驗，讓我們瞭解跨界合作的重要，在館藏與教育活動面向上，持續讓更多社群（如商業界、藝術界、教育界、藝術文化圈）加入我們的行列，這種參與式運作的模式能深入社群，獨具價值又無可取代。透過技法示範、工作坊、大師講堂與博物館活動，無論有形或無形的文化資產都能曝光並吸引大眾關注，讓博物館搖身一變，成為民眾與各種社群的共享空間，讓他們在此相互接觸、彼此肯定，更可交流知識與實務經驗。



Figure 2. Opening drukkerijafdeling. (Photo credit: © Corlazzzoli)

圖 2：「工業博物館」印刷間對外開放。(資料來源：©Corlazzzoli)

The collection as a beating heart

Every maker who shows an interest in the museum's collection and topics can examine a variety of publications, documents or objects from the collection relating to the specific topic through the museum library. The expertise cell for technical, scientific and industrial heritage ETWIE assists interested makers in finding the right partners for their project. This way, the knowledge and collection are constantly updated and expanded. The activities relating to the collection and the research are conducted in a highly participatory manner, by relying on people who have played a part in a relevant industry and by cooperating with educational and research institutions.

People are brought together around a particular topic via meeting days and public calls. Photographs, objects and souvenirs from personal archives and companies are integrated into the (online) collection and exhibitions. Making the collection accessible online via the museum's website is also an important element in maximising the collection's value.

Cross-over

The revamped textile and printing departments are characterised by a strong bottom-up approach. They are active workplaces where makers act as 'living vessels',

transferring traditions, skills and knowledge from the past to the next generations. The activities developed by the Museum of Industry constitute a valuable means of expanding the collection and mapping the intangible heritage. The dynamic interaction between the museum, private collectors, the creative industry and educational institutions enables the museum to survey and conserve various techniques and traditions relating to industrial heritage, ranging from operating a Linotype machine and passementerie weaving to using a flying shuttle or vegetable dyes.

Our years of experience as a 'living museum' have taught us that cross-over collaboration with other sectors (companies, the arts, education and the social-cultural area) is crucial to involving a wide community in the museum's activities and collection. It is a valuable and irreplaceable form of participatory operation of a museum that is firmly rooted in the community. Demonstrations, workshops, masterclasses and events make it possible to ensure the visibility and societal relevance of industrial heritage, whether tangible or intangible. This way, the museum becomes a place where visitors and all kinds of communities come into contact with each other, feel recognised and are enabled to share their knowledge and practices.

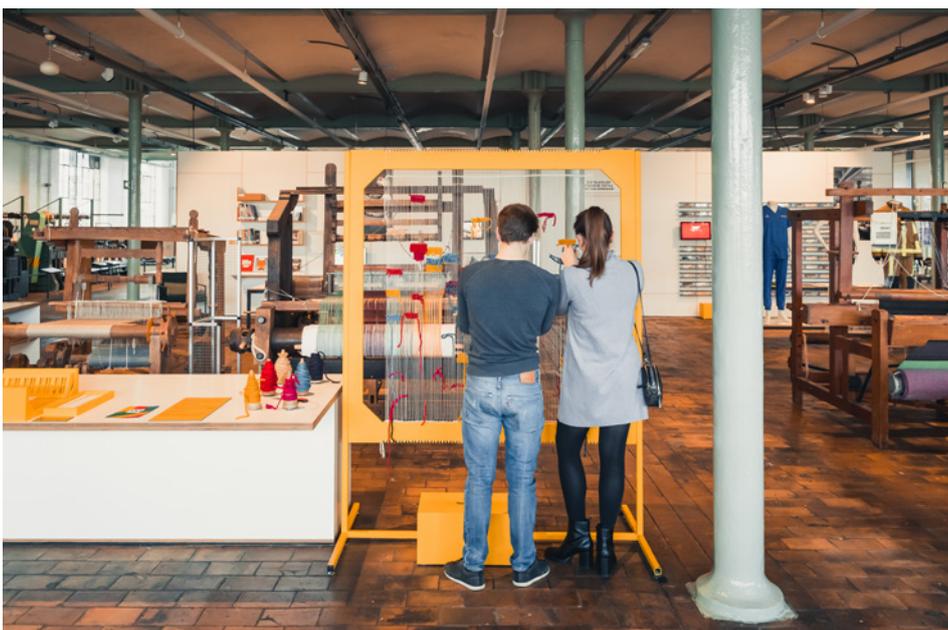


Figure 3. Textielafdeling met publiek. (Photo credit: ©Corlazzoli)

圖 3：參觀「工業博物館」紡織展覽的民眾。(資料來源：©Corlazzoli)

Examples of Events and Souvenirs Fused with Tradition from the World Heritage Registration Movement -Sites of Japan's Meiji Industrial Revolution

日本明治工業革命遺產創生－新興節慶與創意伴手禮開發

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"Sites of Japan's Meiji Industrial Revolution: Iron and Steel, Shipbuilding, and Coal Mining" was registered as a UNESCO World Cultural Heritage in 2015. In order to increase the momentum of World Heritage registration, in the Kyushu region of Japan, symposiums, lectures, and various other events were held from 2004 to 2015, and I also took the stage as a speaker. Companies and local governments in the Kyushu region have carried out various new projects and product developments in order to raise public awareness toward World Heritage registration. For example, various projects such as a cruise tour to Gunkanjima in Nagasaki City and a footpath event in Nakama City are still being held. As a representative example of those that are still loved by the community, I will explain "Tagawa Coal Mine Festival" and "Nejichoco" in this article.

The "Tagawa Coalmine Festival" is an event that has been going on since 2006 to widely publicize the "Coal Mine Dance", a song and dance born from the coal industry in the Chikuho area. "Nejichoco" is a chocolate with a characteristic shape that was developed in 2016 in Yawata, Kitakyushu City, a town in the steel industry. Both of them were created after being registered as a World Heritage Site, but I would like to introduce them here in recognition of their integration into the region.

"Tagawa Coalmine Festival"- the birthplace of Coal Mine Dance

Coal Mine Dance (Tankoh bushi) is a dance that has become a custom in the Chikuho area of Japan along with the development of the coal industry. Residents of former coalfields such as Chikuho, Omuta, and Nagasaki often perform this dance in August. Coal Mine Dance was born in Tagawa City in the Chikuho area. Coal mine dance is often performed during the Bon festival; the Buddhist All Souls' Day in Japan. The prototype of the coal mine dance is the "Coal selection

「日本明治時代工業革命遺產 - 鋼鐵、造船及煤礦產業」於 2015 年登錄為聯合國教科文組織世界文化遺產。為了提升登錄世界遺產的動能，日本九州自 2004 至 2015 年間，辦理了多場研討會、講座與活動，我也曾在其中擔任講者。九州政府與當地企業更進一步推出許多計畫與產品，增加民眾對世界文化遺產登錄議題之重視，如「長崎市軍艦島導覽活動」，以及「中間市散步活動」，至今仍在進行中。我將在這篇文章介紹非常具代表性的兩個案例，這兩個案例至今仍受日本民眾歡迎，也就是「田川炭坑節祭」（炭坑節まつり）以及「螺絲巧克力」（ネジチョコ）。

「田川炭坑節祭」始於 2006 年，目的是宣傳來自九州筑豐地區、音樂舞蹈皆源於當地礦業的「礦工舞」，「螺絲巧克力」則是盛行鋼鐵業的北九州八幡地區於 2016 年研發的巧克力產品，造型十分特殊。兩者都是為登錄世界文化遺產而誕生，因為兩者皆為凝聚當地社群力量而誕生，故特此介紹。

田川炭坑節祭：「礦工舞」的誕生地

過去日本筑豐地區的礦業發展蓬勃，使「礦工舞」(Coal Mine Dance ; Tankoh bushi) 逐漸成為當地習俗，居住在筑豐、大牟田、長崎煤田的居民，常在八月表演「礦工舞」。「礦工舞」最早源於筑豐的田川市，常在盂蘭盆節演出，舞蹈的原型是「挑礦歌」，也就是礦工挑選適合燃燒的煤礦時所唱的歌，每個礦城的挑礦歌旋律都不太一樣，目前在所有與煤礦有關的歌謠當中，「礦工舞」是最為出名的一首。

「礦工舞」約在 1950 年代開始風行全日本，這是因為赤坂小梅和三橋美智也等歌手錄唱了「礦工舞」、並於日本各地的盂蘭盆節演出。錄音室版本的「礦工舞」大受歡迎卻也爭議不斷，尤其對舞蹈發源地的九州居民來說更是如此，許多日本人認為大牟田才是「礦工舞」的發源地，大牟田跟田川一樣都是礦城，不過大牟田會如此有名，是因為該市是著名之三池煤礦所在地。後來，經過田川市與大牟田市的研議，決定在田川煤礦紀念公園的礦坑旁，豎立「礦工舞發源地紀念碑」。

song (Sentan bushi)", which was sung by workers during the labor of dividing coal into those that burn and those that do not. This "Coal selection song" has different tunes in each coal mine city that produced coal, but at present, this Coal Mine Dance is the most prominent coal mine-related song in Japan.

Coal Mine Dance became a famous song all over Japan around the 1950s. The reason is that singers such as "Akasaka Koume" and "Michiya Mihashi" sang Coal Mine Dance and released a record version of Coal Mine Dance, so they started to dance in the Bon festival all over Japan. As a result of the popularity of Coal Mine Dance with the release of the record, it was controversial, especially among the residents of Kyushu, where the birthplace of Coal Mine Dance was. Omuta City is the same coal mine town as Tagawa City, but the city was very famous because of the location of the Miike Coal Mine. In fact, many Japanese people thought that Omuta was the birthplace of Coal Mine Dance. A stone monument called "Monument of the Birthplace of Coal Mine Dance" in Tagawa City's Coal Memorial Park was built near the shaft of Tagawa City as a result of discussions with Omuta City as to which was the birthplace.

The coal mine facility in Tagawa City was a candidate for registration as "Sites of Japan's Meiji Industrial Revolution". Former Mitsui Tagawa Mining Works Ita Mining Shafts and Two chimneys were nominated as part of the World Heritage candidates. In order to support the registration of this coal mine facility as a World Heritage Site, Tagawa City has been holding an event called "Tagawa Coalmine Festival" every November since 2006, and many residents are dancing Coal Mine Dance.

When an event is held in Tagawa City, it is customary to dance Coal Mine Dance at the end of the event or drinking party. I was always wondering about this. In Tagawa City, it has become commonplace to dance Coal Mine Dance at the end of the event. This means that Coal Mine Dance is a traditional custom for the local residents of Tagawa City.

The characteristic of Coal Mine Dance is that everyone dances while forming a circle (Fig. 1). This dance is not performed by a good dancer alone. This is because

田川市的礦業設施當初被列為「日本明治時代的工業革命遺產」登錄名單的潛力點，三井田川礦場伊田礦坑與其兩座煙囪也獲提名為世界遺產潛力點，田川市為支持提名礦場為世界文化遺產，自2006年起每年十一月都會舉辦「田川炭坑節祭」。

節祭期間，民眾會在活動或飲酒派對的尾聲跳令人為之驚艷的「礦工舞」，在田川市，活動結束前跳一支礦工舞實屬平常，顯見礦工舞是田川市居民的傳統習俗。

「礦工舞」的特色就是眾人圍圈一起跳（見圖一），因為礦工舞是在一群人採礦的時候所唱，所以這支舞並不是由單一舞者演出，舞蹈時眾人圍成一圈，一起往同個方向移動，以特定的節奏舞動，並重複同樣的舞步（見圖一）。眾人因工業遺產形成的習俗而共舞，節慶期間，眾人在筑豐地區中心的田川市，從日落到夜晚跳著這支礦工舞，藉由這個傳統，訴說此處獨特的礦業故事。

「田川炭坑節祭」期間也會舉辦點燈活動，照亮礦場的兩座煙囪，這是因為礦工舞這首歌當中，有這麼一段歌詞：「高聳煙囪在夜空，月兒也想抽一口」。

歌詞中的「高聳煙囪」即是以三井田川礦場伊田礦坑的兩座煙囪為發想靈感，唱跳「礦工舞」的最佳地點自然就在煙囪前。

「礦工舞」與象徵田川礦業的煙囪有著密不可分的關係，十分遺憾，「田川炭坑節祭」於二〇二〇年因故停辦，但結合登錄文化遺產運動與傳統礦工舞習俗的「田川炭坑節祭」，已然成為民眾心中新興的熱門活動。



Figure 1. Tagawa Coalmine Festival (2011-11-6). (Photo credit: Ichihara Takeshi)

圖1：「田川炭坑節祭」（2011年11月6日）。(市原猛志提供)

Coal Mine Dance sang when a large number of people were preparing coal. The people in the circle walk in the same direction all at once and dance to a certain rhythm. Repeat the choreography of several patterns (Fig.1). The sight of many people dancing is very beautiful in the customs created by industry. This dance, which is performed from evening to night in the Chikuho area centered on Tagawa City, is a tradition that tells the history of coal mines.

At the "Tagawa Coalmine Festival", a light-up event will be held at night to illuminate the two chimneys used in the coal mine (Fig.2). This is because the lyrics of Coal Mine Dance have the following words.

"The chimney is so high that the moon will want to smoke."

The "high chimney" described in the lyrics is based on the motif of the two chimneys of Former Mitsui Tagawa Mining Works Ita Mining. The most suitable place to sing and dance the call mine dance is in front of the two chimneys.

There is such a close relationship between Coal Mine Dance and the chimney that symbolizes the coal mine in Tagawa City. Unfortunately, the "Tagawa Callmine Festival" event in 2020 was not held, but "Tagawa Coalmine Festival" is popular among the citizens as a new event that combines the traditional custom of Coal Mine Dance with the World Heritage registration movement.

Nejichoco -new souvenir of "Sites of Japan's Meiji Industrial Revolution"

I think it is important to make souvenir products so that more people will know about cultural heritage, including industrial heritage. This is because people who visit the heritage can convey the value and impressions of the industrial heritage to their friends by distributing souvenirs to friends who have never visited the heritage. I think local governments with industrial heritage need to find souvenirs rooted in the area. Also, if it doesn't exist, I think it will be necessary to develop a new one.

In addition to the "Tagawa Coalmine Festival", I would like to introduce the souvenir "Nejichoco" that was made to celebrate the registration as a World Heritage Site in



Figure 2. Tagawa Coalmine Festival (lightup events 2011-11-6). (Photo credit: Ichihara Takeshi)

圖 2：「田川炭坑節祭」點燈活動（2011 年 11 月 6 日）。（市原猛志提供）

「螺絲巧克力」：日本明治時代工業革命遺產的當紅伴手禮

我認為遺產點能搭配開發紀念品非常重要，如此才能讓遊客瞭解文化遺產與工業遺產，參觀工業遺產的遊客，將紀念品分送給從未駐足此地的朋友，可以藉此傳遞工業遺產的價值並推廣遺產點的形象。我認為工業遺產所在的地方政府必須找出深植當地文化的紀念品，如果還沒有開發的話，建議必須創意發想出來。

除了「田川炭坑節祭」，我還想介紹「螺絲巧克力」這個伴手禮。「螺絲巧克力」會誕生，是為了慶祝「日本明治時代工業革命遺產」被登錄為世界遺產。「螺絲巧克力」外型與螺絲類似，誕生地為鄰近田川市的北九州市，也就是官營製鐵所（即八幡製鐵所）的所在地

在礦場與製鐵所周遭可以找到非常多特別的甜食，這可能是因為鋼鐵業工人在悶熱潮濕的環境中工作，需要攝取的熱量比一般工人還多，礦工亦是如此。

因礦工舞而聲名大噪的田川市，也販售煤礦造型的羊羹「黑鑽石名菓」（黒ダイヤ）。除此之外，日本最具代表性的甜點「小雞名菓」（ひよ子）與「千鳥饅頭」（ち



Figure 3. Nejichoco(upper) and Mekasabule(lower). (Photo credit: Ichihara Takeshi)

圖 3：「螺絲巧克力」（上）和「沙布列零件造型餅乾」（下）。（市原猛志提供）

"Sites of Japan's Meiji Industrial Revolution". Nejichoco (chocolate in the shape of a screw) was born in Kitakyushu City (near Tagawa City), where the Imperial Steel Works (Yawata) is located.

There are many sweets specialties near coal mines and steel works. The reason for this seems to be that people in the steel industry need more calories than regular workers because they work in a hot and humid environment. This is also the case for workers in coal mining areas.

Even in Tagawa City, which is famous for its coal mine dance, a sweet called "Meika Kurodaiya (sweet beans jelly)", which is a sweet with a coal-shaped motif, is on sale. In addition, in the Chikuho area, Japan's representative sweets, "Meika Hiyoko (paste bun shaped like Chicken)" and "Chidori Manju (bean-paste bun)" were born with the rise of coal mines and spread nationwide. In this way, the traditional sweets of the region are closely related to the workers in the coal mine and steel industry.

Even near the Imperial Steel Works (Yawata), sweets such as "Yawata Manju (bean-paste bun)" and "Kameya no Monaka (bean-jam-filled wafers)" have been on sale

どりまんじゅう），也都是因筑豐地區礦業興起而誕生，魅力席捲全日本，由此可見，地方的傳統美食與礦業或鋼鐵業有著牽絲萬縷的連結。

官營製鐵所（八幡製鐵所）附近，也常年販售「八幡饅頭」（ヤワタマンジュウ）與「龜屋最中餅」（龜屋のもなか）這類的甜食，很遺憾的是，這些店鋪現今皆已歇業。2015年，「日本明治時代的工業革命遺產」登錄為世界遺產，當地居民決定要為北九州八幡市這個世界遺產所在地發想新的紀念品，於是2016年推出伴手禮「螺絲巧克力」。

螺絲巧克力是以3D列印的模具進行製成，是當地居民為慶祝登錄世界遺產而發想的甜食，巧克力的造型是螺絲與螺帽，兩者可以組合拴緊，象徵八幡工業之城的特色。

螺絲巧克力開賣即掀起熱潮，因世界遺產而發想的甜食變得遠近馳名後，另一種工具造型的餅乾「沙布列零件造型餅乾」（メカサブレ）也開始販售（如圖三），而兩種甜食都大受歡迎。

在過去有許多甜食是因當地礦業與製鐵業之需求而製作，而這些新興甜食則是近代因當地居民的願望而誕生，為的是要慶祝官營製鐵所（八幡製鐵所）納入列為世界遺產的「日本明治時代的工業革命遺產」。若您造訪日本的製鐵業工業遺產，我誠摯推薦您購買一份螺絲巧克力作為伴手禮。

for a long time. Unfortunately, however, these stores have already closed. In 2015, when "Meiji Japan's Industrial Revolutionary Heritage" was registered as a World Heritage Site, the local residents decided to make a new souvenir suitable for the World Heritage Site in Yawata, Kitakyushu City. The following year, 2016, Nejichoco was completed as a product and started selling.

Nejichoco is a souvenir made with a formwork using a 3D printer, which was conceived by local residents to celebrate the World Heritage registration. Nejichoco is in the shape of a bolt and a nut, and both can be tightened together. The shape of Nejichoco was chosen to symbolize the industrial city of Yawata.

Nejichoco became a hot topic with the start of sales. Along with becoming famous as a new confectionery related to World Heritage Sites, products with the same tool motif are also sold as "Mekasabule" (Fig. 3). Both sweets have a very good reputation.

There are many sweets produced by the local coal mining and steel industries. These newly added sweets were born from the wishes of local residents to celebrate the registration of the Imperial Steel Works (Yawata) was registered as a World Heritage Site as part of the "Sites of Japan's Meiji Industrial Revolution". When visiting Japan's steel industrial heritage, I recommend this chocolate as a souvenir.



Figure 4. Tote bag with a pictogram of Coal Mine Dance (Photo credit: Ichihara Takeshi)

圖 4：印有「礦工舞」圖示的托特包。(市原猛志提供)

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Youth Participation Collaborative Design & Strategic Partnership in Heritage Conservation

德國翁納市「國際光影藝術中心」：工業遺產轉型文化設施、文資地標、「林登啤酒廠」文創園區

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For decades beer is worldwide amongst other aspects like classical music or philosophy an important part of Germany's image. In 1874 a country with more than 28.000 breweries, the number of companies in this economic sector decreased in Germany to around 1.200 in 1988. In the framework of this transformation by the national and international process of centralization and concentrating process a wide range of brewery buildings has been reused in the last 30 years for new lofts, cultural initiatives and it is still an issue in Germany.

One well-known example of this transformation, in general led by the public sector, is the former "Linden Brewery" ("Lindenbrauerei") in Unna, a middle-sized town with less than 60.000 inhabitants. The town is located at the eastern edge of the Ruhr, close to Dortmund, the biggest city at the Ruhr region and worldwide very well-known by the football club "Borussia Dortmund 09". Merged with another company outside Unna, the "Linden Brewery" in Unna, a red brick industrial building complex with around 3.000 square meters dating from the 19th century and located close to the heart of the city, has been closed in 1979. In the following years many coal mines and steel mills in the area have been vacated too, so in the late 1990s, the development prospects not only of the brewery building in Unna, but also of other "Cathedrals of Work" in the typical triad of "coal, steel and beer" at the Ruhr Area looked very bleak.

After reusing parts of the brewery building as a cultural centre (opened in 1992 as "Lindenbrauerei") the requirement came up to develop the location as an attractive spot in the framework of a strategy strengthening tourism at the Ruhr. Initiated by the head of the regional renewal program of the "International Building Exhibition Emscherpark" (1989 to 1999), the

德國的啤酒與古典音樂、哲學，在過去幾十年來一直是我國在世界舞台上的形象代表。德國在 1874 年一度有兩萬八千座啤酒廠，但在產業經濟衰退下，德國啤酒廠的數量在 1988 年減少到一千兩百座左右。在過去三十年裡，許多啤酒廠區被重轉作新建公寓之用或成為文化活動場所，產業資產在德國仍然是一個重要議題。

其中一個眾所周知的例子，是位於德國翁納市、由政府主導的前「林登啤酒廠」(Lindenbrauerei) 再生計畫。翁納市是一個居民不到六萬人的中型城鎮，位於魯爾區東部邊緣，靠近魯爾區最大城多特蒙德 (Dortmund)，以足球俱樂部「多特蒙德 09」(Borussia Dortmund 09) 聞名。林登啤酒廠擁有建於十九世紀的紅磚工業建築群，面積約三千平方公尺，位置近翁納市中心，因為原公司與翁納市外的另一家公司合併，啤酒廠於 1979 年關閉。之後多年，該區的許多煤礦和鋼廠也紛紛撤離，在 1990 年代後期，在魯爾區中，不僅啤酒廠面臨關廠命運，典型的三大產業「煤、鋼鐵和啤酒」的許多宏偉的工業遺產殿堂 (Cathedrals of Work)，也因產業凋零而顯得暗淡無光。

首先政府將啤酒廠建築部分轉型為文化中心，1992 年以「林登啤酒廠園區 Lindenbrauerei」為名對外開放，之後更進一步規劃將廠區轉型為具有特色的觀光景點，以強化魯爾區旅遊業的策略發展。本案最早由「國際建築展覽 Emscherpark」區域更新計劃負責人 (1989-1999 年)、翁納市文化局局長和一群專家發起，提出重新利用林登啤酒廠酒窖的想法，跳脫歷史概念之呈現，轉而成為光影藝術之展演場地。酒窖空間一般不適合來舉辦活動，但呈現光影藝術需要黑暗的空間，因此沒有日光和其他光源的酒窖，反而滿足了這種藝術表現的基本條件。當時相對較新的光影藝術是一種以光為主要表現媒介的視覺藝術流派，以雕塑產生光或通過操縱光、顏色和陰影來創造臨時或常設性質的雕塑作品，為光影藝術提供永久的展演場所。林登啤酒廠空蕩的發酵酒窖充滿著歷史氣息與前人足跡，因此經常與羅馬的地下墓穴相提並論，成為舉辦美術館展覽的理想場所，適合範圍廣泛的光影藝術作品和展覽。從再生計畫的最早期，國際光影藝術中心就預定要發展為重要

head of the cultural department of Unna and a small group of experts the idea came up to repurpose the cellars of the “Linden Brewery” not by a historical concept but by light art. This kind of space is in general unsuitable for most other activities, but for presenting light-based art darkness, the complete absence of daylight and other light sources, is a fundamental condition for this kind of artistic expression. Light art, which was relatively new at this time, is a visual art genre in which light is the main medium of expression. It is an art genre in which either a sculpture produces light, or light is used to create a temporary or permanent “sculpture” through the manipulation of light, colors and shadows. The desire to provide a permanent home to light art meant, that the vacated fermentation cellars of the Linden-Brewery, often compared to Rome’s catacombs filled with history and the souls of those gone before, was the ideal location housing a museum for a wide range of works and exhibitions of light art. From the very early beginning this centre of light art should be developed as an international landmark. With financial support by the Ministry of Culture of the federal state of North Rhine-Westphalia and other local institutions like a bank company the renewal of the cellars of the brewery could be realized.

After two years of extensive conversion work and the temporary exhibition “Neon Delight” the Centre for International Light Art (ZfIL) opened in 2001 for the first “work in progress-exhibition” with works by James Turrell, Mario Merz and others (selected by an advisory panel of experts and financially supported by local and other cultural foundations in Germany). The attractive cultural amenity, financially supported by the city of Unna, nowadays is run by a sponsoring association with a wide range of members like the city of Unna, a local power supply company (founded in 2002) and a few individual persons with a total staff of five employees. The permanent exhibition presents today 13 multi-faceted works by internationally renowned artists like Olafur Eliasson, Mischa Kuball, James Turrell, Keith Sonnier, Christian Boltanski and Rebecca Horn. On the backside of the building you will find James Turrell’s sculpture “Sky Space/Camera Obscura”, presented 2009 to the public. Temporary exhibitions during the last twenty years like “Neon Delight” (2020), “Bright” (2018),

國際地標，在北萊茵 - 西發利亞邦文化部和銀行等其他地方企業的贊助下，酒窖的再生計畫得以順利實現。

歷經兩年的轉型工程後，國際光影藝術中心 (Centre for International Light Art, ZfIL) 於 2001 年對外開放，同時推出臨時特展「霓虹喜悅」 (Neon Delight)，這是中心第一次展出「未完成的光影作品」，包含詹姆斯·特雷爾 (James Turrell)、馬里奧·梅爾茲 (Mario Merz) 等人的作品，藝術家由專家顧問小組挑選，並得到當地和其他文化基金會的經費支持。轉型成功的文化園區由翁納市政府提供營運經費，如今由一個協會運營，協會成員則由各個贊助機構組成，例如翁納市政府、當地電力公司 (成立於 2002 年)、幾位個人成員，共有五名員工。常設展覽則展出了國際知名藝術家的十三件多元作品，包含奧拉維爾·埃利亞松 (Olafur Eliasson)、米沙·庫博爾 (Mischa Kuball)、詹姆斯·特雷爾 (James Turrell)、基思·桑尼爾 (Keith Sonnier)、克里斯琴·博爾坦斯基 (Christian Boltanski)、蕾貝卡·霍恩 (Rebecca Horn) 等。建築物後方則展示詹姆斯·特雷爾的雕塑作品「天際 / 暗箱」 (Sky Space/Camera Obscura)，於 2009 年首次公開展出。過去二十年來光影藝術中心所規劃的特展，如「霓虹喜悅」 (Neon Delight ; 2020)、「明亮」 (Bright ; 2018)、「得來不易的文字」 (Words Don’ t Come Easy ; 2013)、「燈光線」 (Light Lines ; 2013)，使光影藝術日漸充實、立足成為正式藝術類別。

為因應魯爾於 2010 年獲選為歐洲文化之都 (European Capital of Culture RUHR.2010)，國際光影藝術中心發起並舉辦了第一屆「國際光影藝術雙年展」 (Biennale for International Light Art)，並在展覽期間推出名為「私人空間中的開放光」 (Open Light in Private Spaces) 的展覽，利用翁納與附近幾個城市居民的六十個私人空間，展示國際知名藝術家的光影作品，展覽主題關注個人空間以及在其中生活或工作的人，邀請當地居民進行對話。博物館於 2015 年與英諾吉基金會 (Innogy Foundation) 發起「國際光影藝術獎」 (ILAA)，旨在展示新興藝術家作品，以創新和創意進一步推廣光影藝術，為新一代光影藝術家提供嶄露頭角的舞台。

國際光影藝術中心是當今世界為數不多且僅專注於光影藝術的機構，每年吸引大約兩萬五千名遊客，這樣的數字乍聽之下並不多，但有鑑中心規定只能在導遊帶領下參觀，這個數字可謂不低，而且大多數中心的訪客是來自魯爾區以外的地區。中心不僅將自身定位為光影藝術展出場所，還是一個人才培育中心，如辦理以「不同文化中的光」 (Light in different cultures) 為主題的討論、研討會、工作坊。在 2001 年，中心與歐洲照明設計師協會 (ELDA) 共

“Words Don’t Come Easy” (2013) or “Light Lines” (2013) complement the world of light as an art genre.

In the context of the European Capital of Culture RUHR.2010 the museum has founded and organized the first “Biennale for International Light Art”. In this framework the exhibition project with the title “Open Light In Private Spaces” presented works of art by internationally renowned artists in 60 private spaces of inhabitants of a few cities close to Unna. The project refers to the individual spaces and the persons living or working in them and has invited to a dialogue with the people of a region. With the Innogy Foundation the museum initiated in 2015 the International Light Art Award (ILAA) with the goal showing works by emerging artists, that develop light art further in an innovative and creative way, offering a stage for future generations of light artists.

The museum, worldwide nowadays one of the very few institutions that merely focuses on light art. It is attracting around 25.000 visitors a year, which may not seem a lot, but because of emergency regulation it can only be visited within guided tours. The majority of the visitors are coming from outside the Ruhr region. The museum considers itself more not only as a location of light art, but also as a competence centre, serving as forum for discussions and symposiums like “Light in different cultures”, organizing workshops, for example in 2001 “Forgotten Places, which was jointly organized with the “European Lighting Designers Association (ELDA).” The following temporary illumination of the church tower in the city of Unna was very successful and a permanent illumination with other buildings in the city centre of Unna could be realized a few years later.

In the framework of the regional cultural project “Hellweg, a Light Path”, founded in 2002 and financially supported by the Ministry of Culture of North Rhine-Westphalia, light art projects in 10 cities presented 40 installations by Rosemarie Trockel, Kazuo Katase and other, in most cases linked to the historical Westphalian Hellweg travel route and within a distance of only a few miles around the Centre for International Light Art. All these initiatives, including temporary exhibitions like “City lights” in 2015, have contributed to the fact that this genre is also very present in the wider regional public. Each year new

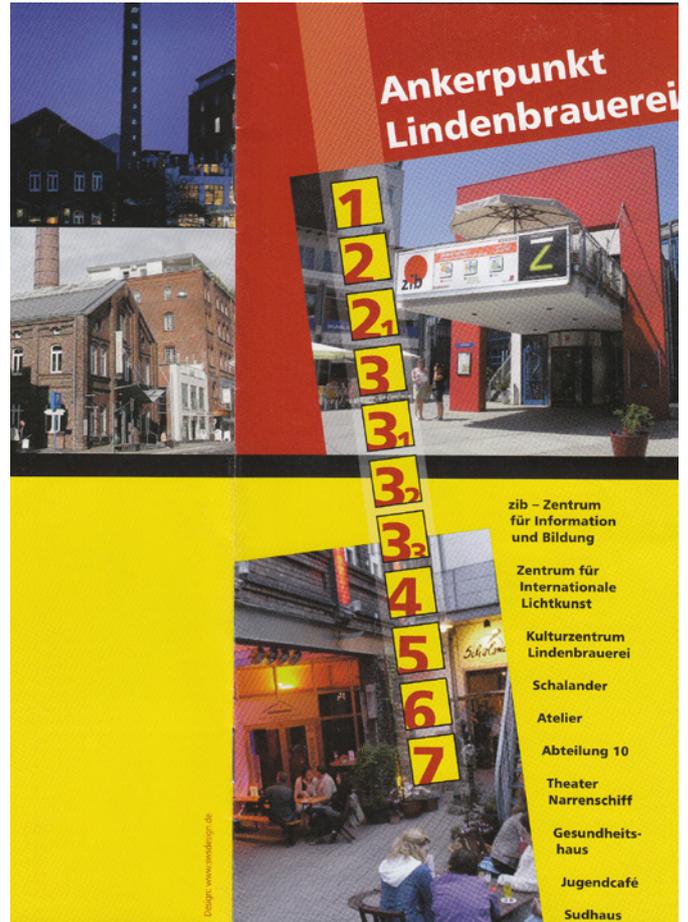


Figure 1. The leaflet cover of Centre for International Light Art. (Photo credit: City of Unna)

圖 1：德國翁納市「國際光影藝術中心」介紹摺頁。(圖片來源：翁納市政府)

同舉辦「被遺忘的地方」(Forgotten Places)論壇，隨後推出的翁納市教堂塔樓的臨時光雕展更是大獲成功，之後幾年，中心進一步在翁納市中心推出其他建物的永久光雕計畫。

在北萊茵 - 西發利亞邦文化部資助下，中心於 2002 年推動區域文化計畫「舊鹽路之旅 - 光之道」(Hellweg, a Light Path)，於鄰近十座城市展示羅斯瑪麗·特羅克爾 (Rosemarie Trockel)、片瀨和夫 (Kazuo Katase) 等人高達四十件光影裝置，作品緊扣歷史悠久的西發利亞邦「舊鹽路」觀光路線，並且距離國際光藝術中心僅幾英里之遙。這些活動與計畫，包括 2015 年的「城市之光」(City Lights) 等特展，都促成了光影類型作品受到更廣泛的大眾歡迎，年年皆有國內外知名藝術家的新作品推出。翁納市公共空間的臨時光雕覽十分成功，因此中心產生了將翁納市發展為「光之城」的想法，並推出「光之城總體規劃」(2007)，但此概念無法在所有重要場域執行，例如照亮整個翁納市市集的計畫並未獲實現。

works made by nationally and internationally renowned artists are being realized. Influenced by the success of this wide range of temporary exhibitions in the public space in Unna the idea came up developing Unna as a "City of light", based on a "Masterplan Light" (2007). But the concept could not be carried out in all the important elements like illuminating the whole market place of Unna.

With a 52-metre-high chimney, itself an installation of light art after dark by the Italian artist Mario Merz, the centre is today also one of the 25 anchor points of the Route of Industrial Heritage at the Ruhr, a concept, which was introduced to a wider public in 1999 in the framework of the final presentation of the "Building Exhibition Emscherpark" (1999). These anchor points serve as important "contemporary witnesses" to the Ruhr area's industrial heritage and simultaneously as symbols of the change of a whole region. They form the core network of the Route and with their wide range of

國際光影藝術中心有一個五十二米高的煙囪，它本身就是意大利藝術家馬里奧·梅爾茲 (Mario Merz) 的燈光藝術裝置，天黑後照亮整個天際。中心如今也是魯爾區「工業遺產之路」 (Route of Industrial Heritage) 的二十五個重要錨點之一。所謂「工業遺產之路」於 1999 年推出，在「國際建築展覽 Emscherpark」 (1999 年) 的最終報告中向大眾介紹工業遺產旅遊的概念。這些錨點是魯爾地區工業遺產的重要當代見證，同時也象徵了整個地區的沿革與變化，構成了工業遺產旅遊路線的核心，以雄偉壯觀的工業遺產殿堂展示魯爾區工業文化發展的多元面向，吸引德國本地與其他地區的遊客慕名前來，使工業遺產路線成為其他國家效仿的藍圖，在 2017 年更吸引了超過 七百萬名遊客。此外，國際光影藝術中心正在連結其他文化機構，除了本身的的地標性建築以及其他文化設施外，還積極與文化中心、城市圖書館、劇院、終身教育中心、城市檔案館、音樂協會、電影院和餐廳形成網絡，以實現「林登創意城區」 (Linden-Quarter) 之願景。

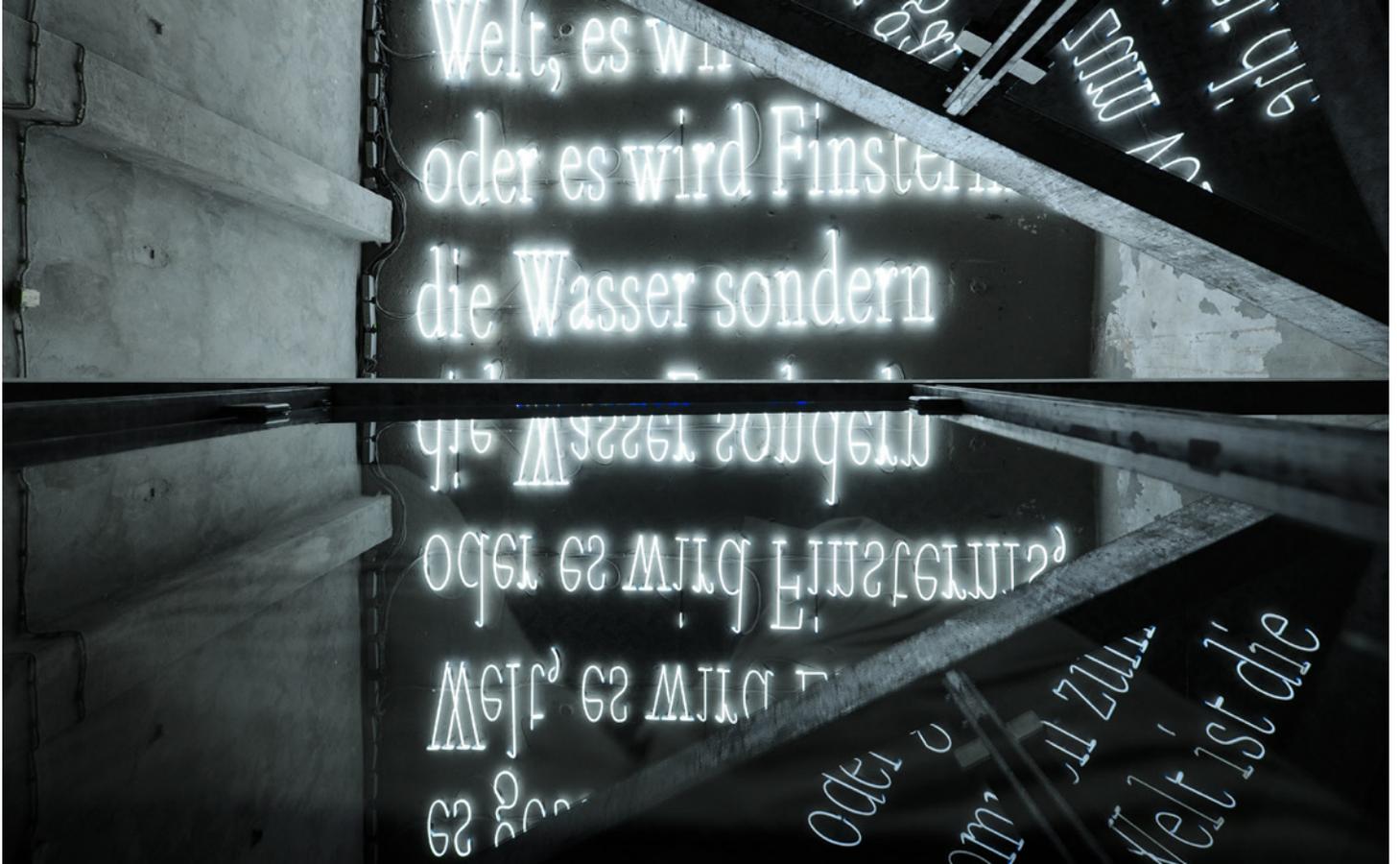


Figure 2. Joseph Kosuth (2001), "Die Signatur des Wortes" ("The Signature of Word"), Light installation. (Photo credit: Frank Vinken)

圖 2：約瑟夫·庫斯「文字的簽名」光影裝置藝術。(法蘭克·法坎提供)

former “cathedrals of work” these attractive locations show the entire spectrum of the industrial-cultural development in the Ruhr and appeal tourists not only from other parts of Germany. Until 2017 the Route of Industrial Heritage, a blueprint for similar initiatives in other countries, has attracted more than 7 million visitors. Additionally the Centre for International Light Art is performing as a landmark for developing the creative quarter “Linden-Quarter” with other cultural amenities like a cultural centre, the city library, a theatre, an adult education centre (“Volkshochschule”), the city archives, a music club, a movie theatre and restaurants.

After 20 years of light art the centre, also member of the regional network “RuhrKunstMuseen” and cooperating with other well-known cities for light art, for example the City of Turin and museums outside the region has become an important anchor point for the arts at the Ruhr, specialized on light art. It is welcoming now an international audience to have a unique experience with art and light. The number of collaborations with universities, high schools and companies of the lighting industry is growing. Many school groups visit the museum by organized exhibition talks and workshops motivating maybe their parents to discover the underground treasures of the former brewery. Because of the Corona Pandemic the Centre for International Light Art is actually closed, including the new exhibition “Switch II”, which was organized jointly with a university in Germany. The biannual International Light Art Award (ILAA) has to be cancelled too. Managing the pandemic in the near future the centre will open again like all other museums and other cultural amenities in Germany are hoping.

歷經二十年的發展，身為魯爾區博物館網絡 (RuhrKunstMuseen) 一員的國際光影藝術中心，也積極與其他著名光影藝術城市合作，例如都靈市和其他城市的博物館也已成爲魯爾區的重要的光影藝術錨點。今日，中心吸引的旅客來自全球各地，慕名前來一享藝術和光影方面的獨特體驗。中心與大學、高中和照明公司的合作計畫數量也正在增加，許多學校團體也經常前來參加展覽講座和研討會，學生家長也透過孩子而認識舊酒廠不爲人知的文資寶藏。然而，因為新冠肺炎疫情肆虐，中心目前暫時關閉，與德國一所大學聯合舉辦的新展覽「Switch II」也暫停開放，兩年一度的國際光影藝術獎 (ILAA) 也被迫取消。國際光影藝術中心和德國其他博物館等文化機構都衷心希望在疫情消退後可再次開啟、重回軌道。

Sharing Experiences - the Way to Build an International Community of Mining Museums

共享經驗：建立礦業博物館之國際社群

Jan Godłowski (Director of Cracow Saltworks Museum Wieliczka, Poland)

波蘭維利奇卡市克拉科夫鹽礦博物館館長 楊·歌德沃夫斯基

Preserving the mining heritage, and especially preserving and giving access to authentic underground mining pits, is a massive and complicated challenge. One of the key issues is to ensure safety for the post-industrial facility itself both for the people working in it as well as visitors. Below, I will try to highlight the basic issues in the protection of material mining heritage on the example of the Salt Mine in Wieliczka.

Despite some common features, each mine has its own specificity. Salt, coal, copper, tin, silver, gold, or slate mines are all extremely different and it is often difficult to compare them with each other. The approach to adapting old workings accessible to visitors may vary significantly depending on the type of mine, the time of its establishing, and subsequent mining techniques. The size of the mining facilities also varies from single tunnels of several dozen meters to complexes with several hundred-kilometre-long galleries. Some mines can be and are adapted to the needs of mass tourism, others, due to the difficulty of access, may only be accessed by small groups of visitors. A separate issue is the possible degree of authenticity and safety which can be provided in former mines. What are the limits of adaptation to the needs of visitors? What to protect in its purely authentic form and what can be used entirely for commercial purposes? What do we want to and how can we preserve from the universally understood equipment of former mines? Where to find the money for the maintenance of these facilities?

In many countries, some of the historical mines are formally protected as architectural heritage sites, some of them function as museums, and others de facto function as museums, although formally they are not museums. Sometimes they are historical and sometimes

保存礦業遺產是艱鉅的挑戰，保存地下礦坑並活化利用更是困難，其中一個關鍵議題是確保工作者與遊客在後工業設施中的安全。於本文中，我會以維利奇卡的鹽礦為例，探討保護礦業遺產的基本議題。

各種礦業雖有共通點，但也各具特色，鹽礦、煤礦、銅礦、錫礦、銀礦、金礦、板岩礦，彼此相差甚大，難以比較，因此要開放舊礦場供遊客參觀，作法會因礦業種類、建造時間與開採技巧而天差地遠。礦業設施的規模也大相逕庭，有幾十公尺長的單條隧道，也有多條數百公里長的隧道集結而成的礦場，有些礦場得以成為大眾旅遊景點，有些則因出入困難，只適合開放少數遊客進入。另一個議題，是舊有礦場是否能提供真實又安全的參觀體驗，滿足旅客需求的同時，侷限又在哪裡？遺產何處需完整保存，何處可完全開放供商業使用？面對這些眾所皆知的舊有礦業設施，我們想要保存什麼？又要如何保存？設施維護的經費又應從何處尋得？

許多國家立法正式保護礦業遺產，將之列為歷史建物，有些則轉型為博物館，有些前身並非博物館，但現在兼具博物館功能；有些遺產是歷史建物，有些是自然遺產。許多礦場也完全改為商業使用，成為娛樂場地如遊樂園、演唱會場、運動賽場；有些則成為水療館舍或研究機構用地。另外，我們知道有少數幾個地下礦場景點仍從事採礦工作，然而還有許多礦場屬於未開發階段。無論發展情況如何，以上這些功能都讓礦場轉型成為旅遊景點，每年吸引越來越多遊客造訪，讓礦業遺產得以大放異彩。我們必須謹記，雖然礦場不一定全都可開放參觀（如地處偏遠山區），但仍值得保存為具歷史性的工業建物。

無論是閒置或仍在營運的礦場，顯然並非全部都能保存或應該被保存，但我們必須謹記礦業發展與人類文明進密不可分的關係，舉例來說，若沒有開採錫礦、銅礦、鐵礦或煤礦，人類文明就不會歷經飛越性的成長。保存礦業遺產有很多種方式，如開發新功能，讓舊有礦場獲得新生，有時甚至全轉為商業使用。

natural reserve sites. Many of the post-mining sites are also used purely commercially for entertainment purposes, acting as amusement parks, concert halls, or sports facilities. Others are used as spas, or host research and development centres. Finally, we know of admittedly few examples of underground tourist routes in functioning mines that carry out normal mining activities. However, there are many mining sites left to themselves in an undeveloped state. All the above functions, regardless of the way in which they are developed, make the former mines a tourist attraction, and attract more and more people each year. They present a great opportunity to show the mining heritage. One cannot forget about the facilities which, in their whole or part, are not available for tourists (e.g. due to their location high in the mountains) but are worth preserving as historically crucial industrial facilities.

Of course, not all mining works, both old and still functioning, can and should be preserved. Nonetheless, one must remember that the entire history of mining is inextricably linked with the development of human civilisation. For example: without the mining of tin, copper, iron, or coal, further civilisation leaps could not take place. The mining heritage can be protected in many ways, for example, by providing old mines with new functions — giving them a second life, sometimes entirely as commercial facilities.

The management form of mining sites made available to visitors is also deeply diverse: through public institutions, e.g. museums, associations of local enthusiasts, commercial entities, family interests, “heirs” of former mines — no longer conducting mining but continuing operations in the form of tourist enterprises, or finally, routes in facilities which still operate, a separate part of which can be used for commercial, tourist, and museum purposes. Maintaining safety in underground complexes (for example, providing the necessary ventilation) is often overly expensive and involves the need to obtain certain permanent funds from subsidies or commercial revenues.

One should not also overlook the legal environment, which constitutes an important element influencing the

供遊客參觀的礦場，管理機構也各不相同，如公營機構（如博物館）、當地有志之士組成的協會、企業經營、家庭事業、或舊有礦場的「繼承者」。有些礦場可能不再開採，轉型為提供遊客參觀，但有些礦場部分持續開採，部分作為商業、觀光或博物館使用。維護地下礦場安全（如必備的通風系統）所費不貲，必須長期由政府補助或商業收入等資金挹注。

另外，我們也不應忽略法規這一面向，因為法規會影響到工業遺產的運作。有時工業遺產必須遵守礦業法，有時又會受制於文化遺產保存之法規，而且不同國家的法規與實施情形也差異甚大、共通性低。

波蘭的維利奇卡 (Wieliczka) 的與鄰近的博赫尼亞 (Bochnia) 有數座岩鹽礦場，皆於十三世紀下半葉開發，據估計，在七百五十年的維利奇卡礦業史中，總共建造了約九百萬立方公尺的礦場空間。截至 1996 年停業為止，共建造了九層礦坑，地底通道長達兩百四十五公里，其中「克拉科夫鹽礦」(Cracow Saltworks) 規模龐大的礦場遠近馳名，早在中世紀後期就已開放遊客參觀，維利奇卡礦場 (Wieliczka Mine) 巨大的地下礦坑更是令人嘆為觀止。十九世紀，旅遊業發展帶動礦場成立觀光路線，當時礦場仍在營運。時至今日，每年有超過一千八百萬名遊客參觀維利奇卡礦場。維利奇卡礦場目前由兩個機構共同營運，一個是維利奇卡鹽礦國營股份有限公司 (Wieliczka Salt Mine state joint-stock company)，其前身為礦業公司，目前負責礦坑維護與觀光路線的遊客服務；一個是克拉科夫鹽礦博物館，負責營運在礦場的地下三樓（約地下一百三十五公尺）的鹽礦展覽空間。

維利奇卡的克拉科夫鹽礦博物館 (Cracow Saltworks Museum) 於 1951 年成立，目的為保存獨特的舊有礦場與場內設備工具。1966 年，礦業公司捐贈礦坑空間作為博物館，使得第一個地下展覽得以推出，礦坑中十七世紀與十八世紀便啟用的馬力驅動起重機也成為館藏，展覽在地下露天博物館展出，是全世界此類展覽規模最大的一場。由於維利奇卡鹽礦博物館的努力推動，維利奇卡鹽礦於 1976 年成為名列保存維護名單的遺產。維利奇卡鹽礦有幸於 1978 年躋身聯合國教科文組織第一批世界遺產 (UNESCO World Heritage) 之列，該年是世界遺產元年，維利奇卡鹽礦也是該名單中的第一個工業遺產。值得注意的是，鹽礦博物館所在的礦場經營時期非常久遠，從十三世紀中葉就一直營運，到 1996 年才退役，原本聯合國教科文組織世界遺產的名單只收錄維利奇卡礦場，到了 2013 年，博赫尼亞礦場與鹽礦城堡 (Salt Mine in Bochnia

functioning of such sites. Often, these places are still subject to mining law, and sometimes, also to the law of heritage protection. In different countries, regulations and practice vary greatly, and regulations are not compatible.

The rock salt mines in Wieliczka and the nearby Bochnia in Poland, were established in the second half of the 13th century. It is estimated that during 750 years of mining activity in Wieliczka, ca. 9 million cubic metres of workings were created. At the time of production shutdown in 1996, there were 245 km of corridors located on nine levels. “Cracow Saltworks”, as the mine complex was known through its history, were already visited in the late Middle Ages. Especially the workings of the Wieliczka Mine with their huge chambers were widely admired and greatly appreciated. The development of tourism in the 19th century led to the creation of the tourist route, while the mine was still operating. Currently, the Wieliczka Mine is visited by over 1.8 million tourists every year. There are two entities operating in the mine: Kopalnia Soli Wieliczka S.A.(Wieliczka Salt Mine state joint-stock company), which is a former mining company and currently deals with securing mining pits and commercial tourist service on the Tourist Route, and the Cracow Saltworks Museum, which has its exhibition on the third level, 135 metres below ground.

Cracow Saltworks Museum in Wieliczka was established in 1951. It was created to preserve the unique old mine workings, as well as the mining equipment and tools left in them. In 1966, the first underground museum exhibition was opened in the mining chambers donated by the mining company to the Museum. A unique collection of horse-powered hoisting machineries from the 17th and 18th centuries was created from the authentic machines found in various places in the mine. It became the largest exhibition of this type worldwide and was displayed in the form of an underground open-air museum. Thanks to the efforts of the Museum, the Wieliczka Salt Mine was placed under conservation protection in 1976 as a heritage site. In 1978, the Wieliczka Salt Mine was entered on the first UNESCO World Heritage List, which was created at that time, and, importantly, it was the first industrial site on that list. It



Figure 1. A horse-powered hoisting machineries from the 17th and 18th centuries
(Photo credit: Jan Godłowski)

圖 1：十七世紀與十八世紀使用的馬拉式捲揚機。（楊·歌德沃夫斯基提供）

and the Saltworks Castle) 終於也獲列世界遺產，其中的鹽礦城堡於中世紀營運至 1945 年，是維利奇卡與博赫尼亞的礦業企業的運作總部，這組歷史遺產在世界遺產名單上的正式登錄名稱為「維利奇卡與博赫尼亞皇家鹽礦」(The Royal Salt Mines of Wieliczka and Bochnia)。

要保存維護維利奇卡規模龐大的地下礦場，可說是難上加難，因應二十世紀鹽析法而建造的設施因為年代久遠而快速崩毀，另外，維利奇卡與博赫尼亞邊界的喀爾巴阡山脈 (the Carpathian Mountains) 地質不斷隆起，也造成礦坑在礦業發展後期不斷擠壓縮小，地下礦場上方就是小鎮，因此必須有特別的安全措施保障居民安全。如先前所提到的，維利奇卡只有很小一部份的礦場 (約 3%) 可供參觀，但其實受到保護與維護的範圍更加廣大。值得注意的是，早在 1928 年，波蘭法律就已認可舊有礦場為文化遺產，但直到 1945 年，此法才首度啟用，認定新石器時代到青銅器時代 (約公元前 3900 年到 1600 年) 位於克熱米翁基的帶條紋燧石礦區為重要遺產。維利奇卡的「水晶洞」(Crystal Caverns) 最早於 1928 獲政府認定為「自然保護區」(nature reserve)，洞內佈滿了在第二次冰河期形成、極致純粹的岩鹽結晶，這個礦區受到法規的特別保護，只有少數人 (基本上就是科學研究者) 得以進入。

維利奇卡鹽礦的歷史價值使之成為受保護的對象，此地現在是礦業保護區及博物館，同時也是遠近馳名的旅遊景點，礦場提供採礦與地質學主題的教育活動，讓兒童與學生能來此學習；這裡的空間也開放商業活動租用，如演唱會、運動賽事、舞會、婚禮、水療中心、醫療照護中心等。要提供以上服務，就必須有適當的技術、衛生、飲食、

is also worth noting that the Museum was established in the salt mine which had been continuously operating from the mid-13th century until 1996. In 2013, the original Wieliczka entry on the UNESCO World Heritage List was extended to include the workings of the salt mine in Bochnia and the Saltworks Castle. The Saltworks Castle, from the Middle Ages to 1945, was the seat of the administration of the enterprise which included the mines in Wieliczka and Bochnia. The present name of this historic complex on the list is "The Royal Salt Mines of Wieliczka and Bochnia".

It is practically impossible to preserve and maintain such enormous underground mining complex as this which is present in Wieliczka. Especially the workings which were created because of 20th-century techniques of salt leaching are subject to rapid destruction. An additional factor accelerating the clamping of post-mining voids is the constant upheaval of the Carpathian Mountains, the border of which runs around the Wieliczka and Bochnia deposit. The mines are located directly under the towns that function today, which requires special safety measures. As mentioned above, only a small part (ca. 3%) of the mine's original acreage is available to visitors, although the area under protection and intended for preservation is much larger. It is worth noting that Polish legislation provided for the possibility of recognising historical mines as heritage site as early as in 1928. However, this law was first applied only in 1945 to the Neolithic and Bronze Age (3900–1600 BCE) striped flint mines in Krzemionki. In 1928, the so-called "Crystal Caverns" situated in the Wieliczka Mine were declared a nature reserve. These are fissures filled with extremely pure salt (halite) crystals formed by secondary Ice Age crystallisation. This area of the mine is subject to special protection with restrictive rules of limited access, basically only for scientific researchers.

The historic aspects of the Wieliczka Salt Mine make it a protected site, as well as a mining reserve and a museum. It is also a great tourist attraction. The mine is also a place providing educational programmes for children and students of mining and geology. It is also a space where one can organise various commercial events, such as concerts, sports competitions, balls, weddings, but also spa and healthcare activities. To be

物流措施，並使用正確的方式以維護地下礦場。讓歷史遺跡保留原有的真實樣貌，都需要極為複雜的礦場維護作業。

憑藉其多年經驗，維利奇卡克拉科夫鹽礦博物館接下任務，要讓全球與在地的舊有礦場形成一個社群。為此，博物館於2018年11月19日至22日，在維利奇卡與博赫尼亞辦理「礦業與地下露天博物館國際研討會」

(the International Conference of Museums Mining and Underground Museums)。會前，博物館與世界各地的礦業遺產密切聯繫，為期四天的研討會，吸引來自十八個國家的礦場專業人士參與。研討會的口號為「在此相見，交流經驗」，研討會也成功做到這點，讓學術社群（研究礦業遺產的歷史學者）與營運礦業博物館和礦場觀光的管理方得以交流。管理方是負責直接保護礦場、讓舊有礦場能夠開放民眾參觀的重要因素，但就我目前的觀察，礦業遺產的歷史學者與開放礦業遺產的營運管理方經常缺乏交流，此外，也有些礦業遺產管理方較為自我中心，無意與他人分享經驗，欠缺與同業交流的動機。

此研討會的目標便是成為一個交流平臺，讓與會者針對地下礦業遺產的管理面向，能有交流經驗的機會，進一步討論問題解方、如何避免失誤、觀摩案例、以及創造自身特色等。這些討論與經驗交流促成了名為「建立與管理礦業博物館與地下礦場觀光路線：最佳實踐國際名錄」的計畫（The International Catalogue of Best Practices in Establishing and Managing the Mining Museum Facilities and Underground Mining Tourist Routes），由克拉科夫鹽礦博物館負責，並與國際文化紀念物與歷史場所委員會（ICOSMOS）和國際工業遺產保存委員會（TICCIH）合作執行，我希望未來幾年，我們的礦業遺產社群可以持續擴編此目錄，提供觀光礦業遺產管理者務實的參考指南。

我也希望克拉科夫鹽礦博物館能成為保護礦業遺產的榜樣。之前已發佈的會議資料、未來會後的資料、以及最重要的會議本身，都是很好的平臺，讓參與者增進知識、交流地下礦業遺產觀光活化的想法。

able to carry all the above out, it is necessary to have appropriate technical, sanitary, gastronomic, and logistic measures and to maintain underground workings in proper condition. Preserving historic workings in the most authentic possible form, like their original form, also requires complex mining works.

Using its many years of experience, Cracow Saltworks Museum in Wieliczka felt entitled to take up the challenge of building a community of historic mining centres, both on a local and global scale. For this purpose, it organised the International Conference of Museums and Underground Open-Air Museums in Wieliczka–Bochnia on 19th – 22nd November 2018. The conference was preceded by intensive establishing of direct contacts with mining centres around the world. As a result, the four-day conference was attended by representatives from 18 countries from several dozen mining sites, and according to the motto “They met and exchanged experiences”. It can be considered a success that during the conference the academic community — historians studying mining heritage met with managers running the mining museums with their tourist routes. It is these operators of these sites who directly protect and make the former workings available for sightseeing. My observations to date show that very often the circles of mining historians are completely detached from the circles operating the historical mines (making them available to visitors). Often, some former mines are so self-centred that they are not interested in sharing and, consequently, do not exchange experiences with other sites of similar type.

The conference in its assumption meant to be the beginning of building a platform for the exchange of experiences in the management of underground mining sites. It was a place of discussion about which solutions work and which do not, how to avoid mistakes, and which examples to follow. How to create one own

uniqueness? The substantive effect of these discussions and exchange of experiences was the proposal for the project entitled "The International Catalogue of Best Practices in Establishing and Managing the Mining Museum Facilities and Underground Mining Tourist Routes". Cracow Saltworks Museum assumed the role of the coordinator of these works, and the cooperation was offered by representatives of ICOMOS and TICCIH. I hope that in the next few years, our mining community will manage to formulate the catalogue together, and it is going to become a guide for people managing the mines open to visitors.

Hopefully, the initiative of Cracow Saltworks Museum will also enable building a representation of the community dealing with the protection of mining industrial heritage. The published conference materials, and most of all, the conference itself was, and its subsequent editions will be, a good place to gain knowledge and create adaptive ideas for centres which are on the precipice of opening underground tourist routes.



Figure 2. Participants of the ICMUM. (Photo credit: Jan Godłowski)

圖 2：地下與礦業博物館國際研討會成員。（楊·歌德沃夫斯基提供）

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Industrial Heritage in Australia: From Labour to Leisure

澳洲工業遺產新境：從勞動場址到休憩場所

Peter Romey (Deputy Chair, AusHeritage)

澳洲遺產協會副主席 彼得·羅梅

In recent decades there has been an increasing interest in industrial heritage, and more specifically the adaptation of redundant industrial sites for new uses. Australia is no exception, and our country has a rich heritage of industrial places, despite our long reputation of relying on our pastoral industry which gave Australia one of the highest living standards in the world (known as 'riding on the sheep's back').

The International Committee for the Conservation of the Industrial Heritage (TICCIH), is the world organization for industrial heritage. It was established in 1973, and its goals are 'to promote international cooperation in preserving, conserving, investigating, documenting, researching, interpreting, and advancing education of the industrial heritage'. The International Council on Monuments and Sites (ICOMOS) recognises TICCIH as a designated consultant in all matters related to the study and preservation of industrial heritage.

Australia ICOMOS established a National Scientific Committee on Industrial Heritage (NSC-IH) in 2018 'to be a voice for industrial heritage advocating for the preservation, conservation, investigation, documentation, research and interpretation of our industrial heritage'. So, industrial heritage, especially the process for finding opportunities for the meaningful reuse of redundant industrial sites, is a subject of considerable interest in Australia.

In this article I will briefly discuss a number of redundant industrial sites have been adapted for a new use as urban parklands. What is particularly interesting about these sites is that they have become successful and highly valued places for passive outdoor leisure, a dramatic contrast with their original industrial use which equated with hard work, pollution, dirt and the exploitation of lowly paid workers.

Many former industrial sites have been redeveloped for new uses that retain a measure of economic viability,

近幾十年來，民眾對工業遺產興趣日益濃厚，退役工業廠區的創生活用更是受到大眾關注。澳洲也不例外，儘管本國因畜牧業享譽全球，讓我們成為世界上生活水平最高的國家之一（澳洲被稱為「以羊業起家」 'riding on the sheep's back' ），但澳洲也擁有豐富的工業遺產。

「國際工業遺產保存委員會」（The International Committee for the Conservation of the Industrial Heritage, TICCIH）成立於1973年，是提倡工業遺產保存的世界組織，宗旨為「促進工業遺產保存、保護、調查、記錄、研究、詮釋、教育面相之國際合作」。TICCIH也是「國際文化紀念物與歷史場所委員會」（ICOMOS）其工業遺產研究與保存相關事項的指定顧問。

澳洲「國際文化紀念物與歷史場所委員會」（ICOMOS）於2018年成立了工業遺產國家科學委員會（National Scientific Committee on Industrial Heritage; NSC-IH），「為工業遺產的發聲管道，倡導澳洲工業遺產之保存、保護、調查、記錄、研究和詮釋」。因此，澳洲的工業遺產，特別是閒置工業空間活化利用的過程，也引起民眾的極大興趣。

於本文中，我將簡要討論幾個澳洲改造為都會公園的歷史工業廠區。這些過去的工業用地，如今已化身為民眾高度重視且喜愛之戶外遊憩場所，有趣的是，相較最初的工業用途、辛勤勞動、環境污染、骯髒與低薪剝削之工作條件，現今的產業園區與過去形成了鮮明的對比。

澳洲許多歷史工業廠區已被重新開發，如改建為住宅、商業辦公室、零售商店、輕工業，甚至是表演場所或博物館（或上述用途的結合），達到一定程度的經濟自主性。但在某些情況下，由於諸多不同原因，卻無法順利執行再生計畫。

例如，工業廠區再生常見的阻礙，是場地受到過去工業活動之汙染，卻無法完全清除，因此廠區不能開發利用，甚至可能要進行密封以防污染外洩。有些廠區在過去長期被當作垃圾處理場，例如製磚廠退役後，土地經常被作為廢棄物處理場，黏土開採殆盡後留下的土坑，也常被用來掩埋家庭和工業廢物。然而，掩埋場土壤狀況普遍不穩定，因此上方不適合興建建築物。

including housing, commercial offices, retail, light industry or even performance spaces or museums (or as combinations of the above). However, in some cases, and for a range of reasons, these options may not be viable.

A common deterrent to the redevelopment of redundant industrial sites is contamination that can not be entirely mitigated, and so needs to be left undisturbed and possibly sealed. Some sites may have been used for rubbish disposal, and this was a common second phase of land use for brickworks, where the pit left behind when the clay was exhausted is progressively filled with household and industrial waste. The resulting unstable ground conditions preclude the redevelopment of these sites for new construction.

Finally, although Australia is a very large country of 7.7 million km² and with a relatively small population of 25 million, it is one of the most urbanised countries in the world. Many of our older redundant industrial sites are located in densely populated inner city areas that lack adequate passive open space. Local communities have been very effective in pressuring governments to exploit the potential of these sites as industrial parklands rather than for more intensive development.

Interestingly, there was initially a widespread reluctance by local communities to recognise the cultural heritage values of the remnant industrial structures. The open space potential was appreciated, but the structures were seen as the physical reminders of dirty and polluting industries rather than as parts of our heritage that should be conserved. Over time these attitudes have evolved, as has an appreciation of the value of industrial heritage generally. Indeed, time has shown that these physical reminders of former industrial processes provide a character and identity to these urban parklands that are now much appreciated by their users.

Sydney Park

Sydney Park is in the inner suburb of St Peters, densely populated and just 5km south of the Sydney CBD. The area had been used for clay excavation and brick making since the 1870s, and the workers mostly

最後，儘管澳洲是一個面積 770 萬平方公里的大國，人口相對較少，只有 2500 萬，但我國是世界上都市化程度最高的國家之一。我國許多歷史工業廠區，其實是位於人口稠密的城市內部區域，這些區域缺乏充足的遊憩空間。澳洲的地方社區在推動工業遺產活化中扮演重要的角色，積極敦促政府將歷史工業場所轉型為產業文化公園，而非進行更密集的商業開發。

耐人尋味的是，一開始，許多社區並不太了解工業遺產的文化價值。民眾對開放空間的潛力表示肯定，但卻認為遺留的工業廠房與建築，象徵著過去產業骯髒和污染的形象，不屬於應該保存的文化遺產。然而，隨著時間流逝，民眾的態度已經產生轉變，對工業遺產價值的總體評價也持續提高。確實，時間已經證明，這些象徵著過去生產過程的工業遺產，轉化為都會公園後，展現了特殊的風格、更象徵地方認同，工業遺產如今已受到澳洲民眾廣泛的喜愛與使用。

雪梨公園 (Sydney Park)

雪梨公園位於聖彼得斯人口稠密的內郊區，位於雪梨核心商業區以南 5 公里處。自 1870 年代以來，該地區業主要從事黏土開採和製磚產業，工人大多居住在工作地點附近的小房子裡。20 世紀下半葉，因為製磚所需的黏土礦藏耗盡，佔地 40 公頃的數座磚廠面臨關廠命運，因此工業廠區被政府規劃為雪梨公園預定地，但巨大的礦坑中卻充斥了家庭和工業廢料。

政府在 1976 年終於勒令停止於此傾倒垃圾，並著手進行階段性重整，將工業廠區轉變為都會公園，過程耗時了數十年。政府將大量的土壤（尤其是黏土）和建築瓦礫鋪在既存的垃圾堆上，以改變廠區地形、密封數十年傾倒廢料所產生的甲烷和其他污染物。

時至今日，園區已化身成為賞心悅目的雪梨公園，獨特綿延的丘陵地形，讓遊人得以欣賞遼闊的城市天際線和雪梨機場的全景，廠區原始的雨水滯留池，現已被改造為濕地型棲息地，以部分重現澳洲原住民的自然環境，公園非常受到當地居民的歡迎，使用率也極高，可進行各式活動和節日慶祝、公共藝術展覽、自行車、遛狗、放風箏和板球和足球等運動。

最重要的是，早期社區和政府對是否應保留廠房等有形元素持保留態度，但如今雪梨公園的特色與認同，與這些煙囪窯爐有著千絲萬縷的關聯，因此當地社區現在對磚廠遺產也非常重視。

lived in small houses near to their places of work. The several brickworks located on the 40ha site of what was to become Sydney Park began to close down in the second half of the 20th century as the clay reserves required for brickmaking were exhausted, and the vast pits were filled with household and industrial waste.

This use of the site as a waste dump finally ended in 1976, and the staged renewal of the site as a regional park began, a process that took several decades. Large amounts of soils (particularly clay) and building rubble were laid over the former rubbish dump to dramatically transform the topography and to seal the methane and other contaminants generated by decades of dumping waste material.

Today, Sydney Park includes a series of visually prominent hills which provide panoramic views of the

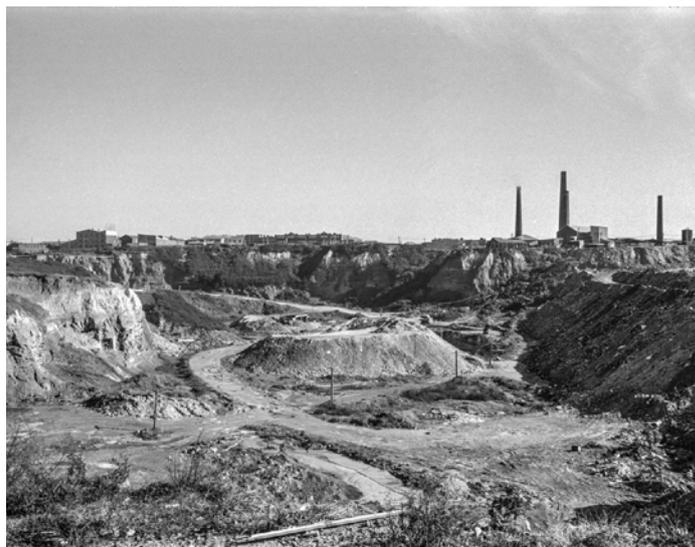


Figure 1. The Bedford Brickworks and rubbish tip in St Peters in 1971. (Photo Credit: City of Sydney)

圖 1：聖彼得斯的貝德福德製磚廠和垃圾掩埋場（1971）。（圖片來源：雪梨市政府）



Figure 2. The former Bedford brickworks area of Sydney Park today. (Photo Credit: Government Architect NSW)

圖 2：貝德福德製磚廠，現已改建為雪梨公園。（圖片來源：新南威爾士州政府建築師）

city skyline and Sydney Airport. Stormwater detention ponds have been transformed into wetland habitat to partly recreate the pre-European environment, and the park is extremely popular and heavily used by the local community a wide range of activities, including events and festivals, public art displays, bike riding, dog walking, kite flying and sports including cricket and football.

Most importantly, and despite early reservations from the community and the government about the appropriateness of retaining tangible evidence of the former brickworks, the identity of Sydney Park today is inextricably linked to these chimneys and kilns, and is much valued as such by the community.

While Sydney Park is an early, and highly successful, example of the conversion of a redundant industrial site as an urban park, there are a number of more recent examples of this process.

Ballast Point Park

Ballast Point Park in the inner Sydney suburb of Birchgrove is a 2.8ha park located on the picturesque Parramatta River, only 2km to the west of Circular Quay. Until its closure in 2002, the site had been a fuel storage and oil distribution centre, dominated by large steel tanks. The headland's natural landform had been radically reshaped over the previous decades and had been left honeycombed in response to its industrial uses.

The design approach to the project is described as: 'The site's industrial past became both an inspiration and a resource for the new park. Existing structures and materials have been kept on site and repurposed. Several large oil storage tanks remain in situ, and the footprint of removed oil tanks has been interpreted in the landscaping' (Ballast Point Park, Walama, Birchgrove - NSW Government Architect).

Balls Head Coal Loader

A third example of successfully creating high quality urban parklands from a former industrial site is the 2.5ha Balls Head Coal Loader in Waverton, located on the north shore of the Parramatta River, also close to central Sydney.

雖然雪梨公園是早期將閒置工業用地轉變為城市公園的成功案例，但澳洲還有一些比較近期的例子。

岬角公園 (Ballast Point Park)

位於雪梨內城區伯奇格羅夫 (Birchgrove) 的岬角公園占地 2.8 公頃，位於風景如畫的帕拉馬塔河畔 (Parramatta River)、環形碼頭 (Circular Quay) 以西兩公里。公園的基地在過去是燃料儲存和石油分配中心，設有大型鋼製儲油槽，於 2002 年退役。在過去幾十年中，因為工業開發，岬角地區的自然地貌變得坑洞化、猶如蜂窩，與原始景觀截然不同。

岬角公園的再生設計主軸為：「讓工業歷史不但能作為新公園的靈感，又能提供再生的資源。」工業廠房的結構體和材料皆進行現地保存並活化使用。(伯奇格羅夫 - 威拉瑪 - 岬角公園；新南威爾士州政府建築顧問)



Figure 3. Aerial view of Ballast Point Park, showing the evidence of the former fuel tanks and the excavation of the original topography. (Photo Credit: Government Architect NSW)
圖 3：岬角公園鳥瞰圖，可見工業儲油槽之原始所在地與地形開挖之痕跡。(圖片來源：新南威爾士州政府建築師)

伯斯海德裝煤場 (Balls Head Coal Loader)

閒置工業廠區變身都會公園的第三個例子，是位於韋弗頓 (Waverton)、占地 2.5 公頃的「伯斯海德裝煤場」。

裝煤場位於帕拉馬塔河北岸，靠近雪梨市中心，在過去是煤炭轉運與儲存的重鎮，運作期間為 1920 年代初至 1990 年代初，主要功能是將煤炭從散貨船運送到較小的燃煤船，本區的裝煤作業有長達 70 多年的工業歷史，於 1992 年退役。

裝煤廠區在 1997 年被指定為公共開放空間，並在 2011 年至 2018 年間分階段轉型為城市公園，且設立了一座「永續發展中心」，活化過程保留了工業歷史的關鍵有

The site is a former industrial complex that operated from the early 1920s to the early 1990s. It functioned primarily as a transfer depot for coal from bulk carriers to smaller coal-fired vessels. The coal loader operated for over 70 years before being decommissioned in 1992.

The site was dedicated as public open space in 1997, and was transformed in stages into an urban park and Centre for Sustainability between 2011 and 2018, while retaining the key tangible elements of its industrial past, including the main coal loader platform, coal chutes and the four vaulted tunnels that run underneath the platform. The project design approach as received wide acclaim:

'The site is based on the idea of community, which is apt considering that the active local community managed to save it from the threat of commercial development' (Architecture AU, March 2021).

There are many other examples of the successful conversion of former industrial sites into urban parklands, both in Australia and internationally. Although far from unique, these three case studies are nevertheless notable. They are located within densely populated inner city precincts, they are popular places for passive recreation in these precincts, and their transformations have retained tangible elements of their industrial past.

Ironically, it is the retention of these elements from an industrial past, evidence of lowly paid work, pollution and dirt, that provide their unique identity and character, and their popularity with their communities.

形遺產，包括主要的煤炭裝載平台、煤炭輸送道、和平台下方的四個拱形隧道，活化設計廣受好評：

「廠區之規劃參考當地社區意見，本地活躍的社區推動了工業園區的開放，有效阻止商業開發。」（澳洲建築協會，2021年3月）

澳洲和國際上還有許多將退役廠區成功轉型為都會公園的例子，儘管本文三個活化案例並非最為特殊，但仍有其參考價值。三座位於人口稠密都會區的公園，現已搖身一變，成為民眾休閒遊憩的熱門場所，更成功保存了有形的工業遺產。

耐人尋味的是，這些保存下來的工業遺跡，在過去是低薪工作、工業污染、和辛苦勞動之象徵，如今卻為公園增添了文化特色與認同價值，受到社區民眾的喜愛與歡迎。

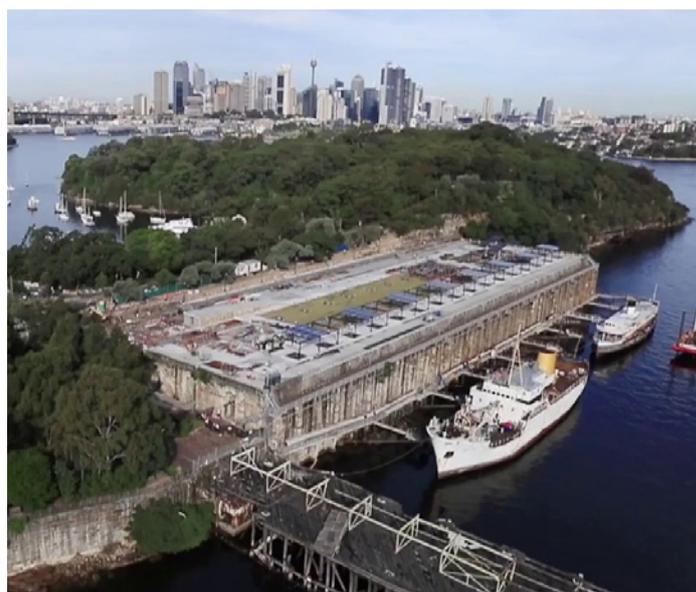


Figure 4. View of the retained coal loader platform in the Balls Head Coal Loader park. The square elements in the grassed areas denote the chutes that fed the coal to the tunnels below. (Photo Credit: Daily Telegraph)

圖4：退役之「伯斯海德裝煤場」煤炭裝載平台鳥瞰圖。草地旁的方形區塊為過去煤炭輸送道的所在地，煤炭於此倒入後，順著管道滑到下方隧道。（圖片來源：澳洲每日電訊報）

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Industrial Narrative, Creative Presence, Living Heritage - Ironbridge Gorge Museums

英國「鐵橋谷博物館」－工業敘事、創意轉型、遺產活化

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鐵橋谷博物館特別計畫部主任羅里·亨特



Figure 1. The Ironbridge. (Photo credit: Rory Hunter)

圖 1：「鐵橋」。(羅里·亨特提供)

The Ironbridge Gorge was inscribed on the UNESCO list of World Heritage Sites in 1986 in recognition of its universal significance and cultural value as an area which gave rise to the first Industrial Revolution, spreading worldwide and leading to some of the most far reaching changes in human history.

The World Heritage Site is a living, working community with a population of approximately 4,000 people and a wide range of businesses. These include long-established local companies, shops, tourism-related organisations, creative industries and community services.

The Ironbridge Gorge Museum Trust cares for 35 historically important scheduled monuments and listed buildings within the World Heritage Site. It manages

英國的鐵橋谷 (The Ironbridge Gorge) 為第一次工業革命的發源地，工業革命蔓延至全世界，為人類歷史帶來深遠改變。1986 年，聯合國教科文組織為表彰鐵橋谷之普世貢獻及文化價值，將其列入世界遺產名錄 (UNESCO List of World Heritage Sites)。

身為世界遺產的鐵橋谷社區至今運作依然生生不息，本地約有四千人口，並有著各式各樣的商家行號，包括歷史悠久的本地公司、店家、觀光旅遊機構、創意產業及社區服務機構。

鐵橋谷博物館基金會 (The Ironbridge Gorge Museum Trust) 負責管理鐵橋谷世界遺產範圍內的三十五座登錄古蹟及建築，同時管轄十座博物館，重現工業革命發源地的歷史故事，其他歷史遺址還包括一座研究圖書館、一處遊客中心、兩間青年旅館、考古學遺址、歷史森林區、住宅、兩間教堂及兩座貴格會 (Quaker) 墓園。

10 Museums, which collectively tell the story of the birthplace of the Industrial Revolution. The sites in the Trust's care include a research library, a tourist information centre, two youth hostels, archaeological monuments, historic woodlands, housing, two chapels, and two Quaker burial grounds.

It is a significant estate and to meet the conservation needs of this extensive portfolio requires substantial funding on an annual basis. As an independent charity visitor ticket purchases and our own fundraising efforts provide the revenue that supports the Trusts work, safeguarding the unique industrial heritage in the World Heritage Site for present and future generations.

A large proportion of the income required is generated through visitation to the museums which welcome around 450,000 people per annum. The Trust endeavours to increase its audience by scheduling a wide-ranging Public Programme. The programme includes Exhibitions, Visitor Engagement activities and ticketed events.

Whilst a Public Programme supports our revenues through sales it is also important because varied activities provide alternative "ways in" both physically and cognitively to the outstanding heritage that the Ironbridge district has to offer. We want our audience to have both an emotive and intellectual engagement with Ironbridge deepening their understanding of the significance of place.

To achieve this, we take a layered approach to interpretation across our Museums to reach the widest demographic possible.

- Our largest and busiest site is Blists Hill Victorian Town, an open air Museum set in the year 1900 and in a site that is over 52 acres. Here we present living history through 1st and 3rd person interpretation for visitor's interactions with our demonstrators and historic structures. Our narrative is based on real people and real stories. This assists our visitors to relate to the historical context that we portray.
- At all our Museums, we provide activities and resources for families, younger learning groups and those with additional needs.

鐵橋谷博物館基金會為重要機構，每年需要大量資金以進行眾多遺址之維護，作為獨立慈善事業，其經費主要來源為門票收入及募款資金，這些收入用來支撐基金會營運，也讓基金會能持續推行保存工作，為世人及後代保護鐵橋谷的獨特工業遺產。

基金會收入極大部分來自於博物館的參觀門票，每年約有 45 萬人次到訪本區的多座博物館，基金會也規劃各式各樣的「公眾計畫」來吸引更多遊客，如展覽、遊客體驗活動及售票活動。

「公眾計畫」除了能增加門票收入，本身也極具重要性。計畫下之各式活動提供了另一種「瞭解途徑」，讓遊客不只能從認知上，也能藉由體驗去認識鐵橋谷的卓越遺產價值，我們希望遊客在情感及認知方面都能與鐵橋產生聯繫，深入了解鐵橋的重要意義。

為了實現這個目標，館內採取了分層方式 (layered approach) 提供遺產之詮釋與解說，擴大觸及觀眾群。

- 布里茨山維多利亞小鎮」是以 1900 年代為背景的露天博物館，佔地超過五十二英畝，也是館群內面積最大、最繁忙的場址。在這裡，我們以第一及第三人稱解說鮮活的歷史，並讓遊客與解說人員及歷史建築互動；我們的解說是基於真人真事，有助於遊客對我們描述的歷史脈絡產生共鳴。
- 所有博物館皆提供各式活動及資源，供家庭、年輕學習族群及有額外需求的遊客使用。
- 我們善用戶外空間，提供適合各年齡層的步行小徑，讓遊客能與歷史景觀建立連結。

我們以上述活動作為平台，以創造更多附加價值，不僅善用區內各場地舉辦各式活動，更透過我們的「學習活動經理」(Learning Manager) 及各館區團隊，提供一系列對談活動、演講、實務工作坊、遺產工藝示範及終身學習計畫，促進遊客參與。

2020 年因疫情而閉館的期間，我們使用數位媒體與訪客互動的機率也越加頻繁，這個相對較新的平台給予我們許多新方法來執行業務與分享故事，如數位展覽、播客及串流等分享形式呈現，今日也都成了「新常態」。我們希望即使人們無法親自前來參訪，也能知道並感受到鐵橋谷的故事，而數位媒介使我們能更進一步接觸廣大的觀眾群。

過去十多年來，「特別活動」一直是博物館的重要年度行程。鐵橋獨特的歷史背景為這些活動提供了最精彩的

- Walking trails are provided for all ages which makes use of our outside spaces and additionally connects people with the historic landscape.

We build on this platform to add value, by utilising our properties and filling them with a huge variety of activities, promoting participation with talks and lectures, hands on workshops, heritage craft demonstrations and a Lifelong Learning Programme, delivered by the Learning Manager and team at all sites.

Pandemic restrictions in 2020 meant that digital media was increasingly used to engage with visitors while the Museum was closed. This relatively new platform offers so many new ways for us to carry out and share our work with Digital Exhibitions, Podcasting and Streaming becoming the new normal. We want to ensure that our story is shared and experienced by people even when they can't travel to Ironbridge and this medium allows us to reach much further.

Special events have over the last ten years become an important part of the Museum calendar. Our unique historic settings provide a spectacular backdrop for an array of events. It is vital to recognise that larger events provide a challenge. A large influx of visitors can place pressure on the fragile condition of historic structures and landscapes and this cost must be weighed against the income from an event. This balance must be considered before an event is sanctioned.

One of the most successful large-scale events delivered by the Trust was the hosting of 'The Man Engine' at Blists Hill. The visit was part of its tour through the mining landscape of Britain in 2018. Awarded 'Best Arts Project 2016' by The National Lottery, the Man Engine celebrates mining heritage and centres around the animation of the largest mechanical puppet ever made in Britain. It was particularly relevant for the Trust as coal mining has a considerable heritage and was one of the main reasons why the industrial revolution started at Coalbrookdale with its close proximity to this valuable fuel.

During the event, the Man Engine's talented puppeteers and narrators acknowledged the toil, endeavour and incredible work of the miners that had operated in the Gorge. The event was a great success on many levels, generating income and creating coverage for the Museum across the press, social media and in the community.

脈絡，然而我們必須了解舉辦大型活動是項挑戰，因為大批遊客湧入勢必對脆弱的歷史建築和景觀帶來衝擊，因此於決定活動是否舉辦前，我們必須考慮其衝擊成本與收益間如何達到平衡。

2018年「機械木偶」(The Man Engine)在英國礦業景觀巡迴展演，期間曾停靠本區的布里茨山，那是我們做過最成功的大型活動之一。「機械木偶」是英國國家彩票(The National Lottery)評選出的「2016最佳藝術項目」，該項目製作了英國有史以來最大的機械木偶、活靈活現地於地景中，以此彰顯英國的煤礦遺產。煤礦業與鐵橋谷息息相關，因為本區內有許多煤業遺產，工業革命發源於本區的柯爾布魯德爾(Coalbrookdale)，其主要原因就是因為本區鄰近珍貴的礦藏燃料。

活動中，「機械木偶」的操縱者及解說員都很肯定鐵橋谷礦工筆路藍縷的辛勞付出。這場活動在諸多層面都取得巨大成功，不僅為博物館帶來收入，也在媒體、社群媒體和社區中搏得曝光版面。

「機械木偶」這樣的特別活動是個完美例子，提供與一般博物館的參觀經驗迥然不同的刺激與體驗，也凸顯了鐵橋與煤礦歷史的關聯性，示範了博物館可以如何發揮創意與夥伴合作，以新穎之方式來探索工業遺產故事。

我們在2020年和2021年將持續面臨挑戰，包括如何提供能維持安全社交距離的活動，以及如何化解遊客對群聚場合尤其是大型活動的潛在疑慮。若要維持社交距離，我們就必須有創新的舉措，才能回到疫情前的收入水平。我們會堅持不懈，繼續提供多元、引人入勝、且具教育意義的活動，以發揚鐵橋谷的工業遺產。就我們記憶所及，很少有哪個歷史時刻，比現在還更需要博物館繼續發揮其



Figure 2. The Man Engine at Blists Hill Victorian Town. (Photo credit: Rory Hunter)

圖2：機械木偶巡迴演出至「布里茨山-維多利亞小鎮」。(羅里·亨特提供)

A special event such as The Man Engine is a perfect example of an activity that provides a different stimulus and experience than a normal visit to the Museum. The relevance of this event for Ironbridge and its coal mining past showed how the Museum can engage creatively with partners to provide new ways to explore our industrial stories.

The challenge for 2020 and 2021 will continue to be the provision of activities with social distancing measures in place and the potential latent hesitancy of our visitors to be in spaces which they deem to be crowded. Large scale events are a particular cause for concern. The provision of social distancing means that we have to be innovative to retain pre Covid levels of income. With perseverance, we will deliver a diverse, engaging and educational programme that celebrates the Heritage of Ironbridge. In living memory, there has rarely been a more important time to continue to showcase all we have to offer across our Museums. The UK governments support for culture in 2020 and 2021 through the Covid Recovery Scheme and recognition of cultures ability to create a sense of community and place are to be commended.

The Trust relies on its position within the World Heritage Site and the patronage of the public to maintain and conserve the magnificent structures and buildings where industrialists, entrepreneurs, miners, iron workers, pipe makers, porcelain producers and tile manufacturers lived and worked. The Trust is responsible for maintaining the legacy of these people and the place, bringing to life the buildings and collections by telling their stories, a continual inspiration for us today.

展示功能。英國政府在 2020 年和 2021 年通過「新冠疫情復甦計畫」(Covid Recovery Scheme) 以支持國內文化發展，並肯定文化於創造社區感及地方凝聚力之能力。

鐵橋谷名列世界文化遺產、加上民眾長期支持，有幸保存了宏偉的建設與建築。工業家、企業家、礦工、鐵工、菸斗製造商、瓷器製造商、磁磚製造商皆於此生活或工作過，基金會將持續維護前人的歷史足跡，並透過講述遺產的故事，讓建築和藏品煥發勃勃生機，這些故事也為現在的我們帶來源源不絕的靈感。

All the Light You See Is from the Past

眼下諸光，皆映昔日

Chi-Yang Chiang (Director, We Do Group)

瓦豆 We Do Group 總監 江佶洋



Figure 1. Railway Department of the General Governor of Taiwan, one of the winning projects of the First Taiwan Environment Lighting Award. (Photo credit: Coretronic Culture and Arts Foundation)

圖 1：第一屆台灣光環境獎獲獎作品之一，《鐵道部廳舍》。(圖片來源：中強光電文化藝術基金會)

Light is an abstract physical phenomenon that cannot be seen or touched. People use light to describe the fastest speeds and the furthest distances, which indicates that the greatest common denominator between light and history is “time.” In recent years, “lighting up Taiwan” has become a mainstream concept, both externally and internally. Many industrial and cultural assets have been “lit up,” and the nighttime lighting projects have become part of the restoration and reuse plan of many cultural heritage sites. In 2018, the Coretronic Culture and Arts Foundation launched the Taiwan Light Environment Award to encourage government and private organizations to create better lighting environments. In 2015, darc magazine (a UK-based lighting magazine) launched the annual “darc awards” to gather lighting design entries from around

光，一個抽象的物理現象，看不到也摸不到。人們用光來形容最快的速度與最遙遠的距離，正好說明光與歷史的最大共同點——時間！近年，點亮台灣成為一種顯學——不論外在或內在的點亮。有許多產業文化資產「被點亮」，夜照計畫成為修復與再利用的一環。中強光電藝術文化基金會在 2018 年啟動台灣光環境獎，透過獎項鼓勵政府與民間單位創造優秀的光環境。2015 年，英國燈光雜誌 darc magazine 便創辦 darc awards 每年向全球徵求燈光設計作品。上述二獎每年都不乏產業文化資產案例入圍與獲獎，可見文化資產在全人類心中只會隨時間而增值。然而，是文化資產保存獲得認同還是古蹟能見度高，讓燈光設計師與設備商前仆後繼投入文化資產夜間照明呢？試想，光又會怎麼說呢？

我相信美是記憶、是關懷、是很多的懷念。沒有這部分，決對沒有美。不管對自然、對人、對土地都是如

the world. Each year, design works related to cultural heritage sites have been shortlisted or awarded in both of the above-mentioned awards. It shows that cultural heritage increase in value with time in the hearts of many human beings. What is it that motivates lighting designers and equipment manufacturers to invest in night lighting of cultural assets, one after another? Is it the recognition of cultural heritage preservation or the increased visibility of monuments? If light could speak, what would it say?

I believe that beauty is made up of memories, care, and a lot of nostalgia. If these are missing, there is absolutely no beauty. This is true for nature, people, and land. There was a time in Taiwan when people did not have memories of, nostalgia for, or appreciation of the things around them, which had led to the greatest degradation of beauty.

Taiwan has been suffering a predestined sadness. In the course of its history, political transitions often result in the obliteration of the previous regime. When the Japanese ruled Taiwan, they dismantled structures built in the Qing Dynasty; when the Nationalist Party took power after World War II, they dismantled the buildings constructed by the Japanese government. Memories had been demolished in this way. (CommonWealth, 2002: 89)

The Never-Ending Memory Café, founded by designer Teng Kun-yan, sparked a trend of retro nostalgia and has gradually prompted people to value the beauty of simple and unsophisticated antiquities. This can be interpreted as people's aversion to the aesthetic experience sparked by their current surroundings, which consist of unflattering contemporary urban architecture. So, when did the architecture in Taiwan become what it is now?

In the days when Taiwan's economy was less developed, Lukang and Meinong were beautiful because buildings were made of the same building materials—red bricks and black tiles.

此。台灣有一段時間大家對周遭的事物都沒有記憶、懷念、感謝，所以美也發生了最大的淪落。

台灣先天有一個宿命的悲哀，在它的歷史上，政治的轉換常常是切斷的。日本人來，把清朝的東西拆掉；二次世界大戰後，國民黨政府把日本政府的東西拆掉。這是記憶的減法。（天下編輯 2002：89）

設計師登琨艷以「舊情綿綿咖啡館」引發復古懷舊潮流，古拙之美漸漸為人所重視。這必定是對現實的美感經驗有所反動，城市的美感由建築空間即可瞧出端倪。這樣說來，台灣究竟是何時變成現在這模樣呢？

在台灣經濟貧窮的年代，那時的鹿港、美濃是很漂亮的，因為它的建築材料非常單一——紅磚、黑瓦。富有以後，可以從世界各地進口建材，就開始醜了。因為它沒有選擇要什麼，只是把最貴的拿進來，可是適合西班牙的，未必適合台灣。台灣城市的醜陋，很明顯是從七〇年代的經濟起飛開始。（天下編輯 2002：83）

我們有時會陷入某種迷思當中，自信心不足導致對外來文化的照單全收。試想，何不努力區隔出海洋國家與多元族群融合的文化特色，將所有外來文化轉化發展成我們獨有的文化？趁著還能記得我們文化歷史優勢與特色的當下一是那海島國家兼容並蓄、是四百年來多次的殖民統治、是親自搬開每一塊石頭，親手種下每一粒稻穀的拓荒毅力，造就了不容小覷的台灣奇蹟。

我們有幸生在電力普及的年代。白天，陽光不論陰晴都讓我們看見世界；夜裡，打開電燈，世界依然為人而亮著。那麼文化資產夜間照明呢？除了仿效現代建築的立面投光，還有其它更深刻動人的脈絡或是產業復甦的想像嗎？除了歐美導入的照明觀念，未來是否會有更適合亞洲與臺灣氣候與自然景觀、人文歷史的照明文化？過去那些被棄如敝屣的文化場址，一夕之間如城市中的珍寶般，被強光照射宛如職業賽場，燈光介入歷史場域難道只有一種詮釋方式嗎？

人工照明有其美感，但高品質的照明也無法兼顧自然夜景，城市美輪美奐的照明，仍犧牲了夜空。在這光線過度飽和的年代，我們似乎失去對真正黑夜的想像。夜晚越來越疏離，越來越少信仰情懷與詩意情緒。無意義鋪張濫用電燈將摧毀美感並逐步消滅世上黑暗角落，並讓地球資源逐漸枯竭。

After becoming rich, Taiwan could import building materials from all over the world. It was then that the buildings started to look unattractive. People simply chose the best building materials that they could afford. However, what is suitable in Spain may not be suitable for Taiwan. Taiwanese cities started to look unappealing when the country's economy took off in the 1970s. (CommonWealth, 2002: 83)

We sometimes accept foreign cultures completely because we get caught up in certain myths, or because we lack confidence in our own culture. However, wouldn't it be better if we could distinguish our own cultural characteristics as a maritime nation and a country with diverse ethnic groups, and absorb foreign cultures through our own unique culture? Taiwan is an eclectic island nation that has been under colonial rule for over 400 years. Our ancestors, with their pioneering spirit and unrelenting perseverance, diligently moved every stone and planted every grain of rice by hand, contributing to the economic miracle that Taiwan has been known for. Changes need to be made based on our cultural characteristics and historical strengths.

We are fortunate to be born in a time when electricity is widely available. During the day, whether it is cloudy or sunny, the sunlight lets us see the world. At night, when the lights are on, the world is still lit up for us. What about nighttime lighting for cultural assets? In addition to following the example of modern buildings in using façade lighting, can't we create different lighting based on a more profound cultural context or reimagining of industrial regeneration? In addition to introducing lighting concepts from Europe and the United States, is it possible to create a lighting culture that is more suitable for the climate, natural landscape, and cultural history of Asia and Taiwan? Cultural heritage sites that had been cast to the side have now moved to the center stage in cities across Taiwan, and intense illumination has been used to light up the sites as if they are celebrities in the spotlight. But we must ask, is this the only way for the light to enter the historical sites?

Artificial lighting has its beauty, but even the highest quality lighting cannot blend in with a natural night scene. Lighting in the city is fascinating, but the beauty

那麼燈光設計的社會責任呢？文化資產修復與再利用計劃搭配夜間照明究竟要傳遞甚麼？筆者有幸參與幾個產業文資的光環境規劃，對歷史場域的光，有以下淺見：

光說的，是一個『經過』，想知道光是怎麼一回事，就往黑暗裡去吧！適度的黑暗，讓我們有機會活化觸覺、味覺和聽覺等感官，激起更多想像空間。現代“燈光之父”阿道夫·阿匹亞（Adolphe Appia）認為：

「我們不應再嘗試創造『森林』的景象，應該轉而創造『人』在森林的氛圍裏的景象」。（Richard C. Beacham 1994：76）¹

箇中秘密很簡單：

1. 寫實到寫意傳遞歷史脈絡
2. 恰如其分的詮釋時空背景
3. 塑造觀者生理與心理空間

燈光設計是哲學思辨的過程。關心社會脈動，反映生活現況，是筆者身為燈光設計參與社會的方式。了解歷史的發展與脈絡，將其內化成心中的意念，轉化為自己所擅長的語彙—「光」。燈光是有象徵性及隱喻性的，光是一種語言，這種語言有文字和形容詞，最重要的是有意義。

我們當下所見的「光」或「(產業)文化資產」，都來自「前一刻」或「之前的時代」。如果不了解環境背景，就無法貼切地說出具有意涵的故事。當生活在這塊土地上，所思所為就與這塊孕育我的土地脫不了關係。建立一套屬於自己獨特的光影語彙與使用燈的文化，思考要留下什麼給後代子孫看，並一起實現「環境友善與永續設計」，用光呵護那些雋永的曾經，用光指引無限可能的未來。

¹ Richard C. Beacham, Adolphe Appia: Artist and Visionary of Modern Theatre (Harwood Academic Publishers GmbH, 1994), p.76. 原文如下：We shall no longer try to give the illusion of a forest, but instead the illusion of a man in the atmosphere of a forest.

of the night sky has been sacrificed. In an era of excessive light, we have passed on the opportunities to reimagine the darkness of the night. The night is becoming more and more detached from us, and we are less and less likely to have sentimental or poetic emotions at night. The senseless and abusive use of electrical lighting destroys beauty, eliminates the dark corners of the world, and drains away the Earth's resources.

What about the social responsibilities that come with the design of lighting? What is the purpose of integrating the nighttime lighting projects into the restoration and reuse plan of cultural heritage? Having had the privilege of participating in several light environment projects for cultural assets, I'd like to share a few of my thoughts on lighting design for historical sites.

Light presents a “passing” concept. If you want to know what light is, go to the darkness, as moderate darkness can activate your senses of touch, taste and hearing, creating more room for imagination. Adolphe Appia, the father of modern lighting, believes that:

“We shall no longer try to give the illusion of a forest, but instead the illusion of a man in the atmosphere of a forest.” (Richard C. Beacham 1994: 76)

The secrets of lighting design are simple. One should:

1. present historical context both realistically and imaginatively
2. aptly interpret the spatial and temporal contexts
3. create physical and psychological spaces for the viewer

Lighting design is a process of philosophical dialectic. As a lighting designer, the way I participate in the greater societal dialogue is by caring about the social transition and reflecting on the current reality. I try to make sense of the development and context of history, internalize it, and then transform it into the art form I specialize in—“light.” Light is symbolic and metaphorical; it is a language, complete with words and adjectives, and most importantly, it has profound meaning.

The “light” or “(industrial) cultural heritage” that we see at the moment comes from “the moment prior” or “the time before us.” It is impossible to tell a meaningful story without understanding its context. Being residents of this land, our thoughts and actions are inextricably linked to the land that nurtures us. It is time that we establish our own unique artistic language for the design and culture of lighting and reflect on what we need to pass onto future generations. We ought to work together to create lighting designs that are environmentally friendly and sustainable, as we use “light” as a medium to preserve the indelible memories of the past and guide our way to an infinite future of possibilities.

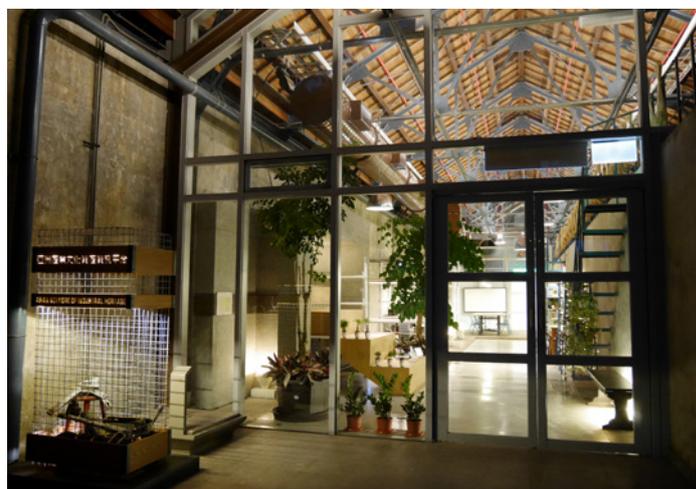


Figure 2. Asian Network of Industrial Heritage—Connecting The Past by Lighting Up The Present. (Photo credit: Chi-Yang Chiang)

圖 2：亞洲產業文化資產平臺 - 以光敘事，互古貫今。(江佑洋提供)

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Railway Heroes: Reflecting Railways in Times of Crisis

《鐵路英雄》：鐵路抗疫的關鍵時刻

Charlotte Kingston (Head of Interpretation and Design, National Railway Museum, part of the Science Museum Group)

國家鐵道博物館 (隸屬英國國家科學博物館群) 詮釋與設計組長 夏洛特·金斯頓

When COVID-19 became a pandemic in March 2020, the world changed in an instant. All too sharply, the roles and industries we depended upon and took for granted were thrown into the limelight. To begin with, healthcare workers were at the forefront of the crisis and the news. Alongside them, stories of workers serving their communities in extreme began to be shared: the delivery drivers, the postal service workers, the rubbish collectors and the funeral directors. And then there were the railway workers, some on the front line ensuring key workers could travel to and from work, while others were giving back to their communities in extraordinary ways. Out of this, the exhibition Railway Heroes was born.

Railway Heroes gives us a snapshot into the railways at a time of immense collective stress and crisis. Built around 16 interviews conducted from August to October 2020, the exhibition features people from across the rail sector, showcasing their role, their original motivations for working on the railways and their unique, human responses to the pandemic. These stories are accompanied by dramatic and striking portraits by acclaimed photographer Charlotte Graham.

We wanted to present the railway heroes in a context that was comfortable to them – as a result, some sit proudly in stately homes, some are captured in stunning stations, and some wear the uniform that makes them feel proud and purposeful. Despite COVID restrictions, a second national lockdown in November 2020, and the infamous British winter weather, photography took place up and down the country thanks to the tenacity of the team and the participants. The result is an exhibition that puts people in the foreground and celebrates the different ways in which they made a difference.

For Penny, a travel consultant from Grantham, writing letters to her local care home was a natural use of her spare time when she wasn't needed as much in

COVID-19 疫情於 2020 年 3 月席捲全球，世界局勢一夕轉變。許多我們所高度依賴並視為理所當然的產業與從業人員，瞬間成為民眾關注的焦點。首當其衝者，就是處於危機和新聞的最前線的醫護人員。在風險環伺下仍然為社區盡心服務的工作人員，無私奉獻的故事也時有所聞，如送貨司機、郵務人員、清潔隊、禮儀師等。此外，鐵路產業的從業人員在疫情中也位於第一線，必須持續服務，確保關鍵工作人員可搭乘鐵路上下班，更有許多鐵路員工，以其它多元方式提供服務以回饋社會，因此我們決定推出《鐵路英雄：鐵路抗疫的關鍵時刻》特展。

在集體壓力和危機的抗疫期間，《鐵路英雄》讓我們一窺鐵路產業的工作縮影。本展於 2020 年 8 月至 10 月訪問了鐵路產業的不同工作人員，呈現他們於產業中扮演的角色、進入鐵路產業服務的動機、以及面對疫情的應變方式。著名攝影師夏洛特·格雷姆 (Charlotte Graham) 受邀為這些展覽主角拍攝個人肖像，生動的攝影作品也伴隨故事一起展出。

我們希望在這些鐵路英雄能感到輕鬆的環境中介紹他們的故事，因此，有些人選擇在引以自豪的家中拍照，有些人選擇在風光宜人的車站拍照，更有些人穿著象徵榮譽與認同的制服拍照。儘管因為疫情，英國於 2020 年 11 月第二次全國封城，英國冬季天氣更是著名的差，但展覽製作團隊和受訪者仍然持續參與，在全國各地陸續完成了拍攝。最後我們成功推出了展覽，以鐵路英雄為焦點，呈現他們為社會做出的辛勤貢獻。

來自格蘭瑟姆 (Grantham) 的潘妮 (Penny) 擔任車站旅遊中心顧問，之前因為沒有排太多班，所以她利用閒暇時間給當地安養院的老人寫信，後來她回到工作崗位逐漸忙碌後，仍然每周繼續寫數百封信，問候安養中心的孤單老人家，讓他們覺得備受關切。

醫護人員。因為疫情發生，她感到有義務發揮醫護專業所長，於是開始輪流切換工作，一周駕駛火車、一周去醫院病房幫忙。此外，在普雷斯頓 (Preston) 擔任列車長的珍妮特 (Janet) 之前當過裁縫，於是她利用閒暇時間為醫護人員縫製手術衣。



Figure 1. Martin Frobisher is the Group Safety and Engineering Director, Technical Authority, for Network Rail. He was awarded an OBE in December 2020. (Photo Credit: Charlotte Graham)

圖 1：馬丁·佛洛畢雪擔任英國鐵路網公司技術安全部門小組安全與工程規畫主任，於 2020 年 12 月獲頒大英帝國勳章。(夏洛特·格蕾姆提供)

the station office. Even when she went back to work, she continued writing hundreds of letters every week to ensure the isolated elderly communities didn't feel forgotten.

Jolene, a train driver in County Durham, worked as a paramedic before joining the railways. She felt duty bound to help, so started alternating one week driving trains with one week on the wards to help the hospitals cope. Meanwhile Janet, a train manager in Preston, sewed scrubs for hospital workers drawing on her previous work as a commercial seamstress.

Elsewhere, Martin and Gareth, both employees of Network Rail, worked together to establish the Nightingale hospital in Manchester, one of seven emergency hospitals set up to manage potential overflow of patients. Gareth worked on the ground managing logistics while Martin connected people across the country to get essential supplies to where they needed to be.

在其他地區，英國鐵路網公司 (Network Rail) 的兩名同仁馬丁 (Martin) 和葛瑞斯 (Gareth) 共同在曼徹斯特設置了「南丁格爾」臨時急診醫院 (Nightingale Hospital)，英國於疫情期間共設有七座「南丁格爾」臨時醫院，於其他醫院滿床時用來收留病患。葛瑞斯在醫院現場管理作業流程，而馬丁則負責聯繫有善人士以募集物資、運送到需要的地方。

對於其他人而言，面對陌生的新常態時，如何堅定不移、盡忠職守，是他們面臨的最大挑戰。列車長侯賽因、戴維和里奇 (Hussain, Davey, Ritchie) 都提到，疫情發生後，車廂一夕間空空蕩蕩，乘客和乘務人員之間的連結似乎也消失了，但同仁的善舉彌補了疫情造成的空白，例如有家公司送給侯賽因巧克力禮物當作禮物，他就決定在從倫敦與普雷斯頓間的每個車站發送巧克力給乘客。

另外，還有些鐵路從業人員的個人犧牲讓他們的故事更加獨特。軌道維修人員珍妮弗 (Jennifer) 本來跟身體不好的母親一起住在家裡，為了進行必要的軌道維修工作，她只好搬出家中。人力資源經理希瑪 (Seema) 和列車長 (Clifford) 更長期在倫敦警察廳擔任志工，讓居民在疫情期間能更加安心。

For others it was more about carrying on in the face of a strange new reality. Train managers Hussain, Davey and Ritchie all spoke of trains emptying overnight, and the way the camaraderie between passengers and staff evaporated. But other acts of kindness filled the gap, like when Hussain received a gift of some chocolates from a high street company and gave them out at every station on his way from London to Preston.

Personal sacrifices distinguished many of the stories. Jennifer, a track operative, moved out of her home where she lived with her mum, who was vulnerable, so she could carry on working on essential track repair works. Meanwhile, Seema, a Human Resources manager and Clifford, a train manager, volunteered long hours with the Metropolitan Police to ensure the communities they served were well looked after during the pandemic.

Rory, a freight manager, was responsible for keeping essential supply lines open to the supermarkets and the healthcare industry. Adam, an engineer, took advantage of the quieter railway lines and delivered crucial maintenance projects around London. Other essential railway construction continued in Birmingham, where Lin, a planner for Laing O'Rourke and Murphy Join Venture for HS2, drew on innovative construction techniques to ensure COVID-secure sites with fewer people needed. She was able deliver a major new bridge on time despite the pandemic.

Stephanie, who works in IT for Network Rail, not only set up an entire workforce to work from home in a matter of weeks; she also took the initiative to donate unused equipment to schools and local hospitals. Charley, who leads the passenger experience team for Network Rail, also made resources available to those who needed it by increasing the number of volunteers who could help at key stations and ensure those who did need to travel felt safe and secure doing so.

As a national figurehead for railways in the UK, the National Railway Museum has a vital role to play in raising awareness of our railway history. But increasingly we share the stories of railways today and tomorrow, in the UK and across the world. Railway Heroes celebrates

貨車列車長羅里 (Rory) 負責提供鐵路運輸服務給超級市場和醫療行業，讓關鍵物資運送不中斷。鐵路工程師亞當 (Adam) 利用安靜時段的鐵道，完成倫敦附近重要的維修計畫。黎音歐若克與默菲合資公司 (Laing O'Rourke and Murphy Joint Venture) 的林女士 (Lin)，在疫情期間讓伯明翰的英國第二高速鐵路建造不中斷，使用創新技術，於現場採取完善防疫措施，還成功降低工程所需人力，儘管疫情期間工程條件嚴峻，高鐵工程的新橋樑仍按時完工。

史蒂芬妮 (Stephanie) 在英國鐵路網公司 IT 部門工作，在幾週內就讓全體公司員工可以移轉到家中辦公，還主動向學校和當地醫院捐贈了未使用的電腦設備。查理 (Charley) 是英國鐵路網公司乘客體驗部門主任，他在疫情期間成功增加重點車站的志工人數、提供所需資源，讓不得不出門旅行的乘客能感到安全與安心。

國家鐵路博物館是英國鐵路的國家象徵，在提升大眾對鐵路歷史之認識上，扮演著關鍵的角色。時至今日，我們呈現的展覽內容也延伸到當今以及未來、英國以及世界各處有關鐵路的故事。《鐵路英雄》透過探索鐵路產業同仁的工作，讚揚他們在危機時刻仍堅守崗位、維持社會功能的正常運作。現代鐵路產業多元且深奧，這個展覽雖無法涵蓋鐵路產業下所有的職位與類別，但卻忠實呈現了鐵路「大家庭」的成員如何在疫情嚴峻的挑戰下，齊心協力實現非凡的成就。正如一位鐵路英雄所說：「我們為國家和社區做了很多，但驅動鐵路產業的『心臟』，正是我們的『人民』」。



Figure 2. Seema Jadva is an HR Business Partner for Avanti West Coast and Police Special Constable for the London Metropolitan Police. (Photo Credit: Charlotte Graham)

圖 2：希瑪加德法是英國阿凡堤西岸鐵路公司人力資源業務合作夥伴，同時擔任倫敦警察廳特別警員。(夏洛特·格雷姆提供)

the work of the many individuals who worked so hard to keep the UK running in a time of crisis. Though it doesn't represent every discipline or role – how could it reflect such a diverse and deep industry as the modern railway? – it presents an insight into how, at every level, the railway “family” came together as one to achieve extraordinary things. As one railway hero said: “We offer so much to our country and our communities – our people are the heart of the railways.”

Railway Heroes is a free exhibition available on site at both the National Railway Museum in York and Locomotion in Shildon until December 2021. You can also visit an extended version of the exhibition on the museum's website railwaymuseum.org.uk/objects-and-stories/railway-heroes.

《鐵路英雄》目前於約克國家鐵路博物館和其位於希爾登的分館鐵路運轉館展出，開放免費參觀，展期至 2021 年 12 月止。您也可前往國家鐵路博物館官網，欣賞展覽的延伸版本：

Railwaymuseum.org.uk/objects-and-stories/railway-heroes



Figure 3. Jolene Miller is a Driver for Northern. She was awarded a BEM (British Empire Medal) in the Queen's Honours List 2020. (Photo Credit: Charlotte Graham)

圖 3：喬琳·米勒於英國北方鐵路擔任火車駕駛員，她在 2020 年獲列女王榮譽勳章，授予大英帝國勳章。（夏洛特·格雷姆提供）

COAL MINE RAILWAY IN DUTCH EAST INDIA / INDONESIA. 《荷屬東印度（印尼）的煤礦鐵路遺產》

Reviewed by; W. Widoyoko (Chairman of Indonesia Railway History Society, KSPI)

書評：印尼鐵路史學會會長 W·維德尤科

The history of the mine railway in Indonesia, in terms of technology and in terms of human history, is one of the most interesting part in the Indonesian industrial history. Unfortunately, here are no Indonesian historians who have studied the mining history comprehensively, until Mr. Gerard de Graaf start his research about this and write a book titled 'De Indische Mijnspoorwegen' or The (coal) mine railway on Dutch East India (Indonesia). To complete this book Mr. Gerard de Graaf has conducted an intensive research on the history of the Indonesian coal mine for almost 20 years.

In the beginning he conducted the research on the Dutch coal mines, but his interest on the colonial history, especially in the industrial railway history in the former Dutch East India, had led him to intensively researching the archives of the colonial coal mine railway in the Netherlands, Germany and Indonesia.

Once a year, or sometimes more, he visited Indonesia to conduct the research in ANRI, the Indonesia national archive, in Jakarta. He went also to the jungle to investigate the abandoned mining sites, that spreads in the island of Sumatra and Kalimantan.

It was a dangerous activity but with this, he has a complete view about the coal mines in Indonesia and give the book more historical detail. So if you read this book you can see how the coal mines look like, in the past and in current condition.

Between the research activities Mr. Gerard de Graaf, also presented his research on the Indonesian coal mines railway at some cities in the Netherlands, organized by NVBS (Dutch Railway Enthusiast Association) and in coordination with KSPI (Indonesia Railway History Society), he presented his research also at Indonesian universities in Jakarta, Yogyakarta and Semarang.

無論從科技或歷史的角度來看，印尼礦業鐵路史都是印尼工業史當中最有趣的一頁，在傑拉德·德·葛拉夫（Gerard de Graaf）著手研究並將成果付梓成書《荷屬東印度的礦業鐵路》（De Indische Mijnspoorwegen）之前，並沒有印尼歷史學家以通盤的角度研究印尼礦業史。為了此書，葛拉夫花費近二十年傾心研究印尼礦業史。

葛拉夫一開始研究的是荷蘭礦業，但因他對殖民史很有興趣，尤其是荷屬東印度公司時期的工業鐵路史，因此他轉而研究荷蘭、德國與印尼的殖民礦業鐵路。

葛拉夫每年至少會造訪印尼一次，他會到雅加達的印尼國家檔案管理局（the Indonesia national archive, ANRI）進行研究；他也會深入叢林，探訪遍布在蘇門答臘與加里曼丹島的廢棄礦場。

這樣的行動十分危險，但也因如此，葛拉夫得以窺見印尼礦業的全貌，也讓本書增添更多歷史細節，若閱讀此書，讀者對印尼礦業的前世今生將有通盤之了解。

研究期間，葛拉夫在荷蘭數个城市發表他對印尼礦業鐵路的研究，這些活動是由荷蘭鐵路愛好者協會（Dutch Railway Enthusiast Association, NVBS）主辦、印尼鐵路史學會（Indonesia Railway History Society, KSPI）協辦；他也在雅加達、日惹（Yogyakarta）與三寶瓏（Semarang）等地發表自己的研究。

有了葛拉夫的研究，我們知道遠在一八六七年八月十日印尼公用鐵路啟用之前，一八四九年，加里曼丹南部的潘加隆（Pengaron）奧倫治拿騷（Oranje Nassau）礦場就已經有鐵路系統與礦車。當時，加里曼丹的礦場皆為荷蘭政府所有並負責營運，但當地的蘇丹也擁有一個礦場。多年來，煤礦多在加里曼丹開採，但後來有人在蘇門答臘西部的奧比林盆地（Ombilin）發現了品質更好的煤礦。

包含日軍開採的礦場在內，印尼總共有十二個礦場。本書詳細介紹了印尼的礦業公司，包含日據時期開發的礦場。

Thanks to his research, we know that far before the public railway was opened in Indonesia on August 10th 1867, rail system and lorries was already adapted in the coal mine since 1849 at the Oranje Nassau coal mine in Pengaron, South Kalimantan. The coal mines in Kalimantan were owned and managed by the Dutch, but the local Sultan owned also a coal mine. For many years the coal mine were exploited in Kalimantan, but later, a better coal quality was founded in Ombilin – West Sumatra.

In total there are about 12 coal mines exploitation in Indonesia, including coal mines opened and exploited by the Japanese military. This book describes in detail all coal mine companies, including coal mines exploited by the Japanese military.

To support the war effort in the second world war, the Japanese military explore extra coal mines in Sumatra, Java and Sulawesi. To transport the coal from the mines to the harbor the Japanese military build a new railway line through the Sumatran jungle, the famous Pakanbaru Death Railway and through the interior of West Java, the Saketi – Bayah railway. It cost many lives of the Romusha and European war prisoner, to build those coal railway lines. Mr. Gerard de Graaf had visited these former coal railway lines and reported in his book. Many books about the Pakanbaru Death Railway has been written, but with this book, Mr. Gerard de Graaf gives another perspective on Pakanbaru Death Railway.

One of the interesting coal mine in Indonesia is the Ombilin coal mine. This mine is located in the mountainous area of West Sumatra. To transport the coal it needs an expensive railway system in the form of cog railway. At that time it was a geographic and technological challenge to build the railway.

In the beginning the government encourages the private companies to exploit the coal mine and build the railway system to transportation the coal to the coast. But there were no private companies prepared to invest a huge capital to exploit the coal, and finally the Dutch government decide to invest in the Ombilin coal mine in Sawahlunto. The Government pointed the state railway to build the coal railway system to transport the coal from Sawahlunto to the harbor in Padang. They

日軍為了供給二戰所需，在蘇門答臘、爪哇與蘇拉威西（Sulawesi）開採了多個礦場。為了將煤礦運至港口，日軍建造了新的鐵路，如貫穿蘇門答臘叢林、大名鼎鼎的北干巴魯死亡鐵路（Pakanbaru Death Railway），以及穿越西爪哇的薩克提－芭雅鐵路（the Saketi – Bayah railway），建造鐵路的過程中，許多日軍誘騙而來的東南亞強迫勞動者與歐洲籍戰俘因而犧牲。葛拉夫也造訪了這幾條礦業鐵路，並將勘查結果收錄在本書中。許多書都僅以北干巴魯死亡鐵路為主題，但葛拉夫這本書用了不一樣的觀點來看這條鐵路。

另一條有趣的印尼礦業鐵路，是蘇門答臘西部山區的奧比林盆地礦業鐵路。要運送奧比林的煤礦，就必須斥資打造齒軌鐵路系統（cog railway）。要在奧比林盆地建造鐵路十分困難，建造齒軌鐵路對當時的技術亦是一大挑戰。

一開始，政府鼓勵私人企業開採煤礦並建造通往港口的鐵路，但當初無公司願意投入鉅資，最後是由荷蘭政府開採位於沙瓦倫多的奧比林礦場。政府下令建造鐵路將煤礦自沙瓦倫多運至巴東（Padang）的港口，並使用最新的技術來建造這條鐵路。有趣的是，荷蘭用以建造蘇門答臘西部鐵路的技術，後來也用在南非的礦業鐵路上。

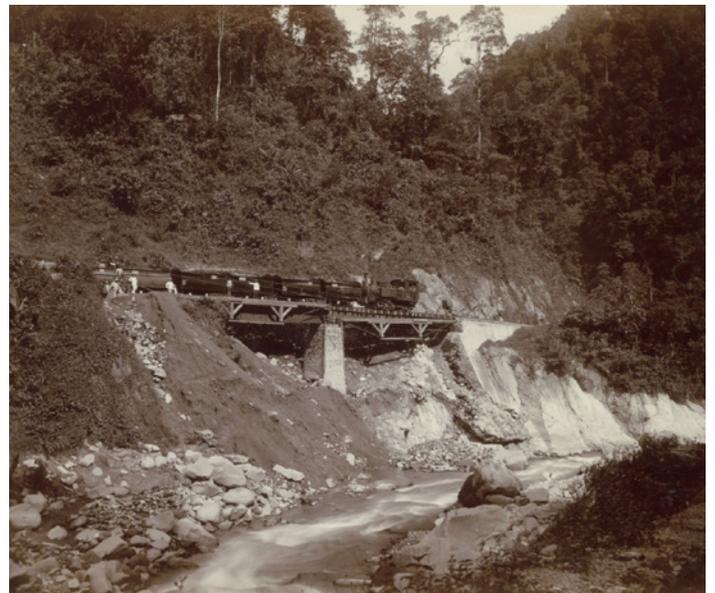


Figure 1. A cogwheel steam locomotive built by Maschinenfabrik Esslingen, hauling a coal train from the Ombilin mines, somewhere in the Anei Gorge in West Sumatra, ca. 1902. (Photo Credit: Rijksmuseum collection)

圖 1：由德國埃斯林根機械製造廠製造的齒軌蒸汽火車頭，拉著煤斗車自奧比林礦場駛出。地點：蘇門答臘西部的亞內谷。拍攝時間：約 1902 年。（資料來源：荷蘭國家博物館館藏）

adapted the latest railway technology to build the coal railway line in West Sumatra. It is interesting that the experiences gathered in West Sumatra also used to build the coal railway line in South Africa.

Ombilin coal mine is a modern mine and adapted all kind of traction system, from steam, pneumatic to electric traction. It is very interesting that this book describe in detail the technological development of the traction and rolling stock system used at the Ombilin coal mine, from the colonial era to the era of independent Indonesia.

Today the Ombilin coal mine is closed and transformed into an interesting museum. In Sawahlunto you can visit the coal mine museum and the railway museum, located in the former railway station of Sawahlunto. The city of Sawahlunto is recently recognized as one of the UNESCO cultural world heritage and Mr. Gerard de Graaf has also contributed in the process of this recognition.

In my opinion, the book titled '**De Indische Mijnspoorwegen**' is the best book that describes the history and development of the coal mine railway in Indonesia.

This book consist of 256 pages and it is a reliable reference on the history of the coal mine railway in Indonesia from past to present. This book is suitable for serious researcher, but also a very good book to read for railway enthusiast.

Unfortunately, this book is written in Dutch, so only limited people can read it. For international reader, the English version is still in progress and will be published soon.

奧比林礦場是一座現代化的礦場，採用各式各樣的牽引系統，如蒸汽、氣力與電力牽引系統。從印尼被殖民再到獨立時期，奧比林礦場的牽引系統與鐵道車輛系統如何發展，本書皆有詳盡的介紹，十分有趣。

時至今日，奧比林礦場已經不再運作，而是轉型成引人入勝的博物館。你可以到沙瓦倫多參觀礦業博物館與舊火車站改裝的鐵道博物館。近來，聯合國教科文組織（UNESCO）將沙瓦倫多列為世界文化遺產，而葛拉夫在推動過程中功不可沒。

在我看來，《荷屬東印度的礦業鐵路》（De Indische Mijnspoorwegen）是描寫印尼礦業鐵路史的最佳著作。

本書共二百五十六頁，介紹印尼從古至今的礦業鐵路發展史，參考資料皆有理有據，適合研究者閱讀，對鐵路愛好者也是本值得閱讀的好書。

本書是以荷蘭文撰寫而成，能閱讀的人可能不多，因此目前英文版正在籌備中，近期將會出版。



Figure 2. Wood engraving of the Oranje Nassau coal mine in Pengaron (Kalimantan), ca. 1872. (Photo Credit: Gerard de Graaf)

圖 2：加里曼丹潘加隆地區，奧倫治拿騷礦場之木版畫。拍攝時間：約 1872 年。（傑拉德·德·葛拉夫提供）



The (Coal) Mine Railway on Dutch East India (Indonesia) (De Indische Mijnspoorwegen)

《荷屬東印度的礦業鐵路》（De Indische Mijnspoorwegen）

Author 作者：Gerard de Graaf besteedde / 傑拉德·德·葛拉夫

Publishing Year 年代：2021

Publisher 出版：De Alk / 德奧克（De Alk）出版

ISBN：978-90-5961-2327

Taiwan

From Osaka Merchant Shipping Company to National Center of Photography and Images

跨·交·通：從「大阪商船株式會社臺北支店」到「國家攝影文化中心臺北館」

Date 活動日期：The exhibition opened on March 25, 2021 (permanent exhibition)/ 2021 年 3 月 25 日起常設

Place 活動地點：Taipei, Taiwan/ 臺北市，臺灣

Organizer 主辦單位：

National Taiwan Museum of Fine Arts & National Center of Photography and Images

國立臺灣美術館、國家攝影文化中心

Official Web 活動官網：

https://event.culture.tw/NTMOFA/portal/Registration/C0103MAAction?useLanguage=tw&actId=10056&request_locale=tw

Information 活動說明：

The Taipei Office of the National Center of Photography and Images is located in a historical building that once housed the Taipei Branch of the Osaka Merchant Shipping Company (Osaka Shosen Kaisha). The building was designed by Japanese architect Setsu Watanabe and was one of the last few reinforced concrete structures built in Taiwan during World War II (1937-1945).

"Crossover · Exchange · Communication: From Osaka Merchant Shipping Company to National Center of Photography and Images" is an exhibition that aims to reflect on the building's historical memories, which were collectively created by the private enterprises and government agencies that once inhabited the building. The building's functions and use of space may have changed over time, but it has continued to play a key role in "promoting cross-domain exchange and communication."

The building was first used as the Taipei office of the Osaka Merchant Shipping Company, a Japanese company that specialized in near-shore passenger and cargo transportation. It was then used to house the headquarters of the Taiwan Navigation Company, which

「國家攝影文化中心臺北館」所在建築，為 1937 年落成的「大阪商船株式會社臺北支店」。此建築由日本建築師渡邊節設計，為第二次世界大戰（1937-1945）期間臺灣最後一批鋼筋混凝土建築。

本展以「跨·交·通」為名，反映本建築因使用單位更迭所承載的歷史記憶，以及其在空間利用功能幾度轉變間，仍持續扮演的「跨域、交流、溝通」的關鍵角色。

在大阪商船時期，本建築是執掌臺灣近海航運客貨流通牛耳的商辦大樓；於臺航公司、公路局使用期間，它是推動臺灣航運發展、見證重大公路工程及早期客運網絡擊劃的公務行政中心。古蹟修復後不僅重現建築的歷史風華，「國家攝影文化中心臺北館」的進駐，亦使其轉型為致力推動臺灣攝影及影像藝術傳承、發展、溝通、跨域及跨國交流的類美術館空間，賦予了古蹟以富含人文價值的新生命。

本展將透過文獻、照片、建築遺構及歷史文物，介紹本古蹟自「大阪商船株式會社臺北支店」、「臺航大樓」、「公路大樓」至「國家攝影文化中心臺北館」80 餘年來的建築生命史，回顧其所走過的歲月足跡及修復再利用歷程。

contributed to the development of Taiwan's shipping industry. Later, the building was handed over to the Taiwan Provincial Highway Bureau and witnessed the completion of major highway projects and passenger transportation networks in Taiwan. After the building was restored to its former glory, it was repurposed as the Taipei office of the National Center of Photography and Images. Today, it is a museum-like space dedicated to the preservation, research, communication, as well as interdisciplinary and international exchange of photography and image-based art works. The building's new mission underscores its cultural value and has breathed new life into the historic site.

The documents, photos, historical architecture, and cultural artifacts on display introduce the evolution of the building, from the Osaka Merchant Shipping Company Taipei Branch, the office of the Taiwan Navigation Company, the headquarters of the Taiwan Provincial Highway Bureau, to today's National Center of Photography and Images. The exhibition encapsulates the 80-year history and memories of the building and presents an overview of the building's restoration and revitalization process.

Taiwan

Into the Woods: An Exhibition of Taiwan's Woodcrafts

木以載生—國產木作工藝特展

Date 活動日期：30 April - 17 October 2021/ 2021 年 4 月 30 日至 2021 年 10 月 17 日

Place 活動地點：Nantou County, Taiwan/ 南投縣，臺灣

Organizer 主辦單位：

National Taiwan Craft Research and Development Institute

國立臺灣工藝研究發展中心

Official Web 活動官網：

https://event.culture.tw/NTCRI/portal/Registration/C0103MAction?useLanguage=tw&actId=11516&request_locale=tw

Information 活動說明：

Taiwan's demand for wood products has remained high. However, the global movement of banning natural forest logging in the 1990s has allowed Taiwan to preserve its precious forest resources. We believe that the development of forestry should be balanced with the sustainable conservation and management of forests. Taiwan's unique natural environments and diverse types of forests have enabled the country's forestry industry to transform and upgrade. Using locally harvested wood, Taiwanese craftsmen are combining modern techniques and traditional skills to produce creative wood products that add an artistic touch to people's daily life.

From the perspective of environmental sustainability, this exhibition attempts to explore Taiwan's timber production policies and management programs, which have been actively developed by the government in recent years. It recalls the old days when humans coexisted with forests, in an attempt to reflect on future challenges. Through communicative interpretation, the exhibition also presents exquisite handmade woodcrafts and provides opportunities for visitors to appreciate the unique aesthetics, creative use of materials, and one-of-a-kind designs of Taiwanese craftsmen. It is hoped that the visitors will be inspired to learn more about

the importance of biodiversity and natural resource conservation. The exhibition introduces the latest development of Taiwan's forestry and woodcrafts and presents a multi-faceted discussion of related issues, such as ecological conservation versus economic development, science and education, and the cultural connections, ethics, and aesthetics of woodcraftsmen.

人類對於木資源的運用與經營是跨越時空與文明的，換言之，其與木材的共生共存關係，亦是文化與哲思的展現。臺灣社會對於木材製品一直有大量需求，90年代禁伐天然林的全球共識，讓臺灣得以保留了珍貴的森林資源。唯林業屬自然資源其中一環，原本就應於永續的前提下被持續的使用。臺灣林產業轉型強而有利的契機來自於得天獨厚的自然環境與森林型態，以及由傳統貫融而來的現代技藝，亦推進原始木料成為生活美學的重要角色。

本展覽嘗試從生態環境永續的面向，關注並結合近年積極發展的國產材政策與計畫等相關作為，串聯木材跟人類文化共存的過去並挑戰新的未來。期待透過傳達與轉譯，讓觀眾跨越木文化的巧工技藝之外，體驗材料美學與設計翻轉帶來的感官振盪，理解並學會尊重生物多樣性資源，共享其帶來在生態與經濟、科學與教育、人文、倫理與美學等方面的多元價值與成果。

UK**NAMHO Conference 2021:****SHROPSHIRE- "60 Years of Mining Projects"**

英國「2021 國家礦業歷史組織協會研討會」—施普洛郡：六十年礦業研究計畫

Date 活動日期：2-5 July 2021/ 2021 年 7 月 2 日至 2021 年 7 月 5 日

Place 活動地點：Shropshire, UK/ 施洛普郡, 英國

Organizer 主辦單位：

Shropshire Caving & Mining Club with support of other local organizations

施普洛郡採礦俱樂部，並同時獲得其他在地組織協助

Official Web 活動官網：

https://www.namho.org/conf2021/confpages/conf_home.php

Information 活動說明：

NAMHO is the National Association of Mining History Organisations with members based in the United Kingdom and the Republic of Ireland.

The 2021 conference is hosted by the Shropshire Caving and Mining Club and will run from Friday 2nd July to Monday 5th July. The Lecture Theme of the year is "Sixty Years of Mining History Projects".

The conference theme is to coincide with SCMC's 60th anniversary and to look at projects in the mining community that have developed with the growth of industrial archaeology and mine exploration during that period, along with the hopes of what the future might bring. This conference also encourages other clubs and societies to bring along displays on their local projects too.

The usual mix of trade stands, local interest and rescue groups will have the opportunity to attend as well.

Booking is now open.

NAMHO 為英國國家礦業歷史組織協會 (National Association of Mining History Organizations)，該組織成員多來自英國和愛爾蘭。

「2021 英國國家礦業歷史組織協會年度研討會」由施普洛郡採礦俱樂部 (the Shropshire Caving and Mining Club) 主辦，將於 2021 年 7 月 2 日至 7 月 5 日舉行，本次會議講座主題為「六十年礦業研究計畫」。

本年度的研討會恰逢施普洛郡採礦俱樂部 (SCMC) 成立 60 週年，主題與隨著工業考古學和礦山勘探興盛，而在採礦社群中執行的各項計畫相關，同時討論其未來的發展可能性。主辦單也鼓勵其他團體、社群共同與會，展示其執行的計畫內容。

本次大會將視情形開放商業展位、在地利益團體與救援組織參加。

本研討會現已開放報名

Online Conference

AIA Annual Conference 2021

工業考古協會 (AIA) 2021 年度大會

Date 活動日期：7 August, 4 September, 18 September & 25 September 2021

2021 年 8 月 7 日、9 月 4 日、9 月 18 日及 9 月 25 日

Place 活動地點：Online Conference/ 線上研討會

Organizer 主辦單位：

The Association For Industrial Archaeology(AIA)

英國工業考古協會 (AIA)

Official Web 活動官網：

<https://www.eventbrite.co.uk/e/aia-annual-conference-2021-tickets-154717589475>

Information 活動說明：

The AIA Annual Conference 2021 is now open for registration. Instead of the usual face-face event this is an online event organised as a number of sessions over weekends in August & September. All sessions are free and open to all.

In conjunction with the Merseyside Industrial Heritage Society we present four talks on Merseyside IA.

Then there is a one day seminar on the theme "The impact of Covid-19 on the industrial heritage sector"

And finally the Rolt Memorial Lecture "The Tools of Empire? Decolonising Imperial Telegraphy"

Read full details and register via Eventbrite:

<https://www.eventbrite.co.uk/e/aia-annual-conference-2021-tickets-154717589475>

Attendance at all sessions is free.

英國工業考古協會 (AIA) 的 2021 年度大會即日起開放報名。有別於過往的實體年會，今年度採線上舉辦，選擇 8 月及 9 月的週末時間舉行數場系列講座，所有場次皆為免費，並開放大眾參與。

今年度的大會與默西賽德郡產業文化資產協會 (Merseyside Industrial Heritage Society) 合作，就默西賽德郡的產業文化資產考古為主題進行四場發表。

後續議程則以「新冠肺炎疫情對產業文化資產有關部門的衝擊 ("The impact of Covid-19 on the industrial heritage sector")」為題進行發表與討論。

最後一天的議程將規劃 Rolt 紀念學術演講，主題為「帝國工具？解殖的帝國電報 ("The Tools of Empire? Decolonizing Imperial Telegraphy")」

本次會議開放免費報名參加。

Hybrid Event

Call for Papers: ERIH Annual Conference 2021

歐洲工業遺產路徑 (ERIH) 2021 年會徵稿公告

Submission Deadline 徵稿截止日：19 July 2021/ 2021 年 7 月 19 日

Date 活動日期：7 October 2021/ 2021 年 10 月 7 日

Place 活動地點：Hybrid Event

Online and Museum of Industry, Ghent, Belgium / 線上暨現場同步混合活動

Organizer 主辦單位：

The European Route of Industrial Heritage(ERIH)

歐洲工業遺產路徑 (ERIH)

Official Web 活動官網：

https://www.erih.net/what-is-new/detail/call-for-papers-erih-annual-conference-2021?fbclid=IwAR1kpshZLdaZ0_qNWV-fnJ-idb4UsJ5w6cvm5LkQt0uAuldRP0HS2QRsCcl

Information 活動說明：

The topic of this year's conference is "RESILIENCE- How industrial heritage sites accepted the pandemic challenge and survived the crisis".

The event will explore how industrial heritage sites have survived the Covid-19 pandemic and developed interesting and imaginative ideas for ongoing development in a post-pandemic world.

Resilience is defined as "being able to recover quickly from difficulty or distress". This year's conference provides a timely opportunity to share experience on how sites and attractions are recovering from the impact of Covid and extended periods of closure. The conference will also explore ways to mitigate against wider and long-term impacts on the protection and promotion of our industrial heritage. We are calling for papers on how sites can successfully rise to the challenge of the "new normal" with imaginative and effective responses which can provide inspiration for all concerned with the future of the heritage sector.

At present, it is proposed that, subject to Covid restrictions, the conference will be held on Thursday 7th October 2021 as a hybrid event; in-person at the ERIH Anchor Point, Museum of Industry, Ghent, Belgium and online. A decision on whether the in-person part of the event will be able to take place will be taken by end of August 2021.

The closing date for submission of papers is Monday 19th July 2021.

本年度主題定為「韌性 (Resilience)- 產業文化資產場域面臨疫情威脅的挑戰與回應」。

將焦點著重於產業文化資產場域如何在新冠病毒疫情衝擊下維持生機，並研發各項有趣且具想像力的提案回應將到來的後疫情時代。

ERIH 對韌性 (Resilience) 的定義為：「如何從困難與危險中快速復原。」本年度的大會提供發表者即時分享產業文化資產相關場域如何從疫情及場域長期關閉的衝擊中復原的經驗。同時也期望能獲得更多各相關場域推行保存與推廣工作時，如何減輕疫情所造成的廣泛而長期的衝擊的方法。

同時，本次大會也徵求發表者就不同場域如何因應「新常態」挑戰，推出的各種富想像力且有效率的應對方案，提供靈感予所有關心文化資產未來的人士。

目前因應疫情影響，將採結合現場與虛擬參與形式並行的混合活動 (hybrid event) 辦理。日期定於 2021 年 10 月 7 日 (四)，現場參與者的地點暫定為 ERIH 錨點之一的比利時根特工業博物館 (Museum of Industry, Ghent, Belgium)。ERIH 將評估疫情發展，於 2021 年 8 月下旬宣布是否舉行現場會議。

本活動徵文繳交期限為 2021 年 7 月 19 日 (一)。