Paper Trails

Industrial Heritage in India: challenges as well as issues in its identification, protection and management

Divay Gupta

Abstract: This article explores the concept of Industrial Heritage and its relevance within the Indian context. Conservation in India has unique challenges arising out of the limited protection framework, the complexity of heritage resources and limited awareness and priority. The main issues confronting the preservation of Industrial Heritage sites in India are related to its lack of identification as a cultural resource and lack of awareness in local communities due to their perception and attitudes towards it. But the question has remained as to how to generate public opinion towards the need to preserve and promote our industrial heritage in a holistic manner, for its conservation as a cultural legacy and part of our identities in this globalizing world. This article explores the challenges in documenting, protecting, restoring, and managing Industrial Heritage sites in India, drawing upon personal experience of the last 27 years in attempting to conserve them.

Keywords: Indian Industrial Heritage, Mumbai Mills, Railway Heritage, Conservation, Heritage Management

Patrimonio industrial en la India: Desafíos y obstáculos en su identificación, protección y gestión

Resumen: Este artículo explora el concepto de Patrimonio Industrial y su relevancia en el contexto indio. La conservación en la India se enfrenta a retos únicos derivados del limitado marco de protección, la complejidad de los recursos patrimoniales y la escasa sensibilización y prioridad. Los principales problemas a los que se enfrenta la conservación del patrimonio industrial en la India están relacionados con su falta de identificación como recurso cultural y la falta de concientización de las comunidades locales debido a su percepción y actitudes hacia él. Pero la cuestión sigue siendo cómo generar opinión pública sobre la necesidad de preservar y promover nuestro patrimonio industrial de forma holística, para su conservación como legado cultural y como parte de nuestras identidades en este mundo globalizado. Este artículo explora los retos que plantea la documentación, protección, restauración y gestión de los sitios del Patrimonio Industrial en la India, basándose en la experiencia personal de los últimos 27 años en los intentos de conservarlos.

Palabras clave: Patrimonio industrial indio, Fábricas de Mumbai, Patrimonio ferroviario, Conservación, Gestión del patrimonio

Património industrial na Índia: Desafios e obstáculos na sua identificação, proteção e gestão

Resumo: Este artigo explora o conceito de Património Industrial e a sua relevância no contexto indiano. A conservação na Índia apresenta desafios únicos que resultam de um quadro de proteção limitado, da complexidade dos recursos patrimoniais e de uma sensibilização e prioridade limitadas. As principais questões com que se confronta a preservação dos sítios do Património Industrial na Índia estão relacionadas com a sua falta de identificação como recurso cultural e com a falta de sensibilização das comunidades locais devido à sua perceção e atitudes em relação a este. Mas a questão continua a ser como sensibilizar a opinião pública para a necessidade de preservar e promover o nosso património industrial de uma forma holística, para a sua conservação como um legado cultural e como parte das nossas identidades neste mundo globalizado. Este artigo explora os desafios da documentação, proteção, restauro e gestão dos sítios de Património Industrial na Índia, com base na experiência pessoal dos últimos 27 anos na tentativa de os conservar.

Palavras-chave: Património Industrial Indiano, Fábricas de Mumbai, Património Ferroviário, Conservação, Gestão do Património

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The Indian Context

Since its inception, the concept of cultural heritage has undergone changes that influence our attitudes and perception towards it. In addition, over the years, it has become much more inclusive. Inclusion and steady growth of a new entrant like Industrial Heritage, recognized even as World Heritage, is one such example. These sites show the intricate interaction of humans with evolving technologies, landscapes, and each other. While some of these sites are of a 'celebratory' nature others remind us of the human and environmental costs we have paid for our choices.

Over the past few decades India has been developing with unprecedented economic growth and urbanization. However, due to this rapid development environmental and cultural resources are under tremendous pressure and threat. That also includes Industrial Heritage sites. They are amongst the most vulnerable typologies as, unlike the 'monumental heritage', they are often ignored or relegated and not identified as part of the heritage identification and documentation. Further the inherent biases towards them also impedes their conservation.   Often their state of preservation is by no means a reflection of their significance.

The main issues confronting the preservation of our heritage, especially Industrial Heritage sites, are two-fold:

  • Heritage Definitions, Identification and Protection of Industrial Heritage; and
  • Conservation and Management of Industrial Heritage

Challenges in Defining, Identifying & Protecting Industrial Heritage in India:

India is fortunate that it has an abundance of cultural heritage, varied and in large quantities, reflecting its more than 5000 years of continuous civilization. In India there is still a thriving living tradition, reflected in every sphere of life especially in vernacular architecture, crafts, traditional knowledge, customs, and skills. Customs and traditions still attached to several historic buildings and sites, especially of a religious nature, provide it with not only cultural continuity and context, but also with making these sites participatory heritage sites for local communities. "Despite a persisting image of India as a predominantly non-industrial country, the tradition of manufacturing in India is not a recent one. The Harappan civilization was known for its excellence in varying fields, the complexity of urban planning, the stringency of parallels in weights and measures, monumental architecture and mass production of bricks, seals, utensils, etc." (Suman Tarafdar as quoted in Yadav 2006). Even without an industrial revolution, India boasts a rich industrial heritage from ancient times. It has some of the oldest iron smelting sites (4th century BCE), Salt Production at Sambhar from, at least, the 6th century,

Zinc Production at Zawar (12th century)[1] , as well as the Chola period Anicut Dam (10th century) which is the oldest such structure that is still functional. That apart, Industrial heritage recounts the memory of recent societies and their industries; sites of production, houses of the people who worked there, systems of transport they used and even the remains of social life. It even includes areas of industrial waste that have potential archaeological as well as ecological value and can be rightly perceived as a subset of cultural heritage (Yadav 2006). Sadly, this aspect is not reflected in either the list of sites of national monuments, or in the diversity of sites to include categorizations like Industrial Heritage and Cultural Landscapes per say.

As mentioned in my 2004 paper in the *TICCIH Bulletin*, Industrial heritage as understood in the western world is little recognized or appreciated in the Indian context. Reasons could be many, like the continuation of the same industrial processes as living traditions today, or a history of colonialism in which manifestations of this heritage may represent oppression and slavery (Gupta 2004). Even after almost 19 years of the publishing of my article, not much has changed and the reasons are the same even today. The same sentiments were echoed by A. G. K. Menon (as quoted by Yadav 2006), and more recently in the TICCIH seminar in New Delhi (Joshi 2017: 5) as well as by Tipnis and Singh (2021: 121).

However, there is no doubt that the industrial revolution in Great Britain in the 18th century was a landmark that changed the landscape of the world by the sheer scale of production employed as observed by Narayani Gupta: "The modern industries of that era like mines, factories, plants, and even medieval castles are part of industrial heritage today" (as quoted by Yadav 2006). Many of the technological advancements that were happening in Europe as part of the 'Industrial Revolution', were introduced in India during the colonial period. These were largely related to extraction of resources, mass production of consumer goods and transportation networks for their trade. In this context, "Indian industrial heritage historically has to be seen as an integrated part of European and world industrial history and vice-versa" (Jan af Geijerstam as quoted by Yadav 2006).

Thus, an elaborate industrial landscape emerged mostly from the mid-19th century in the form of coal and mineral mines, mills processing cotton, wool, indigo, salt, spices, iron, and tea. In fact, many of these have been in continuous use, even up until recently. These were supported by a network of transportation and communication like shipping, railways, postal services, and electricity. Each of these services also created infrastructure in form of canals, stations, bridges, docks, offices, warehouses, residential units as well as health facilities[2] for workers or training and education facilities for engineers[3]. The railway network was one of the most extensive, covering most of the country, which is still its lifeline. This infrastructure led to the development of industrial centers and related

urbanizations all over the country, prominent among them being Bombay, Ahmedabad, Surat, Kanpur and Calcutta. Many of these edifices were created by using mass produced industrial building construction materials imported from Britain and main-land Europe[4]. Even smaller places, especially under the princely states, also developed various industries in their own region like Mangalore (famous for terracotta tiles), Gwalior (pottery), Firozabad (glass works), Surat (textiles), Assam (tea), and Azamgarh (indigo), to mention but a few.

While the British left notable impact on the Industrial landscape in the sub-continent, several other colonial powers like the Portuguese, the Dutch, the French, the Danish, among others, also left their own manifestations. The recently demolished Opium Factory in Patna[5] was set up by the Dutch East India company in 1632. It was later acquired by the British and converted into Collectorate.

While the Portuguese were the first to set up permanent base in India, in 1505, and are contemporary of the Mughals, they concentrated largely on trade and in the western coastal areas of Goa, Daman and Diu. The present General Post Office in Panaji was the old Tobacco Depot and trading house which lasted until the 1800s. Limestone quarries at Diu, called Nadia Caves[6], are another example of the Industrial heritage left by the Portuguese. [Figure2]
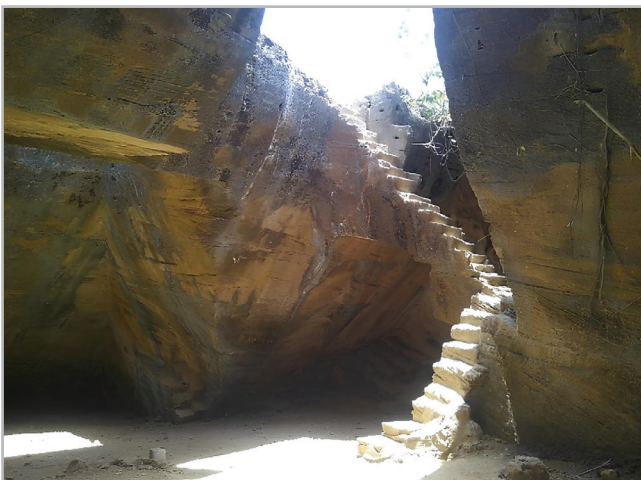
Figure 1.- Limestone Quarries in Diu, locally called Nadia Caves. (Photo by author 2016)

When India gained independence in 1947 from the British rule, it was partitioned into India and Pakistan (East & West). This created a unique challenge, as while many of these 'industries' came under the ownership of the Indian government, their supply chain was broken due to the partition. For example, while the Indian side had most of the Jute mills in West Bengal, its cultivation was largely in East Pakistan, which later became Bangladesh. While many of these mills declined, due to the circumstances of the independence, India being a new nation, embarked upon a path to industrialization in pursuit of progress through 'Modernism and Science'. This thought was contrary to

the Gandhian philosophy of cottage industry and rural development, but the same was adopted as part of the Nehruvian Socialist Model. Bhakra Nagal Dam (1963), Union Carbide Factory (1969), Sindri Chemical Plan (1952), Badarpur Power Station (1974), Chandigarh (1960) are a few such examples. As observed by Moulshri Joshi "[m]ost of these sites were managed by the Central Government in an operational model responsible for transforming an agro-based economy to industry-led, telling the story of a newly formed nation and its identity" (2017: 5).

Many have since suffered from a decline in production with heavy financial losses. Most of the industrial towns have also been transformed into dense residential and commercial areas and are being de-industrialized and redeveloped also due to concerns of pollution (Gupta 2004). These sites, when established, were away from the main cities but due to urban sprawl are now part of the city and are considered prime properties.

"Unfortunately, instead of conserving or looking at sensitive alternatives most of the industrial land is cleared for real estate development. Industries which survive have also gone ahead and changed drastically discarding the old meanwhile loosing precious heritage." (Gupta 2004: 1).

Identification of Heritage in India

The Archaeological Survey of India (ASI), set up in the late 19th century, is a Government of India department under the Ministry of Culture. The ASI is the custodian of our 'National Monuments' totalling about 3695 'protected' buildings and sites. Under its 'ownership' as state party are 32 cultural sites that are UNESCO designated World Heritage Sites. The World Heritage sites in India include the Mughal tomb of Taj Mahal, the ruins of 16th century Vijayanagar, the Capital of Hampi, the Rock cut caves at Ajanta-Ellora, the Buddhist Stupa at Sanchi, and the 10th century temple complex at Khajuraho, among others. The state governments and various union territories combined also protect about 4545 monuments and archaeological sites of regional importance. Further, a few cities like Mumbai, Hyderabad, Delhi, Nagpur, for example, also regulate about 2000 heritage buildings through their local Municipal bodies. This means that out of the estimated 10-11 million monuments and heritage sites barely ten thousand sites have some sort of designated protection, leaving a vast majority of the sites as 'unprotected' (INTACH 2020). As there is no designated official organization for making inventory of heritage sites in India, this task has been taken up by Indian National Trust for Art & Cultural Heritage or INTACH, a national level NGO, set up in 1984. However, the listing by INTACH has no statutory designation and remains largely an inventory on their databank called the National Register. A total of 174 Industrial sites are listed by INTACH as a distinct typology. These 174 industrial heritage sites, out of more than 60 thousand listings all over the country, make up for less than 0.4% of the total inventories on their National

Register. These sites are also concentrated in just three states of Andhra Pradesh, Arunachal Pradesh, and Gujarat out of 39 states and union territories in India [Table1].

Two sites are also designated as World Heritage under the Industrial Heritage category: the serial nomination of Mountain Railways of India (Darjeeling Himalayan Railway 1999, Nilgiri Mountain Railway 2005, and Kalka Shimla Railway 2008) and Victoria Terminus 2004 (now Chhatrapati Shivaji Maharaj Terminus) in Mumbai. Both sites are directly looked after by the Ministry of Railways but are not even designated as National Monuments. Besides the extension to Mountain Railways, no further sites are proposed on even the tentative list in the Industrial Heritage category. This, looking at the scale and industrial history of the country, is highly inadequate. Most of the other sites are unrecognized and unprotected, even when under the ownership of Railways.

A case in point is the recently demolished Allahabad Steam Loco Shed of the East Indian Railways, constructed in 1882. As the city was connected with three different railway lines (East Indian Railway, Oudh-Rohilkhand Railway & Bengal-Northwestern Railway), it has a rich railway legacy and prominence in the railway network with railway yards, workshops and sheds. Though many of these structures, especially the main railway station, are designated as heritage sites, several of them are not. Only the chimney of the Loco shed was listed by railways, and today is the only survivor as the reminder of the historic Loco-shed [Figure2]. This demolition was done for expansion of the Railway Station being developed as a World-Class Station. Over the next 5 years, 10 stations will be proposed to be developed as such, threatening much of Railway's heritage.

Agra, more popularly known as the city of the Taj Mahal, also had a thriving iron casting industry from Mughal times. These were modernized during British colonial times and, at one time, the city had more than 1000 foundries. Yet,

Figure 2.- Surviving Chimney of the now demolished Steam Loco Shed of the East Indian Railways at Allahabad (now Prayagraj). (Photo courtesy Vaibhav Maini)

due to their polluting nature and its impact on the World Heritage site of Taj Mahal, these units were closed. Now only very few foundries remain in Agra, which adopted the CNG-based iron-casting technology imported from the UK[8]. The rest of the units are either already demolished or awaiting similar fate. Agra being a tourist city has an opportunity to create tourism facilities in these historic buildings, which will not only conserve this historic building, but will also create alternative economic opportunities for the workers affected by their closure.

In Delhi, the capital city, efforts were made in 2003 by Sh. O.P. Jain (convener of Delhi Chapter of INTACH from 1995-2007), to preserve some of the Delhi's Mill set up in 1947 as heritage sites, like Swatantra Bharat Mills, Modi Mills, Delhi Cloth Mills (DCM), to mention but a few. He even proposed that part of DCM be a textile museum. But he also recognized that whenever there is pressure on land, it becomes impossible to save a factory or a mill. Terming it as a losing battle to save heritage sites, he stressed that Heritage loss is much bigger than personal loss in this country (OP Jain as quoted by Yadav 2006). However, the listing of Delhi's heritage buildings, by his chapter, did not feature any of these Industrial heritage buildings of the city and were left out of the ambit of the heritage regulations which were put in place in Delhi in 2010.

A.G.K. Menon, INTACH's who took over convenorship of Delhi Chapter from Sh. Jain and remained so till 2016, also recognized the significance and the threats to Industrial Heritage. "Awareness about India's industrial heritage is very poor. A lot of our heritage has vanished due to rapid industrialization and modernization. The mills in Delhi that started in the 1880s and 1890s, for example, are looked at only as old buildings that would not pass muster as valuable buildings to preserve" (as quoted by Yadav 2006). Unfortunately, like in Mumbai, most of these mills were demolished and are being redeveloped into new high-end and high-rise housing for the city.

Unfortunately, despite several efforts, no comprehensive survey, or listing has been done till date in India to assess the industrial heritage sites. Further it will be difficult even to assess what has already been lost due to lack of awareness of their significance. The heritage presently 'protected', or even listed by INTACH, is still predominantly monument centric and the Industrial Heritage is largely ignored. The problem is not only in the limited definition or identification of Industrial heritage in India, even the overall relationship of such sites is not seen within its context due to the lack of any comprehensive cultural policy or legislation for such sites.

Unprotected Industrial Heritage: the case of Mumbai mills

The Bombay Spinning and Weaving Company was the first cotton mill to be established in 1854 at Tardeo in Bombay (Farnie and Henderson 1999: 113). Within

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Combined List of Protected Monuments, Industrial Heritage Sites in INTACH Listed Sites				
S NO.	STATE/ UT	ASI PROTECTED MONUMENTS[9]	STATE PROTECTED MONUMENTS[10]	Listed IH by INTACH [11]	Total INTACH LISTING [12]
1	Andhra Pradesh	135	280	6	664
2	Arunachal Pradesh	3	8	1	52
3	Assam	55	126	-	100*
4	Bihar	70	54		1721
5	Chhattisgarh	46	58	-	713
6	Goa	21	51		3419
7	Gujarat	205	317	167	2231
8	Haryana	91	39	-	2560
9	Himachal Pradesh	40	8	-	964
10	Jammu & Kashmir and Ladakh	71	57	-	1117
11	Jharkhand	13	3	-	438
12	Karnataka	506	747		784
13	Kerala	29	183	-	897
14	Madhya Pradesh	291	526		4579
15	Maharashtra	286	376		2811
16	Manipur	1	63	-	22
17	Meghalaya	8	4	-	250
18	Mizoram	1	81	-	90
19	Nagaland	4	-	-	-
20	Odisha	80	214		6890
21	Punjab	33	94	-	3057
22	Rajasthan	163	385		9003
23	Sikkim	3	-		305
24	Tamil Nadu	412	96		1610
25	Telangana	8	346	-	400
26	Tripura	8	2	-	250
27	Uttarakhand	43	47	-	1264
28	Uttar Pradesh	743	161		7166
29	West Bengal	135	109		4842
30	Andaman & Nicobar	-	-	-	390
31	Chandigarh	-	-		-
32	Dadra Nagar Haveli	-	-	-	63
33	Daman & Diu	11	-	-	295
34	Delhi	173	19		1200
35	Lakshadweep	-	-	-	-
36	Puducherry	7	-	-	1517
	TOTAL	3,695	4,454	174	61,664

Table 1.- Comparison of INTACH listed Industrial Heritage buildings with protected monuments. (INTACH 2020).

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the next 50 years, there were more than 70 mills in Mumbai (earlier Bombay), earning it the epithet of the 'Manchester of the East'. Located mostly in central Mumbai and spread over 600 acres, the mills carried high estate value. It was estimated that nearly 15 million sq ft of real estate can be developed on these 600 acres of mill land. Following the supreme court ruling, the government relaxed its norms that once restricted the redevelopment of mill lands and, as a result, numerous high-profile builders quickly took possession of these land parcels. Between 1990 and 2010, many of these mill lands were acquired and are now being demolished to make way to shopping malls, office towers and high-rise apartment buildings. To put it in perspective, these "mills were at the heart of the city's economy, each textile mill was a miniature city of several thousand people working in three to four shifts, day and night. A complex network of chawls, markets, maidans, and social institutions spread out from the mill gates, integrating the neighbourhood outside with the factory inside. Mid-century Marathi literature, poetry, and oral traditions contains rich reflections on the life of the mills and chawls, but there is today little public imagery and imagination of these spaces" (Krishan 2005: 37).

While 32 of the mills belong to private owners, the rest were taken over by the State several years ago when they turned 'sick'. Post-independence in 1947, due to global competition, the government's subsidized mills steadily declined and by 1980 several mills had been shut down rendering over 2,50,000 workers jobless, resulting in workers' strikes in 1982. As a result, the sick mills were placed under the National Textile Corporation (NTC). Nevertheless, these revival packages failed miserably and plans to turn the mills into workers cooperatives also failed (D'Monte 2005: 118)[13]. Since then, many Mills in Mumbai and elsewhere like Lal Imli wool Mill (1876) of Kanpur or Indigo Factory of Patna, are lying vacant, neglected and crumbling. The NTC also divested many of the Mills in prevailing climate of asset monetization of the Government of India. The private mills, whose owners declared bankruptcy, are being sold through the National Company Law Tribunal (NCLT). Both these agencies do not appreciate the heritage value of these mills and generally auction them as distress sales. Due to this the debate between city planners, business houses, environmentalists and NGOs has raged on for the future of these mills.

The first ever study on the Mumbai Mills done by the Charles Correa Committee in 1996 emphasized the need for considering industrial sites within the city as urban assets, which can be developed as public space for the citizens. It also recommended reusing the existing mill buildings as artist studios and places for fashion designers, and social amenities. It suggested a mutually beneficial formula for redevelopment of the mill land by dividing it into three equal parts where 1/3rd of the land

was to be donated to the municipality for developing civic spaces, 1/3rd reserved for affordable housing and 1/3rd for commercial development (Tipnis and Singh 2021: 135). This formula, however, was challenged by the mill owner and in 2006 the Supreme Court over-turned it and paved the way for fully re-development of the Mill lands, especially under private ownership. This has resulted in large-scale demolition of mills for high-rise redevelopment, particularly in central Mumbai, where most of these mills were located. Nevertheless, there are a (very) few happy endings. India United Mill owned by the government is under restoration for reuse as a Museum and Cultural Space. The Phoenix Mill (1905)[14], which was redeveloped into High Street Mall in 2007, retained its Chimney as memorabilia.

In 1994 Mumbai, along with Hyderabad, became the first city to implement the heritage regulation for identified heritage buildings notified as such under its Town and Country Act of 1971. Nevertheless, amongst the 316 heritage buildings notified under it, no historic mill was included. Besides, only a handful of Industrial sites like Naval Dock Yard, Mumbai Port House, Custom House, Water Supply building, Victoria Terminus, Bandra Station, Western Railways HQ, and others alike featured on the heritage list. In hindsight the Mills, like many other heritage sites in Mumbai facing real estate pressures, could have been saved had they been included in the list of heritage buildings brought under the Mumbai Heritage Regulation in 1994.

The Mumbai Mill case was a lost opportunity as surely the city's future urban development depended upon these mills. Unlike Manchester, its moniker, its industrial structures like mills, warehouses, and its associated infrastructure like canals, have been well integrated into modern lives through their creative reuse and renewal. The Fiat plant in Italy is also known for its role in Italy's modernization unlike the mills in India, which are symbols of our journey to prosperity but are being destroyed, without having their value as heritage recognized. Sadly, this is a lasting trend for even:

"[t]oday the industrial heritage lies unprotected and threatened with very little hope for conservation. This is mostly due to lack of awareness regarding the significance of this cultural resource, as well as lack of any legislation or policies and institutions for the protection of Industrial Heritage. (…). In this scenario, there is urgent need to address the plight of industrial heritage and come up with sensitive policies towards their protection and development in the changing socio-economic context" (Gupta 2004: 1).

Though we are now operating within a new context, and a new understanding of what constitutes our heritage is growing rapidly, there is still a need for a paradigm shift away from a monumental and centralized, top-

down approach to heritage conservation, towards one that is about empowering and encouraging local communities to participate and steward over their cultural and natural resources.

Conservation and Management of Industrial Heritage in India

The perception of heritage tends to differ from region to region, as well as from nation to nation, and so do the protective mechanisms and frameworks. The present protective system including national laws, mostly drafted in the 1960-70s, are found to be weak and inadequate to address the changing concept of heritage itself due to their limitations. A comprehensive legislation or even a guidance is non-existent. The problem is complex as conservation of cultural heritage is clearly detached from larger urban or rural planning processes. Unfortunately, this has resulted in isolating heritage from its context and detaching it from contemporary life in India.

The role of cultural heritage in development is also not fully understood in our context and there are very few and isolated cases of a participatory approach towards the protection and management of heritage sites, especially related to Industrial Landscapes. In many cases conservation is seen as anti-development and there is an urgent need for awareness regarding these issues. The problem stems from not integrating local communities in the decision making or implementation of the projects related to heritage conservation in general. This perceptional change towards managing the heritage resource needs to link their conservation to the central issue of Sustainable Development.

The concept of renewal and reuse is also not well understood and is largely in conflict with official purist approaches in heritage conservation. The fundamental difference is the notion of authenticity whereby many of the sites, due to their continuity in contemporary usage, are viewed as evolving in a 'cyclic' process by traditional local communities. However, the more conventional conservation approach attempts at minimal intervention to maintain existing status, thereby relegating the past as an 'arrow of time', which needs not to evolve any further. This approach though may be relevant for more 'monumental heritage' of the global north, in Indian and Asian Context is inappropriate. The protection of Industrial Heritage, being largely a European phenomenon developed in 1960s, needs a contextual approach, with perhaps each country having their own framework. While this can be based on the existing convention and international charters on Industrial Heritage, these should only serve as a reference point in the conservation and management of these sites in their own context. The challenge will be in their interpretation as well as in the understanding of their relevance in the Indian context. Thus, there is a need for reconciling these, sometimes, opposing views to develop a conservation process for Industrial Heritage, which in India represents both our cultural continuity as well as a cultural legacy. For the sake of illustration, some examples are presented below:

Iron Bridges

Hope Bridge built in 1877 using steel sections in Surat was decommissioned, as it was declared structurally unsafe, and a new RCC bridge was built alongside. It was sold as scrap by Surat Municipal Corporation (SMC), though against this a local NGO went to court, but unfortunately lost. The bridge was finally demolished in 2011[15]. However, Ellis Bridge (1892) in Ahmedabad which was waiting for the same fate was rescued, by citizen's outcry, due to its association with Mahatma Gandhi's who started his Dandi Salt March in 1930 from this bridge. As for the decommissioned Havelock railway bridge over Godavari, in Vizag, it was bought by the Andhra Tourism Development Corporation to convert it into a tourist attraction[16]. One hope the same fate for the soon to be decommissioned Iron Bridge or Loha Pul (1866)[17] of Delhi.

Salt Golah, Howrah

Salt Golah, which spreads over 21 acres of land close to the Howrah railway station, was set up in 1835 by the British to stock salt in its 206 godowns. The site became important as the headquarter of the Salt Commission, which was to enforce the stringent Salt Law of 1882, which debarred Indians from collecting or selling salt. Mahatma Gandhi launched the Salt Satyagraha in 1930 against this repressive act. Following the Independence from the British era the Salt Commission was disbanded, and the Salt Department was reorganized in 1957. After that the site steadily lost its importance and became unfunctional in 1970. Soon after the site came in possession of the Railways which wanted this prime land to expand the Howrah Railway station. This proposal never materialized, and the site was abandoned and entirely taken over by nature. In 2016, on request of Eastern Railways INTACH prepared a proposal for its development. INTACH proposed to reuse the abandoned buildings and convert the site into a cultural, retail, and recreational hub, while also keeping its urban forest character intact. While the Railway Heritage directorate approved of the proposal, the site was handed over to the Railway Land Development Authority (RLDA) for its development. Unfortunately, the RLDA instead of developing the site under Public Private Partnership (PPP) mode, as was originally envisioned, invited tenders from developers for leasing the site for 99 years. This gives developers a free hand to dismantle the abandoned and dilapidated structures for commercial and residential development citing high costs and the non-feasibility of the restoration of these structures. It is hoped that a better sense will prevail, and the chosen developer will restore, at least, some buildings on this historic site.

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Figure 3.- Abandoned Salt Commissioner Office in Salt Golah, Howrah, West Bengal. (Photo by author 2016)

Water works at Varanasi

Badaini and Bhelupur water works (*Jalkal*), in Varanasi, are located near its famous riverfront ghats. They include filtration plants, pumping stations, raised reservoirs and underground tunnels. Constructed by the British in the 1890s, water works are still functional to this day. It has a capacity to supply four million gallons of water daily by pumping it from the river Ganga, filtering and supplying it to the residential, industrial, and other purposes in the city. Built with exposed brick and ornamental stone in Indo-Saracenic style, it looks more like a palace than an Industrial building. Under the Smart City mission, the city government proposes to establish an interpretation centre in the buildings to create awareness about the historic water distribution systems, water pollution and the importance of water conservation by providing a platform for initiating public participation activities, while keeping it functional as well.

Figure 4.- The purification building of Bhelupra Waterworks in Varanasi. (Photo by author 2017)

Looking Ahead: New Approaches & Initiatives

The concept of Industrial Heritage, till now, has had limited implications in India as there is still need for expanding the concept of heritage itself, both on a physical as well as on an intellectual level. Relevance of heritage can only be enhanced with active participation of the local communities, not only in the decision making but also through benefits derived from the conservation process, thereby making heritage much more inclusive as well as sustainable.

Current global discussions on Industrial heritage are largely based on the Nizhny Tagil Charter for the Industrial Heritage of 2003, which looks at this heritage with nostalgia. However, there is a need to recognize industrial heritage as a source of social-economic development too, especially in the Asian context. Thus, as observed by Aishwarya Tipnis and Mandeep Singh "[i]ndustrial heritage in the Indian context is an ecosystem, a combination of tangible and intangible elements set within a spatial framework" (2021: 123), which is indeed an approach better suited for India.

With the fast-disappearing Industrial Heritage in India it is imperative that the same is documented on an urgent basis. This will need efforts both from Heritage NGOs as well as from the National, State and city governments. The governments at their end can start to include it within their protection or regulation mandate. The city government and development agencies should realise their potential as cultural assets for long term public good through their reuse and renewal. However, the most essential way to achieve this will be by raising awareness amongst not only the political class, local communities, citizens, and students but also amongst the professionals, decision and policy-makers, especially planners, conservation architects, heritage and city managers.

A coordination mechanism for co-creation and collective responsibility also needs to be established, as there is no centralised agency or department looking at Industrial Heritage in a comprehensive way, making it fall within the cracks between several stakeholders and agencies like Culture, Urban Development, Industry, Ministry of Textile, Corporate affairs, NITI Aayog, among many others National Textile corporation (NTC), National Company Law Tribunal (NCLT), Department of Investment and Public Asset Management (DIPAM), and the RLDA where each one is looking at it from their own restrained perspective.

Certain new and recent initiatives are very encouraging. For instance, there is an attempt in the Government of India to develop a cultural policy for the nation, thereby an opportunity to re-define heritage. Through the initiatives of this policy, management of cultural resources is envisioned in a more holistic way. Though, it is yet to be seen if this will include Industrial Heritage in its ambit.

The Scientific Committee on Industrial Heritage (TICCIH) of ICOMOS India identified 100 Industrial Heritage sites in

2017. There are 34 sites of production and manufacturing, 37 sites of infrastructure, 4 marking industrial disasters and 10 sites that preserve and interpret industrial history as museums or educational institutions. Some sites are recognized at local or national level, but most are unacknowledged and largely unknown (Joshi 2017: 5). ICOMOS India is now actively pursuing for their protection and conservation however with limited success.

Jugaadopolis,[18] an initiative of Aishwarya Tipnis Architects, co-created a map of Industrial sites through crowd sourcing, that includes nearly 900 sites of both tangible and intangible category, covering sites of extraction, production, transportation, communication, works, trade and commerce as well as docks and maritime structures. The author claims that even this mapping is not an exhaustive one (Tipnis & Singh 2021: 125), suggesting the wealth and abundance of Industrial heritage waiting to be discovered in the country.

The Indian Railways have also started an in-house initiative to list their heritage buildings. Till now, 68 buildings and 72 station feature on their publicised heritage list. However, there is a need to expand this list further to include bridges, loco sheds, yards, houses, etc, to make it more diverse, inclusive and representative. Moreover, there is also a need for them to get this list peer reviewed by experts and establish a process of undertaking Heritage Impact Assessments while developing their heritage buildings and stations.

There is also a growing awareness and interest in Industrial heritage and some of the Industrial Heritage sites are finally being restored and reused. Many of these are being spear-headed by conservation professionals and, in some cases, even by corporates and the local communities. An Ice Factory in Ballard Estate in Mumbai is being used as a café and a Warehouse in South Mumbai is an Art & Design Center. Likewise, a Cultural Center in Vadodara is set up in an old Alembic Industrial Shed, the Kochi Biennale is held in a reused spice warehouse, and a disused factory is being used as a school in Delhi. These are all examples of a growing trend of Industrial Heritage conservation.

Protecting and conserving Industrial Heritage sites should not mean their preservation as artifacts or relics of the past, but as cultural resources which can be utilised for socio-cultural and economic benefit to the city and the society. This is best done if they are integrated within the planning process through Master plans or Zonal developmental plans. For this the original intend of the Charles Correa Committee's recommendations on Mumbai Mills (1996) can be examined on case-to-case basis all over the country. Many of these sites can be 'low hanging fruits' to cater to ever increase demands of social infrastructure required for the cities including, education, health, recreation and housing by encouraging their creative re-use, while allowing for certain changes such as additions and subtractions. Heritage Conservation and Reuse are now well recognised as agents for achieving Sustainable Development Goals (SDGs). Thus, like for any other typology of heritage, we need to link conservation of Industrial Heritage to SDGs, sustainability, climate resilience and socio-economic development of local communities. However, the greatest need is to generate public awareness towards the significance of Industrial Heritage, so that they can be conserved and connected with the people through their reuse, thus making them relevant in their contemporary lives. It is hoped that this will provide these sites the protection, promotion and dignity they truly deserve.

Notes

[1] Zawar was included as a Geo-Heritage site by the Government of India in 2018.

[2] Solarium in Jamnagar constructed in 1934, is one of its kind in the world. It contains a revolving tower built entirely of glass. The tower revolved a full 360 degrees capturing the rays of the sun during the day and was used to treat health conditions such as leprosy, asthma, among others.

[3] Thomason College of Civil Engineering Roorkee, established by the British in 1847 was the first engineering collage in India. It is where India's first steam engine was developed.

[4] The Railway Board Building Shimla (1896) and the Watson Hotel in Mumbai (1867) were largely made using prefabricated steel members.

[5] The building was Demolished in 2022, citing it having 'no heritage value' by the Archeological Survey of India (ASI) & Bihar government.

[6] The site is now proposed to be developed as a heritage hotel by the local administration.

[7] The iconic saree weaving clusters, in the tentative list, is under vernacular architecture.

[8] For further information see: https://www.business-standard.com/article/sme/agra-s-foundry-industry-on-verge-of-extinction.html (accessed on: 26.5.2023)

[9] As per ASI website: http://asi.nic.in/asi_pro-_tected_monu_list.asp (accessed on: 28.2.2023)

[10] ibid

[11] As analysed from State of Built Heritage of India. The Case of the Unprotected, Published by INTACH in 2020.

[12] As per INTACH Listing Cell, as in 2022.

[13] Also see *Mills for Sale* by same author.

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[14] https://www.moneycontrol.com/company-facts/phoenixmills/history/PM02 (accessed on: 14.6.2023).

[15] A new pedestrian bridge replicating the old Hope bridge is proposed by SMC at a cost of Rs. 54 crores, a fraction of this would have required for its restoration. https://timesofindia.indiatimes.com/city/surat/the-reincarnation-of-hope-bridge-over-tapi/articleshow/29922749.cms (accessed on: 27.5.2023)

[16] https://www.deccanchronicle.com/nation/current-affairs/140218/rajahmundry-havelock-bridge-to-be-made-into-a-tourist-hub.html (accessed on: 28.5.2023)

[17] https://timesofindia.indiatimes.com/city/delhi/work-on-bridge-parallel-to-loha-pul-enters-final-lap/articleshow/91582261.cms (accessed on: 14.6.2023).

[18]   http://jugaadopolis.com/indianindustrialheritagemap/. (accessed on: 24.5.2023)

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Author

Divay Gupta
divaygupta@gmail.com
School of Planning and Architecture, New Delhi

Divay Gupta is a conservation architect and headed the Architectural Heritage Division of INTACH, New Delhi til March 2023. An Alumni of ICCROM, University of Birmingham & School of Planning & Architecture he has been striving to help better manage and conserve the cultural resources in his country for more than 25 years. He has had the privilege and opportunity to be part of a number of prestigious projects in the UK, USA, India, Afghanistan, Nepal and Cambodia and has participated in joint UNESCO & ICOMOS missions to World Heritage sites as a conservation expert. His restoration projects in Ladakh have won the South Asia UNESCO awards of Merit & Excellence. He is an Ad Hoc expert on the International Conservation Committee (ICC) for the world heritage site of Preah Vihear in Cambodia. He was a member of National Culture Fund and serves on advisory committee to Government of India on World Heritage Matters. He is also a visiting faculty and a member on the board of studies of Department of Architecture Conservation at School of Planning and Architecture (SPA) New Delhi. He is presently pursuing his private practice and PhD at Deprt of Conservation, SPA, New Delhi
Divay Gupta (he/him) (Professor of Practice)
https://www.design.upenn.edu/people/divay-gupta