Transformation of Industrial Heritage:

The Case of Volos, Greece

Preserving the value of industrial heritage in historic towns through conservation, regeneration and reuse

by

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As you set out for Ithaka
hope the voyage is a long one, full of adventure, full of discovery.
…
Keep Ithaka always in your mind.
Arriving there is what you are destined for.
But do not hurry the journey at all.
Better if it lasts for years,
so, you are old by the time you reach the island,
wealthy with all you have gained on the way,
not expecting Ithaka to make you rich.

Ithaka gave you the marvellous journey.
Without her you would not have set out.
…
Wise as you will have become, so full of experience,
you will have understood by then what these Ithakas mean.

Ithaka by C.P. Cavafy

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Author's Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or processional qualification at the University of Kent or any other institution.

Signature: ……..…….

Printed name: MARIA DIMITRIOU

Abbreviations

AIPAI: Associazione Italiana per il Patrimonio Archeologico Industriale

CILAC: The Comité d'Information et de Liaison pour l'Archéologie, l'Étude et la Mise en Valeur du Patrimoine Industriel

DEH: Department of the Environment and Heritage

GSA: General State Archives

HAZ: Heritage Action Zone

HMSO: Her Majesty's Stationery Office

HUL: Historic Urban Landscape

ICOMOS: International Council on Monuments and Sites

ICCROM: International Centre for the Study of the Preservation and Restoration of Cultural Property

NSW: New South Wales

PIOP: The Piraeus Bank Group Cultural Foundation

TICCIH: International Committee for the Conservation of the Industrial Heritage

UNEP: United Nations Environment Programme

UNRRA: United Nations Relief and Rehabilitation Administration

URBED: Urbanism Environment and Design Ltd

Abstract

Deindustrialisation poses a major challenge for the preservation of heritage in European industrial towns. Volos, an industrial harbour city in central Greece, provides a typical example of this phenomenon. Redundancy and decay of many of the city's 20th century industrial buildings threaten the survival of a significant portion of its heritage. Infusing new life into these buildings requires the involvement of a wide range of stakeholders as well as the development of new management and conservation strategies. The latter remains the subject of lively discussion between scholars and policy makers. In cities like Volos, strategies tailored to the needs of industrial buildings are urgently needed to save this rapidly decaying part of their heritage.

This dissertation begins with a critical analysis of existing methods of preserving historic industrial buildings. This is used as a basis for the development of a novel set of criteria for the selection of new uses for redundant industrial buildings in Volos. In addition, this research re-evaluates the significance of industrial buildings in Volos, aiming to expand the framework of historic industrial preservation practice. It argues that management strategies based on traditional preservation practices are insufficient for interpreting the complexity of these historic places, and that historical industrial reuse is best served by attending to the range of values and processes associated with the historic landscape and its protection.

CHAPTER 1 – INTRODUCTION

1.1 Introduction

In the late nineteenth and early twentieth century, Volos was the capital of the province of Thessaly and one of the richest cities in Greece. It gradually expanded along the coast and maintained its role as a major industrial centre throughout this period. A number of publications state that during these years high productivity was linked to the development of trade and crafts associated with clothing, agriculture, and construction.[1] This intense activity is demonstrated by the historic buildings of Glavanis Ironworks, the main case study of this thesis, built in several phases until its closure in the 1980s and now abandoned. This historic complex opens a unique window into the urban and architectural development of Volos. Investigating its historic and architectural significance provides crucial information about the impact of industrial heritage on the city.

One cannot, however, study the architectural merit of such a monument without being conscious of its technological role as the setting of manufacturing processes and activities. Located at a strategic site close to the railway station and port, Glavanis Ironworks was associated with innovative processes and craftsmanship. Indeed, both the complexes of Glavanis Ironworks and the Stamatopoulou Ironworks, another great historic structure which has unfortunately been demolished, played an important role in the technological development of the city in the twentieth century, making Volos one of the most creative industrial hubs in Greece.[2] Its story reflects important aspects of local social and economic history, providing information about a crucial community

[1] Aigli Dimoglou, "Establishment and development of industry in Volos," in *Volos. In quest of the city's social identity*, ed. Thomas Maloutas (Thessaloniki: Paratiritis, 1995), 119-140; Nitsa Koliou, *The industry of Volos* (Volos: Municipality of Volos, Municipal Center for Historical Research and Documentation, 1994), 9-23; Charalampos Charitos, "Volos: the course of the new town. In Volos and its district through history," in *Volos and its district through history*, ed. George Kypriotelis and Costas Liapis (Volos: Thessalian Research Society, 2004), 267-328.
[2] Koliou, *The industry of Volos*, 23-26.

development: the formation of a localised labour party that reformed the working class movement in Greece.[3]

The first noteworthy initiatives concerning the conservation and rehabilitation of industrial heritage in Volos occurred in the 1980s and 1990s, when the Municipality of Volos and the University of Thessaly supported the conversion of industrial buildings into university premises and public offices.[4] According to Kostas Adamakis, a member of the county's Architectural Committee, in 1984 the University of Thessaly bought a number of large industrial complexes located in the city centre, which are still used as university buildings today. A strong industrial identity, the quality and diversity of its industrial buildings, the significant role of industrial buildings in the cityscape, and the effects of these conservation projects make Volos an ideal place to study the rehabilitation of industrial heritage. These rehabilitation projects also make this city an ideal laboratory for testing new methods of preserving industrial heritage.

Despite the fact that these buildings have been reconstructed, our knowledge of the principles applied in the protection, preservation, and conservation of these structures remains limited. The physical remains reused so far neither demonstrate the various values associated with industrial heritage, nor acknowledge the high significance of these monuments for the local community. As the significance of industrial heritage in Greece is currently largely unknown to us, it is uncertain whether planning goals for historic building conservation have managed to maintain authenticity while revitalising some of the most historically significant industrial places in Volos. Thus, there remain serious lacunae in our knowledge of a city which used to be such an important industrial centre. To fill these lacunae, it is necessary to study this overlooked heritage and reflect on its rehabilitation. Here, the value of such heritage is analysed for the first time, making it possible to successfully preserve and reuse buildings that are at risk or remain in a derelict condition.

[3] Charalampos Charitos, "The first statute of the Labour Center in Volos," *En Volo*, no. 30 (July-September 2008): 12-25; Giannis Kordatos, *History of the Greek Working-Class Movement* (Athens: Boukoumanis, 1972), 21.
[4] Kostas Adamakis, *The industrial Buildings of Volos* (Athens: Piraeus Bank Group Cultural Foundation 2009), 45-46, 52, 112.

It is now necessary to briefly present the background information on the thesis problem, before moving on to the research questions, objectives, and methodology.

1.2 Research Background

Industrial growth in Greece has always lagged behind the continuous technological progress of other industrialised countries.[5] However, industrialisation did happen, affecting the development of cities and their economies.[6] Indeed, the geographic decentralisation that resulted from the advance of the secondary sector has led to the development of industrial cities such as Piraeus, Thessaloniki, Ermoupoli (Island of Syros), Patra, and of course Volos (Fig. 1).[7] The location of Volos (capital of the Magnesia regional unit), in the middle of the Greek mainland and on the main North-South road axis of the country, was of great importance (Fig. 2, 3).[8]

The industrial development of Magnesia was associated with the economic activity of Volos, which lasted from 1881 until the 1970's, making it one of the most important industrial cities in Greece. According to Prassa, the urbanisation of Volos was directly linked to its industrial development, influencing the city's urban layout and architectural style.[9] Built around 1840, it was located east of the historic settlement in

[5] Georgios Anastasopoulos, *History of Greek Industry: 1840-1940* (Athens: Elliniki Ekdotiki Etairia, 1946); Labros Skartsis, *Greek Vehicle & Machine Manufacturers 1800 to present: A Pictorial History* (Athens: Marathon, 2012); Andrew Freris, *The Greek Economy in the Twentieth Century* (New York: St. Martin's Press, 1986).

[6] For comprehensive research on the history of Greek Industry see: Christos Hatziiossif, *The old moon. The industry in the Greek Economy 1830-1940* (Athens: Themelio press, 1993); Stathis Tsotsoros, *The Making of the industrial capital in Greece, 1898-1939* (Athens: National Bank of Greece Cultural Foundation, 1993); Tasos Gianitsis, *The Greek industry. Crisis and Development* (Athens: Gutenberg, 1985); Christina Agriantoni, *The beginning of industrialization in Greece in the 19th century* (Athens: Commercial Bank of Greece, 1986).

[7] Panagiota Kalogri, Fotini Margariti, and Vasias Tsokopoulos, "The industrial archaeology in Greek space: a first approach," Archaiologia no. 18 (1986): 9.

[8] Dimitris Oikonomou and Ilias Beriatos, "Urban Planning System of Volos: Geographic position and influence on the urban network," in *Volos. In quest of the city's social identity*, ed. Thomas Maloutas (Thessaloniki: Paratiritis, 1995), 237-260.

[9] Growth of the secondary sector was boosted by the intense economic activity of Mount Pelion, which has been characterised by agricultural and craft production since the end of the 18th century. See more in: Annita Prassa, 'The industrial development of Magnesia. Chronology. Towards deindustrialization,' in *Argo. Orientation lessons of technology in secondary schools*, ed. Annita Prassa (Volos: GSA, Archives of Magnesia, 1998), 131.

Palaia.[10] Its first residents were perceptive businessmen, mainly from the mount Pelion region, who conducted their professional activities in that area.[11] Once Volos was enrolled in the Greek State in 1881, it became the northernmost port, attracting residents from regions under Turkish domination and even further afield.[12] As a result, the town of Volos evolved very quickly.[13]

During the same period, a series of public works, such as the railway that connected Volos to Pelion and the Thessalian plain, as well as the construction of the harbour and the Urban Development Plan, created appropriate infrastructure that could facilitate economic activities.[14] Politically active industrialists, such as members of the Glavanis family, have greatly contributed to this development, linking their names to powerful expressions of economic growth, progress and the organisation of the local trade union movement.[15] From that point onwards the town's architecture had a decidedly industrial focus. Volos quickly flourished in the textile, metallurgy, and flour industries.

[10] Palaia, a hill in the west precinct of Volos, constituted of the historic settling core of the region, up until the middle of the 19th century; the precise date of the creation of that settling core is lost deep in time. The region around the hill of Palaia was protected by the byzantine castle, from the early Byzantine period and after. Nowadays some parts of the castle are still being preserved in the region, whereas some other parts have been recently revealed through excavations. During the Turkish domination, the region around the castle was the seat of the regional political and military authorities. See more: Vilma Hastaoglou, *Volos. The Portrait of a City from the 19th Century until Today* (Volos: Municipal Centre for Historical Research and Documentation, 2007), 11-21.

[11] In the beginning of the fifteenth century the whole region of Thessaly was occupied by the Turks. Then a lot of Greeks from the whole area of Thessaly moved to Mount Pelion for security. Villages were being developed around the monasteries. The taxes that the villages of Pelion had to pay to the Turks were much lower compared to other parts of Greece. A significant consequence of this situation was Pelio's economic development. The local products of handicrafts of that times were silk, olives and figs. Later they were producing shoes and other kinds of clothing. As the commerce was organised through agencies in Constantinople, Smyrne and Moldavia, the products were being exported by ships, constructed in Mitzela and Trikeri, or on horses as far as Vienna and Budapest. See more: Giorgos Kareklidis, "A 120-year-old story. Progress and expansion," Newspaper First, March 2017, 24-26.

[12] Christos Bessas, "The birth of the city and its productive physiognomy," *Volos, our city: Feature on yesterday and today* (special issue), no. 18, (December 1990): 5-9.

[13] The population of the city grew steadily - out of 4,987 inhabitants in 1881 it reached 11,029 in 1889 and 23,563 in 1907. See more: Hastaoglou, *Volos. The Portrait of a City*, 70-73; Michael Houliarakis, *Geographic, Administrative and Demographic Evolution of Greece, 1821-1971*, Vol. A: Part 1, Vol. A: Part II, and Vol. B (Athens: National Centre of Social Research, 1974).

[14] Hastaoglou, *Volos. The Portrait of a City*, 36-40.

[15] The owners of such industrial buildings were part of the business elite and were one of the driving forces in the community of Volos until 1940 when the first economic crisis began. For instance, Kostas Glavanis was mayor of Volos for seventeen years (1908-1925), winning a series of consecutive elections and Michalis Kazazis, the factory's co-owner, general manager, designer, and staff trainer, was also a prominent member of the community and was appointed National Representative of Greek Manufacturers in England in 1911. See more in Kormazou, Michalakis Kazazis:1850-1938, 43. The economic change and following industrial development had a direct impact on new social classes and

The first industrial buildings were primarily single-storey, developing later into two or three storied masonry warehouses. There was great variety in building morphology and arrangement of space, resulting from the different services and productive functions the buildings were supposed to house. Some of the most important such buildings were the textile factories of Papageorgiou (1905) and Mourtzoukos (1908), the halvah factory of Papagiannopoulos (1909), and the Glavanis Ironworks (1896), the main case study of this thesis.

The ideal location of the city, the upgrading of its harbour in 1903, and the concentration of specialised labour, were all factors which helped strengthen the industrial tradition of the region and attract further capital and workers.[16] Most industries were concentrated in the urban complex of the city. In fact, according to the 1988 census, Volos accounted for 78% of the prefecture's industrial employment.[17] In the 1970s, thanks to the high participation of the secondary sector in the total product and total employment, the prefecture of Magnesia surpassed the Greek national average and approached the levels of developed western European countries.[18]

However, the industrial recession of the 1980s led Volos into an era of de-industrialisation characterised by severe economic decline and high unemployment.[19] The factors that prompted the crisis were endogenous as well as exogenous. According to a Developmental Study for the Prefecture conducted by the University of Thessaly, among the main causes that had a negative impact on the industrial development of the region of Magnesia were the development of Athens as a capital and the subsequent concentration of human and financial resources on the city and its surroundings.[20] Furthermore, local industry was unable to adapt to new conditions of

changed social structure. See more in: Tzafleris, "The deindustrialization in Volos: claiming the urban space between the historical machine workshops and the locals," 448-449.

[16] The upgrade was implemented in three phases: first phase from 1892 to 1902, second phase from 1903 to 1920 and third phase from 1925 to 1931. See more: Aigli Dimoglou, *The industry in the prefecture of Magnesia. From the 19th to the 21st century* (Athens: Kerkira Press, 2005), 22-25.

[17] Prassa, "The industrial development of Magnesia," 141.

[18] Prassa, "The industrial development of Magnesia," 141.

[19] In May 1962, the 4th Congress of Chambers of Commerce and Industry was held in Volos showing the realisation that a vital restructuring was needed there. This picture was also confirmed by representatives of the local Chamber who stated that in the 1970s 9,000 out of 20,000 workers were forced to unemployment. See more: Dimoglou, *The industry in the Prefecture of Magnesia*, 68-69.

[20] George Petrakos, *Developmental study for the prefecture of Magnesia*, (Volos: Department of Spatial Planning and Regional Development in collaboration with the Department of Mechanical Engineering, University of Thessaly, 1995), 179.

national and foreign competition due to the old-fashioned style of most industrial enterprises, as well as excessive dependence on the crumbling banking system.[21]

External factors are also thought to include Greece's accession to the European Economic Community (EEC) in 1981, the reduction of state protectionism towards Greek industry, and the operation of a single European market (1992).[22] According to Iosif Hassid, the lack of specifications for and control over imported products combined with high tariffs and high cost of transportation led to a significant reduction in the ability of Greek manufacturers to penetrate foreign markets.[23] Moreover, industrial crisis in many commercial sectors across Europe, due to significant technological changes and the entry into international markets of low-cost labour countries, also considerably affected the industrial sector in Greece.[24]

This crisis dramatically affected the urban, social, and economic environment of the city, causing the closure of large industrial units in the city centre, the loss of jobs in manufacturing, the cessation of investment activity, and a significant reduction in the secondary sector's share in the GDP of the Prefecture.[25] In consequence, the industrial city centre was no longer a hub of creativity, production, commerce, and transport, leading industrial buildings and their surroundings to evacuation and abandonment.

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[21] 'The overwhelming majority of companies were small and family-based, which is not a disadvantage in itself, but becomes one when management practices remain archaic. Very few companies had adopted modern management techniques. Statism had the side effect of allowing patronage mentality and practices to persist… easy access to bank financing had led to excessive debt, which had been further increased in the early 1970s, when several companies, especially the larger ones, had embarked on new investment plans.' See more in: Christina Agriantoni, "Rethinking Greece: Christina Agriantoni on Greece's industrial development and its future prospects," interview by Ioulia Livaditi and Nikolas Nenedakis, Greek News Agenda, General Secretariat for Media and Communication, March 19, 2018, http://www.greeknewsagenda.gr/index.php/interviews/rethinking-greece/6667-agriantoni.

[22] 'The Association Agreement with the European Economic Community, signed in 1961, provided for a long transitional period, which allowed the perpetuation of a protective environment; however, the adaptation of the industry to the new conditions was insufficient when the Accession to the European Community (1979) entered into force in 1981.' See in: Agriantoni, interview; For a comprehensive evaluation of Greece's accession to the EEC see: Elisabeth Oltheten, George Pinteras, and Theodore Sougiannis, "Greece in the European Union: policy lessons from two decades of membership," The Quarterly Review of Economics and Finance (Winter 2003); Theodoros Christidis, *The European Economic Community and the subsequent Greek economic problems* (Athens: Commercial and Industrial Chamber of Athens, 1973); Goulielmos, *Europe – EEC - Greece* (Athens: 1978).

[23] Iosif Hassid, *Greek Industry and EEC. Impact Assessment and Integration study* (Athens: Institute of Economic and Industrial Research, 1980), 121-125.

[24] Iosif Hassid, *Greece and EEC. A comparative study of industrial structure* (Athens: Institute of Economic and Industrial Research, 1977), 30-39.

[25] Dimitris Dervenis, "The reuse and exploitation of industrial buildings in the city centre by the Municipality of Volos." Paper presented at the 3rd Special Thematic European Conference on the Protection and Use of Cultural Heritage, Municipality of Volos, Volos, April 2007, 1-4.

The once successful businesses gradually came to symbolise the city's decline, and the loss of its industrial identity.

1.3 Research Scope

The current research focuses on reuse of industrial heritage, using a value-based approach to the preservation of industrial structures, and the regeneration of the urban environment and previously overlooked industrial identity. Industrial heritage is a significant part of the urban built environment of the selected main case study, the city of Volos. Over the last forty years, following post-industrial European trends, industrial heritage has been considered a flexible resource that can adapt and redefine itself. Although many industrial buildings have been repurposed, the ill-considered new uses have not been able to preserve industrial heritage values while regenerating the city centre. Moreover, there are still a significant number of emblematic industrial properties in the city centre that remain vacant or underused. This main problem of selecting new uses and the delay in rehabilitating these abandoned sites threatens to erase an entire chapter of the city's history. We should therefore urgently protect this type of heritage.

Despite the potential of these historic buildings, industrial heritage in Greece has not been adequately studied. During recent years, there has been an increasing amount of published research on historic building conservation in Greece.[26] This is not the case, however, with industrial heritage. Previous studies focus almost exclusively on either the historical background of the Industrial Revolution or on the creation of inventories listing Greek industrial sites.[27] There is insufficient investigation of industrial heritage and no clear conservation framework or conservation principles.

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[26] Sophia Antoniadou, Ioannis Poulios, Giorgos Vavouranakis, and Pavlina Raouzaiou, *Culture and Perspective at Times of Crisis* (Athens, Oxbow Books, 2018); Miles Glendinning, *The Conservation Movement: A History of Architectural Preservation: Antiquity to Modernity* (London and New York, Routledge, 2013); Kalliopi Vacharopoulou, "Conservation of Classical Monuments: A Study of Anastylosis with Case Studies from Greece and Turkey," (PhD diss., Institute of Archaeology, University College London, 2013).

[27] Christina Agriantoni, *The beginning of industrialization in Greece in the 19th century* (Athens: Commercial Bank of Greece, 1986); Aigli Dimoglou and Pavlos Kollias, *Industrial Buildings in Volos: Past, present and future* (Volos: Volos Municipal Enterprise for Urban Studies, Construction and Development-

Moreover, there has been a great deal of confusion in the literature regarding the driving forces that shape conservation approaches in central Greece. There is no comprehensive explanation as to why the planning goals for historic building conservation have failed to maintain the authenticity of some of the most historically significant industrial places in Volos. It is therefore crucial to provide empirical evidence through the survey of current strategies of reuse dominating conservation efforts in Greek cities. Such an empirical investigation is the main focus of this thesis.

The post-industrial urban decay experienced in Volos has led to large parts of the architectural and urban heritage becoming disconnected from the urban fabric. Considering the fact that it was a central industrial and manufacturing centre, where trade and commerce flourished throughout the era of industrialisation and well into the 20th century, the scale of dereliction that followed deindustrialisation has been immense. Although a number of initiatives have attempted to reuse and economically recover former industrial sites, these efforts have not been able to regenerate the urban environment, maintaining a feeling of uncertainty among local residents. In view of this feeling of uncertainty as well as the inconsiderate choices of developers, there is a strong need not only to revitalise the material environment but also to transform established negative perceptions and reveal the city's lost industrial identity.

This shortfall can also be seen as a gap in the relevant literature. Although the importance of industrial heritage in urban regeneration practices and the adaptive reuse of industrial sites has been acknowledged in academic and professional publications since the 1980s, no detailed survey has been devoted to the industrial heritage of Volos.[28] However, brief references to it have appeared in several

DEMEKAV, 1997); National Technical University of Athens, *Historic Industrial Machinery I Greece* (Athens: Odysseas 1998); Ioanna Katsigianni and Antonia Kondili-Lagari, Industrial Buildings in Ermoupoli (Athens: Cultural Institute of Technology ETVA, 2000); Dimitra Baltsi, Heavy Industry in Greece (Athens: Kedros, 1977); John Peponis, "The architecture of the factory. A key concern or a peripheral issue?" *Architectural Issues* no 25 (1991): 69-73.

[28] This approach has been well established in the US, the UK and Europe, affecting at a certain extent Greece too. Following this trend, adaptive reuse of historic buildings emerged in Greece in the late 1990s. Indicative literature on urban regeneration for industrial heritage sites see: Judith Alfrey and Tim Putnam, *The Industrial Heritage: Managing Resources and Uses* (London: Routledge, 1992); Sophia Labadi, *Evaluating the Socio-Economic Impacts of Selected Regenerated Heritage Sites in Europe,* European Cultural Foundation, 2011. [Online]. Available at: http://www.encatc.org/pages/fileadmin/user_upload/Forum/Sophia_Labadi_2008CPRA_Publication.pdf; Ball, R. M., "Re use potential and vacant industrial premises: revisiting the regeneration issue in Stoke-on-Trent," *Journal of Property Research* 19, no.2 (2002): 93-110; Peter Bullen, "Adaptive reuse and

publications with a wider scope.[29] It is this insufficiently explored topic that constitutes the focus of this thesis. Knowledge about the transformation and adaptive reuse of industrial heritage in the Greek context, and especially in Volos, will be a timely contribution to existing theories and literature. The former Glavanis Ironworks site is an opportunity for an informed conservation and reuse approach that can help it become a magnet for activity and a spur to the regeneration of Volos. Finally, taking into account the fact that industrial heritage is a complex and significant resource, its transformation is linked to a number of principles and values that should be used to protect its character.

1.4 Aims and Research Questions

By developing an in-depth understanding of heritage practice and assessment criteria, this research aims to develop a tool as guidance for the future preservation and

sustainability of commercial buildings." *Facilities* 25, no.1-2 (2007): 20-31; Myriam Jonsen-Verbeke, "Industrial heritage: a nexus for sustainable tourism development," *Tourism Geographies* 1, no.1 (1999):70-85; Christopher De Sousa, "Brownfield redevelopment in Toronto: an examination of past trends and future prospects." *Land Use Policy* 19, no. 4 (2002): 297-309. Indicative literature on touristic and economic growth of industrial heritage see: Jonsen-Verbeke, "Industrial heritage," 70-85; Deborah Kerstetter, John Confer and Kelly Bricker, "Industrial heritage attractions: types and tourists," *Journal of Travel & Tourism Marketing* 7, No.2 (1998): 91-104; Bob McKercher and Hilary Du Cros*, Cultural Tourism: The Partnership between Tourism and Cultural Heritage Management* (New York: Routledge, 2002); Philip Xie, "Developing industrial heritage tourism: A case study of the proposed Jeep Museum in Toledo, Ohio," *Tourism Management* 27, No. 6 (2006): 1321–1330. Indicative Literature on city branding practices and local identity enhancement for industrial heritage see: Brian Graham, "Heritage as knowledge: capital or culture?" *Urban Studies* 39, No. 5-6 (2002): 1003-1017; David Throsby, *Economics and Culture* (Cambridge: Cambridge University Press, 2001); Graeme Evans and Phyllida Shaw, *The Contribution of Culture to Regeneration in the UK: A Review of Evidence* (London: DCMS, 2004). Available at: http://www.scholars-on-bilbao.info/fichas/EvansShaw2004.pdf.

[29] Earlier work may include: Michael Nomikos, *Restoration – rehabilitation of monuments and historical buildings in Northern Greece*, Volumes A and B (Athens: Ergon IV, 2001); Eirini Papageorgiou, Aggeliki Togia and Eleftheria Fainidou, "Restoration study of the Fixed Industrial Complex in Thessaloniki," In proceedings of *The end of the giants: Industrial heritage and transformations of cities* Conference, Volos, 2007, 405-416 (Volos: TICCIH-Greece, Municipality of Volos, University of Thessaly, the Piraeus Group Cultural Foundation); Nicholas Karachalis and Evagelos Kyriazopoulos, *The re-use of post-industrial space and waterfront development: The case of the Stone Loft* (Piraeus: Maritime Tradition Museum, 2019); Marina Karavasili, *The interpretation of industrial Heritage in Greece: Recent trends and new perspectives* (Athens: University of Athens, 2005), 1-10; George Mergos and Tzoulia Mouratidou, "Old buildings, new uses: The economics of preservation of an old industrial building," In *Cultural Heritage and Sustainable development. Economic Benefits, Social Opportunities and Policy Challenges*, edited by George Mergos and Nikolas Patsavos (Chania: Technical University of Crete, 2017), 357-366; Nikos Sifounakis, "From abandonment to rescue, reuse and recovery of identity of industrial units," In Bulletin of the Greek Department of the International Commission for the Conservation of Industrial Heritage, edited by Eleni Beneki (Athens: TICCIH Greece, 2010), 99–101; Michael Stratton, *Industrial Buildings: Conservation and Regeneration* (London: E & FN Spon Press, 2000), 122.

selection of new use of industrial heritage. It also aims to produce a method based on empirical investigation and analysis of national and international reuse and evaluation approaches, and to test it on the selected case study of Glavanis Ironworks in Volos.

Using Glavanis Ironworks as the primary case study, this research first aims to explore the complex set of values associated with industrial buildings, creating a statement of significance; secondly, to examine the different existing preservation theories and practices of rehabilitation in Volos; and thirdly, to consider how an inclusive approach would be applied in Volos and potentially inform reuse of industrial buildings elsewhere.

On this basis, three research questions were formulated:

RQ1: What is the significance of the existing industrial heritage in Volos?

RQ2: What are the limitations of current strategies of reuse in Volos?

RQ3: What alternative new use is required to provide an evidence-based solution to the problem of preservation? How can we identify the new use?

1.5 Methodology

To fill the gaps in the existing literature it is necessary to use a multifaceted approach which systematically investigates what has already been published while examining physical evidence and archival records. The literature review provides an analysis of industrial building conservation and reuse ideas as well as heritage evaluation practices that have been established by previous scholars. Data collected through literature survey and content analysis helps to identify the factors-values that affect considerate reuse of historic industrial buildings.

Most of the archival resources presented in this thesis are recorded and analysed for the first time. Identifying these resources was challenging due to the lack of prior research on the topic. Although Glavanis Ironworks is acknowledged in studies of the history of Volos as an important industrial site, published sources fail to assess its

entire cultural significance. To fill this gap, I carried out an architectural survey of the site and studied unpublished archival resources such as graphic records, original photos, archival documents, and project briefs. These new data are crucial in understanding the significance of and objectively identifying the industrial heritage attributes and values of the Glavanis Ironworks. These values serve as a guide for my proposed tool, which attempts to respect and retain the site's heritage significance. The research findings presented in this thesis are supplemented and validated by data collected through semi-structured interviews with local citizens and associated stakeholders, providing a more comprehensive analysis.[30]

The analysis of the main case study also helps evaluate the effectiveness of local conservation and reuse practices in the preservation of industrial significance over time. The factors-values discussed in Chapter 2 are used as a basis for this investigation in Volos. Critical appraisal is informed by original data collected through site observation, archival research, and one-to-one interviews identifying the deficiencies and shortcomings of existing rehabilitation practices in the city. In order to provide a more holistic approach to my selected case study, this thesis also examines alternative reuse approaches for comparison.

Regarding the comparative case studies, successful examples of reused historic industrial buildings are analysed based on the defined factors-values. Ten re-functioned industrial sites from different countries are selected according to their efficiency in preserving and promoting the various industrial heritage values. Observations from site visits and investigation of the decision-making process are both guided by the factors-values. A deductive content analysis is undertaken on secondary data sources, such as peer-reviewed academic articles, books, newspaper articles, and governmental publications.

All this information (such as defined factors-values associated with Glavanis Ironworks, the limitations of the existing reuse strategies, and the comparative strategies that have respected and promoted industrial identity) contributes to the creation of recommendations and an evidence-based selection of new use for the primary case

[30] Associated stakeholders include local policy makers and officers, academics in the field and professional experts in industrial heritage management.

study that respects the history, physical evolution, cultural significance, and conservation potential of this important heritage site.

1.6 Structure of the Thesis

In order to understand the rise and fall of former production spaces in Volos, the historical and economic context in which they evolved is presented in **Chapter 1,** which has also presented the research problem, thesis aims, research questions, and methodology. **Chapter 2** will review the literature in this area, opening with a discussion on the scope of industrial heritage and evaluation of industrial heritage significance, in order to identify criteria for assessing the various case studies. This chapter will examine existing approaches, using related scientific literature on some of the contemporary issues that arise from the evaluation of industrial heritage and its integration into the urban fabric. This will then lead into further discussion in **Chapter 3** of industrial heritage conservation and reuse, drawing from the work of Michael Stratton.[31] Here, preservation versus transformation and adaptive reuse approaches will be particularly emphasised.

This will lead into the empirical section of the thesis in which **Chapter 4** will focus on the assessment of significance of the selected case study in Volos, the Glavanis Ironworks, thereby answering the first research question of the thesis. Values associated with the main case study will be identified, demonstrating the importance of protecting and utilising the industrial site according to its attributes. Additionally, an assessment of significance will demonstrate the urgency of building preservation and rehabilitation, showing the impact that it has on the local community. **Chapter 5** will then critically appraise existing approaches to industrial heritage rehabilitation in Volos, providing insight into how historic industrial buildings are being evaluated and transformed. This chapter will therefore provide answers to the second research question.

Outlining some of the outstanding examples of industrial heritage in Europe and their transformation, **Chapter 6** will discuss the revitalisation and utilisation of industrial

[31] Stratton, *Industrial Buildings: Conservation and Regeneration*, 2000.

heritage according to modern needs, thereby questioning current practices in Volos. The interdisciplinary survey in this chapter will test identified criteria across the various case studies using the methodology specified in Chapter 1 and will help answer the third research question. Following the findings from Chapters 4, 5, and 6, in conjunction with scientific evidence from the literature review, **Chapter 7** will present a set of criteria for guiding the choice of a new use and as a solution to the research problem. Contributions made to the field of industrial heritage conservation and rehabilitation as well as urban regeneration will be demonstrated. In addition, this chapter will provide a novel tool and approach to adaptive reuse that future proponents may use to undertake an adaptive industrial heritage reuse project. In conclusion, **Chapter 8** will provide a summary of the findings and final closing statements.

CHAPTER 2 – SCOPE AND SIGNIFICANCE OF INDUSTRIAL HERITAGE

Following the establishment of the context, background and methodology, this chapter provides, in a systematic way, the literature and the key ideas or theories that help us understand industrial heritage and assessment of its significance. The aim of this chapter is to identify gaps in the existing literature which the following chapters will attempt to fill. The first section explains the scope of industrial heritage, focusing on industrial architecture. In the second section, a review of the assessment of significance and related values is undertaken. Overall, this first part of the literature review clarifies the concepts that will be used in the following chapters of this thesis.

2.1 The scope of Industrial Heritage

Since the second half of the twentieth century, industrial archaeology has increasingly gained acceptance as a field of study by people from different academic disciplines and diverse backgrounds.[32] The study of industrial heritage provides a better understanding of the historic industrial landscape and demonstrates the significance of surviving tangible and intangible assets. A large and growing body of scholars has produced results which strengthen policies and actions on documenting, recording, and listing industrial heritage sites.[33]

One of the earliest publications on the subject is the book 'Industrial Archaeology: An Introduction' by Kenneth Hudson.[34] Hudson discusses and defines the term 'industrial archaeology'[35], first applied by Michael Rix in a pioneering article for 'The Amateur

[32] The term of Industrial Heritage here refers to the tangible and intangible remains of the history of technology and industry as well as power and transportation infrastructure. Industrial Archaeology, on the other hand, is the academic study of histories based on artefacts of the industrial period. See more in: Judith Alfrey and Tim Putnam, *The Industrial Heritage: Managing Resources and Uses* (London: Routledge, 1992), 1-7.

[33] Neil Cossons, *BP book of industrial archaeology* (Newton Abbot: David and Charles, 1975); Marilyn Palmer and Peter Neaverson, *Industrial Archaeology. Principles and Practice* (London: Routledge, 1998); Michael Stratton and Barrie Trinder, *Twentieth Century Industrial Archaeology* (London: E & FN Spon Press, 2000).

[34] Kenneth Hudson, *Industrial Archaeology: An Introduction* (London: John Baker Publishers, 1966).

[35] The term Industrial Archaeology became widely adopted in the English-speaking world. However, it has been accepted by other countries as well such as 'l'archéologie industrielle' in French,

Historian' which opened debate over the understanding of the term. Great Britain, Rix said, 'as the birthplace of the Industrial Revolution is full of monuments left by this remarkable series of events.' [36] Despite this wealth of industrial assets, he proposes that the country's national heritage is being underestimated and left in decay. Analysing this approach, Clark stresses that 'despite the *archaeology* in its name, industrial archaeology is a world of its own which barely figures in antiquity or the other general archaeology journals'.[37] Rix adds that 'industrial archaeology is the study of early remains produced by the Industrial Revolution'.[38] Furthermore, he points out that what is important is not terminology but the role of the discipline itself. [39] He believes that industrial archaeology is an investigation of physical remains built in the eighteenth and nineteenth centuries, including factories, engines, bridges, railways, and canals.[40] His work has had some influence on the conception of industrial heritage in Britain, including on researchers such as Clark and Raistrick. Raistrick gives meaning to the 'hybrid' phrase 'industrial archaeology' by extending his analysis of industrial sites to different types and time periods, including for example Grimes Graves, stone-axe factories, Cistercian metallurgy, and the iron bridge site at Coalbrookdale.[41]

The debate on the theorisation of industrial archaeology has also explored the relationship between Industrial Archaeology and the Industrial Revolution. According to Rix, 'Industrial Archaeology is the study of early remains produced by the Industrial Revolution'. Similarly, Trinder argues that the main focus of Industrial Archaeology has been the documentation and preservation of the remains of the Industrial Revolution.[42] Criticising this explanation, Hudson stresses that the Industrial Revolution as a time period may include more than one phase and should therefore be

'Industriearchäologie' in German, 'archaeologia industriale' in Italian and 'arqueología industrial' in Spanish. See more in: Walter Minchinton, "World industrial archaeology: A survey," *World Archaeology* 15, no.2 (1983): 125-136. DOI: 10.1080/00438243.1983.9979892; Rainer Slotta, *Einführung in die Industriearchäologie* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1982); Emmanuel De Roux and Georges Fessay, *Patrimoine Industriel* (Paris: Nouvelles éditions Scala, 2007).

[36] Michael Rix, *Industrial archaeology* (London: Historical Association, 1967), 255.

[37] Clark, C. M. "Trouble at T'Mill: industrial archaeology in the 1980s." *Antiquity* 61, no.232 (1987): 169.

[38] Rix, *Industrial Archaeology, 5*.

[39] Sophia Labadi, "Industrial Archaeology as Historical Archaeology and Cultural Anthropology," *Papers from the Institute of Archaeology*, No. 12 (2001): 78.

[40] Rix, *Industrial Archaeology*, 25.

[41] Arthur Raistrick, *Industrial archaeology: an historical survey* (London: Eyre Methuen, 1972).

[42] Barrie Trinder, *The Making of the Industrial Landscape* (London: Dent, 1982), 350.

cautiously applied.[43] Furthermore, Labadi questions whether the phenomenon of Industrial Archaeology should be more broadly described, referring to social and economic transformation during the eighteen and nineteenth centuries.[44] In her paper, Labadi discusses the challenges deriving from a direct link between industrial archaeology and the Industrial Revolution. A broader perspective has also been adopted by Buchanan and Raistrick, who argue that industrial archaeology should be associated with industrial monuments throughout time.[45] By drawing on the range of sources published until the 1990s, it can be seen that approaches to Industrial Archaeology have often been technologically centred, focusing on the technical and physical character of industries.

2.1.1 The anthropological perspective

A multidisciplinary perspective on the subject has been encouraged by theoreticians with a concern for the social, cultural, and economic effects of industrialisation. A number of authors have attempted to report social benefits that are linked to industrial heritage. Among the earliest was Rix's pioneering article where he highlights the importance of the human contribution: 'But at whatever level it is treated and from whatever viewpoint it is examined, Industrial Archaeology as a human achievement must not be overlooked. Behind all its aspects are the people, the inventors, the mills owners, the engineers, the factory hands, and they must always be borne in mind'.[46] In his 1975 book, Cossons describes the role of the industrial archaeologist, referring to the demand for interdisciplinary awareness and recognition.[47] He underlines the fundamental contribution of craftsmen to the advancement of industrial technology. Moreover, Richard Sennett draws on mixed and

[43] According to Hudson, 'there are those who distinguish between the first and second stages of the Industrial Revolution, the first, beginning in the sixteenth century and characterised by the increased use of coal and iron and by the increasing concentration of workers, first into workshops and then into factories, and the second, the period of electricity, scientific method and man-made materials, which began about 1850 and is still in progress.' See more in: Hudson, Industrial Archaeology, 16.
[44] Labadi, "Industrial Archaeology as Historical Archaeology," 77 - 85.
[45] Robert Angus Buchanan, *Industrial Archaeology in Britain* (Harmondsworth: Penguin, 1972); Raistrick, *Industrial archaeology,* 4 – 10.
[46] Rix, *Industrial Archaeology,* 20.
[47] Cossons, *BP book of industrial archaeology*, 24.

informal sources, including economic data, historical accounts, and social theories, to assess the labour conditions of the 'new economy'.[48] A more recent study that addresses the anthropological dimension is the pioneering collection of Bernard Knapp, Vincent Pigott, and Eugenia Herbert, providing an in-depth analysis of the social context of mining communities by using ethnographic and ethnohistoric records from various cultures.[49] Like Sennett, Palmer and Neaverson discuss the wider topographical, social, and cultural contexts of industrial sites and structures.[50] By using various documentary, oral, and pictorial sources as evidence, their book provides a methodological framework for assessing industrial significance.

In the same vein, in his book entitled 'World Industrial Archaeology', Hudson makes clear that industrial archaeology should be about the working and living conditions of former industrial societies, and should create links between past, present, and future communities.[51] Mark Leone uses an example from Hudson's book to demonstrate how he approaches the anthropological aspect of industrial heritage, using business archival records, oral history, local newspapers, and site visits.[52] The example he chooses is an established case of industrial archaeology, the Clark Factory Museum in the British town of Street, Somerset. Here, Hudson criticises the sterile representation of local industrial culture while calling for better connections between industrial museums and modern realities. In dialogue with this viewpoint, Palmer and Neaverson suggest that the role of the individual as part of the productive process should be included in the social context of industrialisation.[53] These publications show that the field of industrial archaeology has faced continuous challenges.[54] The debate has surpassed the simple documentation of physical evidence by highlighting the collective social experience of industrial societies.

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[48] Sennett, Richard, *The corrosion of character: the personal consequences of work in the new capitalism* (New York: W.W. Norton, 1998).

[49] Bernard Knapp, "Social Approaches to the Archaeology and Anthropology of Mining," In *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, ed. Bernard Knapp, Vincent Pigott and Eugenia Herbert (London: Routledge, 1998), 1-23.

[50] Palmer and Neaverson, Industrial Archaeology, 7. See more in: Palmer and Neaverson (1995) *Managing the Industrial Heritage;* Palmer and Neaverson (1994) *Industry in the Landscape.*

[51] Kenneth Hudson, *World Industrial Archaeology* (Cambridge: Cambridge University Press, 1979), 1-12.

[52] Mark P. Leone Review of *World Industrial Archaeology*, by Kenneth Hudson, *American Anthropologist*, 1981, Vol. 83, Iss. 1.

[53] See more in: Palmer and Neaverson, *Industrial Archaeology*, 4.

[54] Casella and Symonds, *Industrial Archaeology: Future Directions*, 53.

Although a broader concern for industrial heritage has now developed, people initially failed to understand the value of modern monuments. According to Michael Stratton, the destruction of Euston Arch and the Coal Exchange in London due to large-scale urban renewal was the turning point in public opinion.[55] Other unfortunate losses include the world's first shot towers in Bristol and Newcastle-upon-Tyne, the impressive Randolph & Elder engineering building in Glasgow, and the six Cornish beam engines at Sudbrook in Gloucestershire, which drained the Severn Tunnel.[56] These losses undoubtedly fed into the dynamic growth of cultural heritage awareness in the 1970s, which placed preservation at the centre of industrial archaeology. Walter Minchinton is among those holding the view that industrial archaeologists should safeguard industrial sites and structures, and ensure that they are not treated unsympathetically.[57] Thanks to this increasing concern for preservation and the belief that social value attached to industrial sites is of equal importance, transformation has focused not only on protection but also on strategies that give these sites new lives. This approach is supported by Alfrey and Putnam, who refer to the development of science and technology.[58] The gradual recognition of diverse values associated with industrial structures has helped us to better understand contemporary society.[59]

In addition to the aforementioned conceptual dimension, the development of industrial archaeology has been accompanied by the evolution of systematic national industrial heritage inventories and recording programs. This has been supported and assisted by national industrial heritage societies which bring together groups and individuals with an interest and expertise in identifying, recording, preserving, and presenting the remains of the industrial past. Such societies with a great deal of influence have included the Association for Industrial Archaeology (AIA) in Britain, CILAC in France, AIPAI in Italy, and the Society for Industrial Archaeology in North America.[60]

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[55] Stratton, *Industrial Buildings*, 11.
[56] See more in: Cossons, *BP book of industrial archaeology*, 1975.
[57] Minchinton, "World Industrial Archaeology: a Survey," 125–136.
[58] Alfrey and Putnam, *The Industrial Heritage*, 9.
[59] Alfrey and Putnam, *The Industrial Heritage*, 340.
[60] Regarding organisational structure respective societies in Australia, France and the USA are centralised and bureaucratic while societies in Britain, Italy, Belgium and the Netherlands have more like a grassroot, mainly amateur, level. See more in: Minchinton, "World Industrial Archaeology: a Survey," 125–136.

2.1.2 Industrial Heritage in Greece

In Greece, industrial archaeology has quite recently emerged as a new field of study.[61] Traditionally it has been argued that Greek industrial development was anaemic and that Greece could be hardly considered an industrial country.[62] According to Agriantoni, one of the weaknesses of this stereotype is that it is based on a limiting comparison with the British model.[63] For instance, Tsolis argues that Greece's heritage focus on its agricultural economy, glorious ancient past, and sunny islands could be shifted when considering the impact of the mining site of Lavrion in ancient Athens.[64] Tsoli's view is also supported by Böckh, who writes that silver from the mines of Lavrion was used as money, demonstrating significant commercial activity fourteen centuries before the beginning of the Industrial Revolution.[65]

A considerable body of literature has investigated the Greek industrial past and its development. During the late nineteenth century several publications approached the topic from a historical perspective. In 1896, Agriantoni traced the state and private initiatives that marked the country's industrial awakening in the early nineteenth

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Moreover, to find more about the international preservation movement please see Henry Cleere, "The impact of world heritage listing," in *ICOMOS 17th General Assembly*, 2011-11-27 / 2011-12-02, (2012) Paris, France; Henry Cleere, "Cultural landscapes as World Heritage," *Conservation and Management of Archaeological Sites* (1995): 63-68.

[61] Definition: Industrial Archaeology aims at studying the recent industrial past developed between the 18th and 20th century and in particular the various ways that the material evidence is linked to the city and its community. Regarding the definition see more in: Marilyn Palmer, 'Industrial archaeology: a thematic or a period discipline,' *Antiquity*, no. 64 (1990): 275–85; On the field of industrial archaeology in Greece see more in: Christina Agriantoni, "Industry and city," En Volo, no. 23 (2006): 12-15.

[62] Mitoula Roido, Eleni Theodoropoulou and Barbara Karali, "Sustainable development in the city of Volos through reuse of industrial buildings," *Sustainable development, culture and traditions Journal*, No. 2 (2013): 154-155.

[63] "The truth is that Greece has indeed remained a predominantly agricultural country until the Second World War: in 1939 industry's contribution to GDP was estimated at about 10% and 60% of the population was employed in agriculture (this percentage was 80% in the 19th century). Greek industry tended to lag behind the continuous technological progress launched by industrialised countries. All this does not mean that the industry was anaemic or unimportant for the economy. It has simply developed according to a different pattern." See more in: Agriantoni, interview.

[64] Tsolis, *Processes of Industrialisation*, 7-8.

[65] This North-South divide could be also linked to the global socio-economic and political divide, where the countries from the South have never been industrial whilst the countries from the North have been industrial. See more in: August Boeckh and Lewis George Cornewall, *The public economy of Athens: to which is added, A dissertation on the silver mines of Laurion*, (London: J.W. Parker, 1842), 615, 657.

century.[66] At that time, the economy of Greece still depended mainly on agriculture and maritime trade, as well as the smaller scale activities of weaving and tanning. In

the same vein, Lyberaki argues that the event initiating industrial development in Greece was the fall in silk cultivation occurring in France around 1850, apparently boosting Greek textile production.[67] This event led to the creation of industrial centres and landscapes around ports such as Ermoupoli, Piraeus, Patra, Thessaloniki, and of course Volos, tripling the population of Greece by 1879.[68]

Several studies have revealed that a vast number of industrial buildings and sites were built across Greece during the most important waves of industrialisation.[69] Following deindustrialisation, in Greece as in most European countries, empty buildings, outdated machinery, and abandoned industrial sites have had a negative impact on the urban landscape.[70]

In spite of previous scholarly efforts to record Greece's historic industrial background, our understanding of Greek industrial heritage is still fragmentary. Limited effort has been made to analyse and interpret this industrial background so that it can be used to efficiently guide industrial building reuse. According to Belavilas, there is scant analysis of technical monuments and machinery and a limited understanding of working society.[71] These deficiencies have led to poorly considered reuse practices that lack an integration of understanding, conservation, and revival.

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[66] Agriantoni, *The beginning of industrialization in Greece*, 56

[67] Antigoni Lyberaki, *Flexible specialization: crisis and restructuring the small industry* (Athens: Gutenberg, 1991), 99.

[68] These industrial centres were initially focusing on textile production but then expanded into more diverse markets. See more in: Kalogri, Margariti and Tsokopoulos, *The industrial archaeology in Greek space*, 9; Pantoleon Kabouroglou, *History of Piraeus from 1833-1882: general situation, commerce, shipping, industry* (Athens: Karavias, 1985), 49.

[69] The waves of industrialisation were: 1860-1875, 1890 and the eve of the (Balkan and world) wars, 1918-1921, 1924-1927, 1933-1939 and the biggest wave was 1950-1975. See more in: Agriantoni, interview; Giannis Polyzos et all, *Historical industrial equipment in Greece* (Athens: Odysseas, 1998), 32, 51; Konstantina Demiri, *The Greek textile factories: historic and typological investigation* (Athens: Piraeus Bank Cultural Foundation, 1991); Nikos Sifounakis, *Industrial buildings in Lesvos. Olive factories – Soap factories. 19th and beginning of 20th century* (Lesvos: Prefecture of Lesvos, 1986); Adamakis, *The industrial buildings of Volos*; Xenofon Papaefthimiou, *Industrial Buildings of Western Greece* (Patras: CETD-WG, 2007).

[70] Roido, Theodoropoulou and Karali, "Sustainable development in the city of Volos," 154-167.

[71] Nikos Belavilas, "Documentation of industrial heritage," En Volo on Industrial Heritage in Magnesia, no. 23, (Oct-Dec 2006): 74-79.

2.1.3 Industrial architecture as part of post-industrial cities

In the field of Industrial Archaeology, there have been a number of publications that also investigate industrial architecture. The intersection of design and industry has proven to be a fruitful research area for professionals in various disciplines, including historians, architects, planners, and policy makers. According to Aitchison, early industrial architecture has been very influential, shaping modernist architecture in the first half of the 20th century.[72] For instance, the Fagus Factory (1911) designed by Walter Gropius and Adolf Meyer and the Bauhaus designed by Gropius are both representative examples of modernist industrial architecture that have influenced many later architectural works. Karl Friedrich Schinkel's early nineteenth century work, such as the Bauakademie in Berlin (1831 - 1836), inspired by British factories, also redirected the architectural movement of that age.[73] This dramatic shift in building design has been thoroughly analysed and critiqued by architectural historians such as Sigfried Giedion (1888 - 1968) and Nikolaus Pevsner (1902 – 1983), and later by Bruno Zevi (1918 – 2000) and Peter Reyner Banham (1922 – 1988). Most of these critics have approached industrial architecture from a technological and stylistic point of view. In his books 'Space, Time and Architecture' and 'Mechanization Takes Command', Giedion combines disciplinary and cultural fields to discuss how architectural fashion relates to the history of mechanisation, to the scientific development of the factory system, and to the human values.[74]

An increasing presence of industrial architecture in design history is also recognised in urban and regional planning discourses. More specifically, there has been a need for many housing developments and supplementary facilities to be built around industrial

[72] Mathew Aitchison*, Industrial Architecture Past and Present* (New York: Routledge, 2016), 113-116.
[73] In 1826, Karl Friedrich Schinkel together with his friend Peter Beuth did a tour in Britain (including cities such as London, Manchester, Birmingham and the Potteries), Scotland and North Wales. See more in: Gottfried Riemann, "The 1826 Journey and Its Place in Schinkel's Career," in *The English Journey: Journal of a Visit to France and Britain in 1826*, ed. David Bindman and Gottfried Riemann (New York & London: Yale University Press, 1993): 1-11.
[74] Sigfried Giedion, *Space, Time and Architecture: The Growth of a New Tradition* (Cambridge, Harvard University Press, 1962), 2-3; Sigfried Giedion, *1888-1968. Mechanization takes command: a contribution to anonymous history* (New York: Oxford University Press, 1948), v-vi.

sites.[75] Among such developments, popular model villages in Great Britain have included the Swindon Railway Village in Wiltshire, built in 1840s; New Lanark in Lanarkshire, built in 1786; and the Creswell Model Village in Derbyshire, built in 1895, which also influenced the garden city movement.[76] At this point, it is interesting to discuss the case of Aspra Spitia (modern Greek for "White Houses"), situated on the coast of the Corinthian Gulf. This is a characteristic settlement planned by Doxiadis Associates for the company "Aluminion de Grece" to house industrial workers employed at its nearby aluminium plant.[77] As Erik Ghenoiu notes, this approach fostering links between artists, industrialists, and planners can be compared to the Deutsche Werkbund movement.[78] Such large scale industrial transformation fed into the creation of polycentric industrial regions such as the East and West Midlands in Britain, the Ruhr Area in Germany, and the Rust Belt region in the United States.

Other studies have considered the dominant influence of industrial architecture in post-industrial cities. Palmer and Neaverson find that a post-industrial city is easily recognisable from its silhouette, which is shaped by networks of factories.[79] Features such as tall chimneys and notched roofs, or structural elements such as the use of stone, tile, and timber, have a considerable impact on the city's architectural form and design. Furthermore, Maheras notes that the imposing size of most factories makes

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[75] Aitchison, *Industrial Architecture Past and Present*, 65-66, 77-78.

[76] Definitions: A model village is a 'type of mostly self-contained community, built from the late 18th century onwards by landowners and industrialists to house their workers. Although the villages are located close to the workplace, they are generally physically separated from them and often consist of relatively high-quality housing, with integrated community amenities and attractive physical environments.' See more in: Wikipedia contributors, "Model village," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Model_village&oldid=898225164 (accessed August 16, 2019). Also, the garden city movement is a 'method of urban planning in which self-contained communities are surrounded by *greenbelts*, containing proportionate areas of residences, industry, and agriculture.' See more in: Wikipedia contributors, "Garden city movement," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=Garden_city_movement&oldid=910198029 (accessed August 16, 2019); David Rudlin and Nicholas Falk, *URBED-The urban and economic development group. Building the 21st century home. The sustainable urban neighbourhood*. (Oxford: Architectural Press, 1999), 29-32; Spiro Kostof, *A History of Architecture: Settings and Rituals* (New York: Oxford University Press, 1985), 679-681.

[77] Socrates Yiannoudes, Nikolaos Patsavos and Vasilis Tsesmetzis, "Aspra Spitia 2015: intentions and transformations. Constantinos A. Doxiadis' industrial settlement and its development," paper presented at *International Conference on Changing Cities II: Spatial, Design, Landscape & Socio-economic Dimensions*, Porto Heli, Greece, June 22-26, 2015: 1007-1018.

[78] Erik Ghenoiu, "Post Industrial Spaces of production: The New Brooklyn Economy and the Deutsche Werkbund," in The Architecture of Industry. Changing Paradigms in Industrial Building and Planning, ed. by Mathew Aitchison (Farnham, Surrey, England; Burlington, VT, USA: Ashgate, 2014), 19.

[79] Palmer and Neaverson, Industrial archaeology, 2 - 8, 105, 143 - 153.

them prominent foci in the industrial cityscape. Their design, reflecting the architectural grandeur, plasticity, and neoclassical compositions of the era,

transformed and dominated the city's appearance.[80] According to Stefanou and colleagues, surveying and documenting this architectural style is essential as it helps us to gain insight into the complex character and identity of an industrial city.[81] Similarly, according to Lynch's theory, industrial buildings define industrial urban centres and could be used as symbols for interpreting space and establishing local identity.[82] This view is supported by Rossi (1991) who in a broader sense explains that preserving historic buildings as fundamental components of the city structure and urban space contributes to public memory.[83] Historic buildings, in this thesis industrial buildings, have a timeless impact even if their initial use has been replaced. As a result, conserving and protecting such buildings helps to maintain the location's industrial identity.

Finally, documentation of industrial heritage, including site surveying, building or machinery recording, and drawing and photographic archival recording, have proven to be important when studying industrial heritage.[84] According to Palmer and Neaverson, interpretation of material evidence focuses on the protection and promotion of public memory associated with industrial buildings, while emphasising the characteristic features that these monuments are known for.[85] This view is supported by Agriantoni, who argues that industrial artefacts found in the vicinity of industrial cities represent the knowledge and working skills of that era.[86] In such cases, maintaining and promoting industrial heritage contributes to the preservation of a place's identity.

[80] Giorgos Maheras, "Industrial archeology," *Arheologia* no. 18 (1986).
[81] Joseph Stefanou, *The physiognomy of Greek city* (Athens: Laboratory of Urban Design N.T.U.A., 2002), 49.
[82] Kevin Lynch, *The image of the city* (Cambridge: MIT Press, 1960), 25-29.
[83] Aldo Rossi and Peter Eisenman, *The architecture of the city* (Cambridge, Mass.: MIT Press, 1982), 19 - 21.
[84] Palmer and Neaverson, *Industrial archaeology*, 2 - 8, 105, 143 - 153.
[85] Palmer and Neaverson, *Industrial archaeology*, 2 - 8, 105, 143 - 153.
[86] Christina Agriantoni, "Industry and city," *En Volo*, no. 23 (2006): 12-15.

2.2 Significance of Industrial Heritage

A large and growing body of literature has investigated the significance of heritage buildings, focusing on their link to the local community and the place's identity.[87] There is a consensus among urban historians highlighting the importance of memory and history in the understanding of a place which is directly linked to people's identity. This view is also supported by Historic England, who noted in 2004 that historical sites play a significant role in enhancing a community's sense of belonging.[88] This arguably means that environmental psychology is a factor in defining identity and feelings of belonging to a place or city.[89]

By definition, industrial heritage consists of remains that are linked to the culture and everyday working life of ordinary people.[90] This in practice not only refers to the architectural or historical value of these places but also to social and technological values that are associated with the memories of generations of workers and their technological progress.[91] In a time of homogenisation of cultures, identities, and spaces, this approach can be considered crucial. In a study by Tim Edensor, alternative aesthetics of industrial ruins and their value in over-designed modern cities are analysed.[92] Edensor addresses concerns that new developments without character are replacing industrial sites, and that this is also supported by governmental policies. A broader perspective has been adopted by Vladimir Mihajlov, who argues that industrial heritage is so significant to the community that its reuse can solve many social problems.[93]

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[87] Lineu Castello, "City & Time and Places: Bridging the Concept of Place to Urban Conservation Planning," *City & Time* 2, no.1 (2006): 5; Dollores Hayden (1995), The Power of Place: Urban Landscapes as Public History.

[88] English Heritage (2009) *Heritage-Based Regeneration*; English Heritage (2004) *People and Places: A Response to Government and the Value of Culture*.

[89] Clare Twigger-Ross, Marino Bonaiuto and Glynis Breakwell, "Identity theories and environmental Psychology," In *Psychological theories for environmental issues*, ed. by Bonnes, Mirilia, Terence Lee, and Marino Bonaiuto (Aldershot: Ashgate Publishings, 2003): 205.

[90] TICCIH (2003) The Nizhny Tagil Charter for the Industrial Heritage.

[91] TICCIH (2003) The Nizhny Tagil Charter for the Industrial Heritage; TICCIH. Industrial heritage: the hidden face of European identity. INTERREG IVB North-West Europe Programme Newsletter, 2004, n. 4.

[92] Tim Edensor, *Industrial Ruins: Spaces, Aesthetics and Materiality* (Oxford: Berg Publishers, 2005).

[93] Vladimir Mihajlov, "Industrial heritage renewal – social motives and effects," *Sociologija i prostor*, 184, no.2 (2009): 139-164. Ref in: ICOMOS Slovenia, Protection and Reuse of Industrial Heritage: Dilemmas, Problems, Examples.

By drawing on the concept of significance, numerous studies have attempted to explain that the value of industrial heritage goes beyond physical aspects.[94] Industrial building reuse is also often defined as a practice of space improvement, place making, and economic growth.[95] According to Stratton, industrial cities that have gone through economic decline are inclined to develop strategies for economic growth and social improvement.[96] Unlike Stratton, Jasna Cizler argues that although industrial heritage is an important factor for attracting investments, more attention should be given to predominantly private-led, business-friendly developments.[97]

2.2.1 Assessing the significance

In order to begin examining the ways in which industrial heritage significance is being assessed, we need to consider and define the current preferred approach to heritage conservation and management.[98] The value-based approach aims to identify, sustain, and enhance significance, where significance is understood as the overall value of heritage, or the sum of its constituent 'heritage values'.[99] In this approach there is an emphasis on understanding how the heritage in question is valued, often formalised in a statement of significance, in order to manage, use, and conserve it appropriately.

[94] Hardesty and Little (2009) Assessing site significance: A Guide for Archaeologists and Historians; Labadi (2013) UNESCO, Cultural Heritage, and Outstanding Universal Value; Hamond and McMahon, *Recording and conserving Ireland's Industrial Heritage*, 30.

[95] Talja Blokland, "Bricks, Mortar, Memories: Neighborhood and Networks in collective acts of remembering," in *International Journal of Urban and regional research*, Volume 25 no 2, (2001): 268-283; Legner, Redevelopment through rehabilitation (2007); Allen Scott, *Social Economy of the Metropolis: Cognitive-Cultural Capitalism and the Global Resurgence of Cities* (Oxford: Oxford University Press, 2008); Dominic Power and Allen J. Scott, *Cultural Industries and the Production of Culture* (New York: Routledge, 2004).

[96] Michael Stratton, "Reviving industrial buildings: an overview of conservation and commercial interests," In Industrial Buildings: Conservation and Regeneration, ed. by Michael Stratton (London: E & FN Spon Press, 2000): 9-27.

[97] Jasna Cizler, "Urban regeneration effects on industrial heritage and local community – Case study: Leeds, UK," *Sociologija sela*, no.50 (2012): 223-236.

[98] The heritage conservation approach is adopted by major conservation authorities, both at national level (for instance in USA, Canada, Australia, and UK) and at international level (such as the UNESCO World Heritage Centre), and by major research and educational institutions (such as the Getty Conservation Institute). See more in: Poulios, Moving Beyond a Values-Based Approach to Heritage Conservation, 1.

[99] Heritage Values are considered plural to recognise the fact that heritage is considered significant for a range of different reasons. Lists of heritage values are thought to include heritage significance are known as 'value typologies.'

While the origins of value-based approaches in heritage conservation and management practices often hark back to the first Burra Charter, the value-based method did not gain attention among conservators until the very beginning of the twenty first century.[100] According to Pye, since then it has increasingly been asserted that 'the meanings and values attached to objects, provide the very reason for conservation'.[101] Richmond and Baker also believe that conservation is currently widely considered an inherently value-based action.[102] This view is by no means accepted by the conservation community as a whole. There have been a number of assertions that values are changeable social-constructs and that value-based strategies are relativistic and post-modernist.[103] However, as aptly identified by de la Torre, 'value has always been the reason underlying heritage conservation. It is self-evident that no society makes an effort to conserve what it does not value'.[104] It can be understood that conservation decisions can potentially be the product of value analysis aiming to maintain and enhance significance.

The conservation and rehabilitation of industrial sites and buildings requires collaboration between different stakeholders.[105] This collaboration is informed by the value that each party confers on the subject/object. Therefore, there is a need to understand the full range of heritage values in order for these to be taken into consideration in local, national, and international policies and strategies.

There is a conflict of approaches and typologies in value-based management. The value-based approach was first formally used as a field of study and a heritage conservation method almost forty years ago. Since then, value-based approaches have

[100] ICOMOS Australia (1979) The Burra Charter.
[101] Elizabeth Pye, *Caring for the Past: Issues in conservation for archaeology and museums* (London: James and James, 2001), 57.
[102] Alison Richmond and Alison Bracker, *Conservation: Principles, Dilemmas, and Uncomfortable Truths* (Oxford: Butterworth-Heinemann in association with the V&A Museum: 2009), xiv-xviii.
[103] Michael Pearson, and Sharon Sullivan, *Looking After Heritage Places: The Basics of Heritage Planning for Managers, Landowners and Administrators* (Melbourne: Melbourne University Press, 1995), 168; Avrami et all, *Values and Heritage Conservation: Research Report* (Los Angeles: The Getty Conservation Institute, 2000). Available at: http://hdl.handle.net/10020/gci_pubs/values_heritage_research_report
[104] De la Torre et all, *Assessing the Values of Cultural Heritage*, 3. Available at: https://www.getty.edu/conservation/publications_resources/pdf_publications/pdf/assessing.pdf.
[105] Such as developers, national and local governments, local communities, non-governmental agencies, professional organisations, funding agencies, regulators, researchers, educators, and the public.

been embraced in a wide range of disciplines including archaeological and historic objects (Muñoz Viñas 2005; Appelbaum 2007; Cane 2009; Russell and Winkworth 2010), modern art (Schädler-Saub and Weyer 2010), archaeological sites (Teutonico and Palumbo 2002; Australia ICOMOS 2013), historic buildings (Clark 2001; Feilden 2003; Orbaşlı 2008; Stubbs 2009), and urban and rural landscapes (Mason 2006; English Heritage 2008; Stephenson 2008; Worthing and Bond 2008). In order to apply the value-based approach to an industrial context, a critical review of established typologies is needed.

2.2.2 Heritage value typologies

The development of assessing significance and managing cultural resources has its roots in the fields of archaeology and history of art.[106] William Lipe was one of the first scholars to examine the values of cultural heritage.[107] In a seminal paper in 1984, William Lipe suggested that the future management of cultural resources would emerge from different interests competing with each other, rather than a set of principles imposed from above. [108] In Lipe's scheme, cultural resources have four kinds of values, of which only one (the informational) concerns research, while the other three are values to be considered by every type of manager: economic, that is market price; aesthetic, that is 'of contemporary appeal'; and associative, meaning that it can be valued through sentiment, familiarity, or association with other values. Archaeology can contribute to all or any of these values, insofar as it has an ability to enhance economic, aesthetic, associative, or informational values.

[106] Sophia Labadi, "Representations of the Nation and Cultural Diversity in Discourses on World Heritage," *Journal of Social Archaeology*, No. 7 (2007): 147-170; Harald Fredheim and Manal Khalaf, "The significance of values: heritage value typologies re-examined," *International Journal of Heritage Studies* 22, No.6 (2016): 466-481.

[107] Among the first key texts to discuss values of monuments is also by Alois Riegl, "The Modern Cult of Monuments: Its Essence and Its Development," in N. Stanley-Price, M. Kirby Talley, Jr. and A. Mellucco Vaccaro (eds) Historical and Philosophical Issues in the Conservation of Cultural Heritage (Los Angeles, CA: The Getty Conservation Institute): 69–83.

[108] William Lipe, 'Value and Meaning in Cultural Resources', in *Approaches to the Archaeological Heritage. A Comparative Study of World Cultural Resource Management Systems*, ed. by Henry Cleere (Cambridge: Cambridge University Press, 1984): 1–11

Lipe's followers' approach cultural resources and their values from various perspectives. For instance, in his paper, Darvill addresses the problem of values by introducing a much more thorough list of categories while informing us about their relative merit.[109] The first major heading, use values, has no fewer than 10 sub-headings. According to Carver, the categories and subheadings compiled by Darvill are 'more imaginative and detailed variants of the Lipe value-cohort'.[110] Despite Darvill's archaeological background, most of his first heading's list can be more easily applied to monuments and historic buildings than to archaeological deposits. However, the next two major headings, option value and existence value, may refer to archaeological deposits. More specifically, option value, as a more perpetual set of values, appears to concern the value that something might have at an unspecified time in the future. According to Darvill, option value is a 'projected understanding' that future communities and individuals will have a potential interest and make use of their heritage.[111] The last heading, existence value, is related to the recognition of feelings that people may have only by knowing that the resource exists, without expecting to use or see it. This is known as the 'feel-good factor'. It allows for the conservation of something without having to give a reason for its existence.

Lipe and Darvill are both pioneers in their field of expertise because they have recognised that different values may collaborate and engage with each other. However, they do not tell us how these values may compete with other values applied by a society. Carver, in his attempt to resolve this issue, proposed a new value-typology.[112] In his new list, archaeological research meets, confronts, and competes with other societal imperatives and desires. Each value stands for groups of interested parties with their own agendas, without making any judgement on the scale of contribution to the public. Carver's groups of values are listed under three headings: market values, community values, and human values. According to Carver, the three groups compete on a different basis and are very differently measured. Without escaping from engagement with the discipline of archaeology, he has made one of the most easily understandable attempts to frame the debate, by describing land profit,

[109] Timothy Darvill, "Value Systems in Archaeology," In *Managing Archaeology*, ed by M. Cooper, A. Firth, J. Carman and D. Wheatley (London: Routledge, 1995): 40-45.
[110] Martin Carver, "On Archaeological Value," *Antiquity* no.70 (1996): 45-56.
[111] Darvill, "Value Systems in Archaeology," 40-45.
[112] Carver, "On Archaeological Value," 45-56.

public good, and environmental ideology in conflict with one another. In this case, land profit refers to those who measure the success of an archaeological resource according to the amount of profit earned when renting, selling, or operating on the land. In the public good philosophy, success is mostly measured by the people themselves, while environmental protection relies on generalised morality.

Table 1: A selection of published value-typologies

Riegl (1903,1928)	**Australia (1979)**	**Lipe (1984)**	**Darvil (1995)**	**Carver (1996)**
age historical commemorative use newness artistic	aesthetic historic scientific social	economic aesthetic associative/symbolic informational	**use values** archaeological research scientific research creative arts education recreation and tourism symbolic representation legitimation of action social solidarity and integration monetary & economic gain **option values** stability mystery and enigma **existence values** cultural identity resistance to change	**market values** capital/estate production commercial residential **community values** amenity political minority/ disadvantaged/ descendant local style **human values** environmental archaeological
Frey (1997)	**English Heritage (1997)**	**Burra Charter (1998)**	**Ashley-Smith (1999)**	**Pye (2001)**
monetary **option** **existence** **bequest** **prestige** **educational**	cultural educational and academic economic resource recreational aesthetic	aesthetic historic scientific social (including spiritual, political, national, and other cultural)	economic informational cultural emotional existence	historic artistic scientific cultural contextual condition economic

	Mason (2002)	**Feilden (2003)**	**Heritage Lottery Fund (2004)**	**Keene (2005)**
	sociocultural values historical cultural/symbolic social spiritual/religious aesthetic **economic values** use (market) nonuse (nonmarket) existence option bequest	**emotional values** wonder identity continuity respect and veneration symbolic and spiritual **cultural values** documentary historic archaeological and age aesthetic and architectural townscape landscape and ecological technological and scientific **use values** functional economic social educational political	**economic values** commercial use non-use **cultural values** historical social symbolic aesthetic spiritual **environmentalism** sustainability intergenerational equity fairness of distribution of benefit precautionary principle biodiversity **intangible values** **public value** **heritage practice**	**Economic values** **Cultural values** aesthetic spiritual symbolic historical authenticity OR scientific personal impersonal

Appelbaum (2007)	**English Heritage (2008)**	**Orbasli (2008)**	**Stubbs (2009)**	**Gomez Robles (2010)**
Cultural values **art** **historical** **research** **educational** **age** **newness** **monetary** personal values **aesthetic** **use** **sentimental** **associative** **commemorative** **rarity**	evidential historical aesthetic communal	age and rarity architectural artistic associative cultural economic educational emotional historic landscape local distinctiveness political public religious and spiritual scientific, research and knowledge social symbolic technical townscape	universal associative curiosity artistic exemplary intangible use	typological structural constructional functional aesthetic architectural/formal historical symbolic

ICOMOS New Zealand (2010)	**Lertcharnit (2010)**	**Throsby (2010)**	**Burra Charter (2013)**	
Intangible values **commemorative** **historical** **social** **spiritual** **symbolic** **traditional** Tangible values **archaeological** **architectural** **landscape** **monumental** **scientific** **technological** Authenticity **Aesthetic** **use etc** Integrity	informational educational symbolic economic entertaining/ recreational	**economic values** use benefit non excludable non rival non market - existence - option - bequest **cultural values** aesthetic symbolic spiritual social historical authenticity	aesthetic historic scientific social spiritual	

Source: M. Dimitriou 2019

2.2.3 The significance of values

As discussed above, a number of scholars have tried to create comprehensive and inclusive value-typologies. According to Labadi, 'their comparison highlights an evolution, over time and across cultures, of the process of heritage valuation.'[113] As mentioned earlier in this chapter, social value has not always been recognised as a criterion for the assessment of heritage significance. Indeed, the earliest value-based typology by Riegl does not include the social value.[114] The Burra Charter, on the other hand, has had a significant impact on giving prominence to the social value by adding it to the typology.[115] Since then, most scholars have integrated it into their analysis and assessment (see Table 1).

More recently, attention has focused on bridging the 'gap' between cultural and economic values.[116] This distinction between economic and cultural values –'the two meta-gories of heritage values'- has been the starting point of research for the Getty Conservation Institute.[117] In a 2002 research report, Randall Mason proposes that economic behaviour cannot be separate from culture, pointing out that economics is one of the most dominant (sub)cultures in many societies.[118] In his provisional typology, he labels the two major categories as *sociocultural* and *economic*. Despite this distinction, Mason clarifies that economy and culture are two alternative ways of understanding and labelling the same, wide range of heritage values. He concludes that 'the major difference between them resides in the very different conceptual frameworks and methodologies used to articulate them'.[119] According to Paul

[113] Labadi, "Representations of the Nation and Cultural Diversity," 149.
[114] Alois Riegl, "The Modern Cult of Monuments: Its Essence and Its Development," In *Historical and Philosophical Issues in the Conservation of Cultural Heritage*, ed. by Nicholas Stanley-Price, Kirby Talley and Alessandra Mellucco Vaccaro, (Los Angeles: The Getty Conservation Institute, 1903/1996): 69–83.
[115] ICOMOS Australia (2013) Burra Charter.
[116] Paul Burtenshaw, "Mind the Gap: Cultural and Economic Values in Archaeology," *Journal of Public Archaeology* 13, no. 1-3 (2014): 48-58.
[117] Getty Conservation Institut (GCI) is a private international research institution dedicated to advancing conservation practice through the creation and delivery of knowledge. It "serves the conservation community through scientific research, education and training, model field projects, and the dissemination of the results of both its own work and the work of others in the field" and "adheres to the principles that guide the work of the Getty Trust: service, philanthropy, teaching, and access." GCI has activities in both art conservation and architectural conservation.
[118] Randall Mason, "Assessing Values in Conservation Planning: Methodological Issues and Choices," in *Assessing the Values of Cultural Heritage*, ed. by Marta de la Torre, Research Report, (Los Angeles, CA: The Getty Conservation Institute, 2002): 5–30.
[119] Mason, "Assessing Values in Conservation Planning: Methodological Issues and Choices," 11.

Burtenshaw, 'the use of archaeology for economic development represents a non-traditional use of resources normally valued for their cultural aspects'.[120] This opposition seems to have significantly delayed the recognition of the role that cultural heritage plays in economic development.

To give examples of a contrasting view, the Burra Charter value typology minimises economic values because they are seen as derived from cultural and historical values and are therefore given secondary consideration.[121] Likewise, in her book entitled 'Architectural Conservation', Orbasli presents an inclusive list of values that are representative of the different interests in a building or place.[122] While having an architectural perspective, Orbasli intends to support the value-based approach as an informed approach to conservation where 'value judgements have to be as objective as possible'.[123]

Indeed, there has been some criticism suggesting that the language of heritage values is incapable of capturing the full range of ways in which heritage is valued and that a value-based approach cannot be expected to result in appropriate conservation and management decisions. This opinion can be seen in a recent academic paper written by Fredheim and Khalaf.[124] They argue that although typologies perform crucial legislative roles in formally designating heritage in some contexts, this is not a general rule.[125] They claim that where the 'successful application of value-based approaches to contexts where typologies are not externally determined, a critical review of established typologies and reassertion of the significance of typologies is timely'.[126]

Likewise, in her book 'Uses of Heritage', Smith introduces the concept of the Authorised Heritage Discourse (AHD), which exposes the predisposition of heritage professionals towards tangible, elite heritage, and the associated widespread belief

[120] Burtenshaw, "Mind the Gap," 48.
[121] Australia ICOMOS (2013) The Burra Charter.
[122] Orbasli (2008) Architectural conservation.
[123] Orbasli, Architectural conservation, 39.
[124] Fredheim and Khalaf, "The significance of values," 469.
[125] such as in Australia where the Burra Charter (Australia ICOMOS 2013) and the work of the Heritage Collections Council (2001) has institutionalised value typologies. See more: Heritage Collections Council (2001) Significance: A Guide to Assessing the Significance; Roslyn Russell and Kylie Winkworth, *Significance 2.0: A Guide to Assessing the Significance of Collections* (Collections Council of Australia, Commonwealth of Australia, 2010).
[126] Fredheim and Khalaf, the significance of values, 469.

that heritage can only be properly interpreted by experts.[127] Indeed, Pearce claims that conservation is one of the few heritage processes by which heritage is deliberately modified and changed, thereby facilitating selected future uses of heritage, often inevitably at the expense of others.[128] Conservation seeks to enhance the resource that is valued, and interpretations that are not 'authorised' may be delegitimised.[129] As heritage continues to be recognised as increasingly complex and traditional tangible/intangible and cultural/natural heritage divides regarded as artificial and untenable (cf. Brown 2010; Burke and Smith 2010; Bergdahl 2012; Borrelli and Davis 2012; Harrison 2015), value typologies must capture the complexity of holistic interpretations of heritage (cf. ICOM 2002; ICOMOS 2007, §3.4, 3.5) if they are to facilitate appropriate heritage conservation and management.

2.2.4 Industrial heritage values

Evaluating the significance of industrial heritage poses many challenges. According to Orbasli, industrial buildings are often thought to be less attractive than other types of historic buildings.[130] In certain cases they can also be reminiscent of periods of hardship and suffering.[131] Alice Mah has commented on the view of industrial heritage as an embodiment of dirt, noise, and decline which needs to be 'cleaned-up'.[132]

However, for the purposes of significance evaluation, industrial heritage provides evidence of various values. According to the Nizhny Tagil Charter 'Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value.'[133] It seems that the value typology here, when compared to the previously mentioned archaeological typologies, puts an emphasis on

[127] Laurajane Smith, *Archaeological Theory and the Politics of Cultural Heritage* (Abingdon: Routledge, 2004).
[128] Susan Pearce, *Archaeological Curatorship* (Leicester: Leicester University Press, 1990), 106.
[129] Janet Stephenson, "The Cultural Values Model: An Integrated Approach to Values in Landscapes," *Landscape and Urban Planning* 84, no. 2 (2008): 129; Keith Emerick, *Conserving and Managing Ancient Monuments: Heritage, Democracy, and Inclusion* (Woodbridge: Boydell Press, 2014), 225.
[130] Orbasli, *Architectural Conservation*, 29-30.
[131] Sherry Lee Linkon and John Russo, *Steel-town U.S.A: Work and memory in Youngstown* (Lawrence: University of Kansas, 2002), 131-189.
[132] Alice Mah, *Industrial Ruination, Community, and Place. Landscapes and Legacies of Urban Decline*. (Toronto, Buffalo, London: University of Toronto Press, 2012), 195-202.
[133] TICCIH (2003) *The Nizhny Tagil Charter for the Industrial Heritage*.

technological and scientific value. However, approaching evaluations from a statutory perspective, the Secretary of State (United Kingdom) uses the following criteria for designating industrial heritage: period; rarity and representativity; documentation; group value; survival/condition; and potential.[134]

More recently, several authors emphasise the integration of economic value into assessments of industrial heritage.[135] For instance, Yanfang and Yinling explain that industrial heritage 'is being widely involved in modern economic activities.'[136] Their analysis is based on a value typology which identifies historic, artistic, scientific, and economic values as the core criteria for industrial heritage assessment.[137] Similarly, Liu et al comprehensively investigate the topic of industrial heritage value assessment, building their system on interdisciplinary methods and techniques.[138] In their paper, although they initially recognise that 'industrial heritage is associated with political, economic, cultural, social, scientific, technological, and architectural fields', for their proposed value system they select only the historical, artistic, technological, social, and economic values.

There is some confusion with regard to the use of the architectural, artistic, and aesthetic values.[139] As with any other type of historic building, industrial buildings

[134] Department for Culture, Media and Sport, *Principles of Selection for Listing Buildings* (London: UK Government, 2018); Historic England (2017) Industrial Buildings, Listing Selection Guide.

[135] Heritage conservation has transformed during the last decades incorporating changes that focus on economic development and community improvement. Engaging with economic concepts and values has been a prominent and significant change in heritage conservation and management decisions. See more in: Randall Mason, "Be Interested and Beware: Joining Economic Valuation and Heritage Conservation," *International Journal of Heritage Studies*, 14:4 (2008): 303-318.

[136] Xu Yanfang and Cao Yinling, "Cultural Industrialization: A Value Realizing Path for Industrial Heritage," *Cross-cultural Communication* Vol. 8, No. 6 (2012): 104-107.

[137] Yanfang, Yinling, Cultural Industrialization, p 105.

[138] The analytic hierarchy process (AHP), the Dempster-Shafer Theory (D-S Theory) and the Delphi Method are the main methods used in their analysis. See more: Liu Fuying, Zhao Qi, Yang Yulan, "An approach to assess the value of industrial heritage based on Dempster–Shafer theory," Journal of Cultural Heritage No. 32 (2018): 210-220.

[139] Architectural/technological value: 'Architectural value is concerned with innovation, development and perhaps pinnacles of achievement (as in 'the finest example of … ') in relation to architectural ideas and movements, and also in the work of individuals. This value would also embrace the work of craftsmen and the development of materials. Some of the architectural values might be related to developments and high points in technical achievement, but a place may have technological value represented by structures, etc. which would fall outside the concept of architecture – an obvious example would perhaps be a bridge. Because architecture and technology (or indeed art) are not created in a vacuum, the social, cultural, political and economic context, which informed their development, will also be represented by the architectural and technical achievement'. Artistic value 'may be related to the work of a particular person or an artistic or architectural movement, and may be important because it is a unique example or it may

should be known for their surviving elements and architectural features. However, according to Labadi, 'industrial sites do not tend to be valued for their monumentality or their architectural or aesthetic values.'[140] Still, industrial buildings are often nominated for their beauty, which strengthens recognition of the engineering progress and architectural creativity of the era.[141]

Reviewing the relevant Greek literature, it could be argued that the architectural value of industrial buildings has rarely been recognised. Among the very few studies is a book by Nikos Sifounakis on 'Industrial Buildings in Lesvos' which pays explicit attention to industrial beauty.[142] He uses detailed descriptions of various case studies in Lesvos in order to promote Greek industrial architecture that the local community is proud of. Konstantina Demiri on Greek textile factories also reflects on design and architectural features.[143] Apart from these two scholarly publications, reference to the architectural value of industrial heritage in Greece has been very limited. Thus, analysis of the architectural value of the selected case study in Volos will be a timely contribution to existing heritage assessment theories and methodologies.

In addition to the limited recognition of industrial architectural significance in Greece, there has been no efficient creation of a comprehensive evaluation system. The existing evaluation processes, both related to cultural heritage in general and to industrial heritage explicitly, seem to be either generic or incomplete, and cannot be used when trying to assess industrial heritage in Volos.[144] When reviewing

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be pivotal or representative'. See in: Worthing and Bond, *Managing Built Heritage,* 63, 66; In addition, aesthetic value 'is widely agreed to be a category of sociocultural value, though it refers to a wide range of qualities. In the main, aesthetic refers to the visual qualities of heritage. The many interpretations of beauty, of the sublime, of ruins, and of the quality of formal relationships considered more broadly have long been among the most important criteria for labeling things and places as heritage. The design and evolution of a building, object, or site can be another source of aesthetic value. It is also argued that the category of the aesthetic can be interpreted more widely to encompass all the senses: smell, sound, and feeling, as well as sight. Thus, a heritage site could be seen as valuable for the sensory experience it offers. Aesthetic value is a strong contributor to a sense of well-being and is perhaps the most personal and individualistic of the sociocultural value types.' See in: De la Torre, *Assessing the values of cultural heritage*, 12.

[140] Labadi, *UNESCO, Cultural Heritage, and Outstanding Universal Value*, 62.

[141] Louis Bergeron, "The heritage of the industrial society," In *Industrial Heritage Re-tooled*, ed. by James Douet (Lancaster: Carnegie Publishing Ltd, 2012), 31.

[142] Sifounakis (1986) *Industrial Buildings in Lesvos*.

[143] Demiri (1991) *The Greek Textile Factories*.

[144] Nikolaos Triantafillopoulos, *Restoration and reuse of listed buildings. Institutional and economic dimensions* (Athens: Hellenic Company of Environment and Culture - Architectural Heritage Council,

governmental designation decisions on Greek historic industrial assets and the associated evaluation criteria, there is no clear and comprehensive picture of the asset's significance.[145] Although the aim of a value typology or a 'toolbox approach' can be easily criticised, it is able to guide decision-making towards well-informed conservation outcomes .[146] As Torre explains, 'the aim of the toolbox approach is to get all relevant heritage values on the table, building the fullest practicable account to inform policy making and decision making. The variety of values represented in the typology requires the use of a variety of tools in their assessment'.[147]

Finally, when assessing industrial heritage, the values ascribed to a site may be associated with stakeholders interested in the property, such as government agencies, conservation and other non-governmental organisations, developers, and local communities or indigenous people. The engagement of the local community in conservation decisions and a bottom-up approach in heritage management have been increasingly published upon.[148] As Labadi writes, although there might be conflicting or poor judgements by concerned stakeholders or individuals, 'the better access to people's knowledge of the site and their involvement will lead to increased care for the site'.[149] Involvement of the community in the decision making process is noticeably absent in Greek industrial heritage rehabilitation practice.[150] The full involvement of all possible parties should be a priority when assessing industrial significance in the future. Before we move on to assess the significance of the selected case study in Volos, it is first necessary to review and identify conservation and management principles that should be considered when proposing an informed reuse approach.

2015), 6-9; Anastasios Tachos, "Crisis when designating a building as listed or not: Parallel procedures of General Building Regulation and Law 1469 / 1950," in *Environment and Law* 3 (2016): 440.

[145] Parthenopoulos, Konstantinos, Kabouri Evagelia, Dousi Maria, Parthenopoulou Nikoleta. Preservable Buildings and Elements in Human Environment - Traditional Settlements and Residential sites - Historic Centres and Cities. Thessaloniki: Technical Chamber of Greece, Department of Central Macedonia, 2009; Anastasios Tachos, *Listed Building (nr. 4 section 2 General Building Regulation): Criteria - Process – Reasoning* (1996): 277-288.

[146] Fuying, Qi and Yulan, *An approach to assess the value of industrial heritage*, 2.

[147] De la Torre (2002) *Assessing the values of cultural heritage*.

[148] See more in: Labadi, *UNESCO, Cultural Heritage, and Outstanding Universal Value*, 102, 120; Hall and McArthur, *Integrated heritage management: Principles and practice*, 55–84; Millar, "Stakeholders and community participation," 37–54; De la Torre (2001) Values and site management, 16(2).

[149] Labadi, *UNESCO, Cultural Heritage, and Outstanding Universal Value*, 102.

[150] Aspasia Gospodini, "Urban morphology and place identity in European cities: built heritage and innovative design," *Journal of Urban Design* 9, No. 2 (2004): 225-248.

CHAPTER 3 – CONSERVATION, MANAGEMENT AND REUSE OF INDUSTRIAL HERITAGE

Following the identification of the key ideas on the scope and the values of industrial heritage (examined in Chapter 2), this chapter aims to develop a better understanding of the scholarly knowledge on industrial heritage conservation, management and reuse. The first section of this chapter presents the relationship between conservation and industrial heritage, including the recognition of conservation principles in reuse guidance. The second section discusses the challenges of intervention in adaptive reuse intending to identify unexplored pieces in the research literature.

3.1 Terminology of conservation

Several attempts have been made to define architectural conservation. Among the earliest efforts was the ground-breaking book entitled 'A History of Architectural Conservation' by the conservation architect and urban planner Jukka Jokilehto. Here, Jokilehto presents the concepts, rules, and boundaries of the conservation movement in the late eighteenth century by analysing early approaches to historic building conservation in Europe.[151] Similarly, Miles Glendinning presents the entire history of architectural conservation, and provides an up-to-date analysis of discussions in the conservation movement.[152] Criticising Glendinning's approach, however, Bob Kindred questions whether the conservation movement is 'a singular entity or a series of loosely connected parallel streams, the acceptance of a set of common principles and practices'.[153] Moreover, the conservation architect Bernard Feilden in a 'heroic effort' comprehensively and definitively discusses the conservation of historic buildings, defining it 'as activities to prevent decay, which contains all acts to extend the life of cultural and natural heritage'.[154] Feilden's book has been characterised by reviewers as

[151] Jukka Jokilehto, *History of Architectural Conservation* (London: Architectural Press, 2002).
[152] Glendinning, *The Conservation Movement*, 2013.
[153] Miles Glendinning, "The Conservation Movement: A History of Architectural Preservation: Antiquity to Modernity," review by Bob Kindred, *Journal of Architectural Conservation* 19, No. 2, (2013): 179-180.
[154] Bernard M. Feilden, *Conservation of historic buildings. Technical Studies in the Arts, Archaeology and Architecture series* (London: Butterworth Scientific, 1982) – 3rd edition (2003).

a monumental work with international impact that applies to an enormous growing field.[155] The concept of conservation has been also discussed by Orbasli, who dedicates her book to the background and theory of conservation as well as approaches to regeneration, re-use, and design intervention. Orbasli's definition and view of architectural conservation as a 'process to manage the changes while development is the mechanism that delivers change' can be characterised as a straightforward and empirical plan for heritage protection.[156]

In addition, there have been several studies that try to define conservation practice from a heritage management perspective. A successful explanation has been given by Kate Clark, who describes conservation as a process that negotiates change and transition, placing understanding behind every judgement and conservation decision.[157] She recommends guidelines for understanding the significance of historic buildings and delivering conservation projects. In an earlier study, Feilden and Jokilehto refer to the importance of properly interpreted conservation, while also presenting a list of objectives for successful protection and a number of guidelines and principles for effective and active management of cultural heritage sites.[158] Finally, quite recently, Historic England presented a thorough national planning framework entitled 'Conservation Principles, Policies and Guidance', an integrated approach towards transparent and sustainable heritage protection.[159] These publications suggest that architectural conservation is not a static procedure. Most of them have stimulated exciting debates and ongoing discussions about ideas and principles that contribute towards international frameworks and practices in the treatment of historic structures.

[155] Bernard G. Feilden, "Conservation of Historic Buildings," review by James Marston Fitch, *Journal of the Society of Architectural Historians* Vol. 42 No. 2, (May 1983): 197.
[156] Aylin Orbasli, *Architectural Conservation: Principles and Practice* (Oxford: Blackwell Science, 2008), 3.
[157] Kate Clark, *Informed conservation* (London: English Heritage, 2001), 12.
[158] Bernard M. Feilden, and Jukka Jokilehto, *Management Guidelines for World Cultural Heritage Sites*. 2nd Edition. International Centre for the Study of the Preservation and Restoration of Cultural Property. (Rome: ICCROM, 1998).
[159] Historic England, *Conservation Principles, Policies and Guidance* (London, 2015).

3.1.1 The practice of Industrial Heritage Conservation

Industrial heritage conservation as a movement advanced during the last forty years in an effort to prevent further deterioration of industrial ruins. Recently there has been an increasing number of published studies describing the role of conservation in industrial heritage.[160] According to Hamond and MacMahon, conservation can be divided into three subcategories.[161] They claim that the first category could be characterised as 'Stabilisation' or Preservation; the second one could be 'Reinstatement' or Restoration; and the last one could be 'Alteration' or Adaptive Reuse.[162] In all these categories, however, minor or moderate intervention that does not alter significant original features remains the primary goal. Drawing on this, Heike Oevermann and Harald A. Mieg provide an alternative approach to the classification of industrial heritage conservation.[163] According to these authors, the discourse of heritage conservation has a main objective to protect and preserve, including repair or minimal intervention, and there is also a discourse on architectural production which focuses on aesthetic value and adaptive conversion to new uses. In any case, as Towle highlights, industrial heritage conservation is a challenge and should ensure respect for the existing fabric as well as meeting the needs of contemporary society.[164]

Although there is little reference to comprehensive frameworks specialising in the sustainable conservation of industrial heritage, the general conservation principles for the historic environment found in international charters could be also applied to

[160] James Douet, *Industrial Heritage Re-tooled: The TICCIH Guide to Industrial Heritage Conservation*, (Lancaster: Carnegie Publishing Ltd., 2012); Stratton (2000), *Industrial Buildings: Conservation and Regeneration*; Fred Hamond, "Conservation and Industrial Archaeology" in *The Heritage of Ireland*, ed. by Neil Buttimer, Colin Rynne and Helen Guerin (Cork: Collins Press 2000): 358-74; Neil Cossons, Johannes Cramer, Birgitta Ringbeck and Mark Watson, "Discussing Industrial Heritage Conservation and Planning", in *Industrial Heritage Sites in Transformation: Clash of Discourses*, ed. by Heike Oevermann and Harald Mieg (New York: Routledge, 2015): 199–216.

[161] Fred Hamond and Mary McMahon, *Recording and Conserving Ireland' Industrial Heritage: An introductory Guide* (Dublin: Ed. The Heritage Council of Ireland Series, 2002), 24.

[162] At this point, it should be noted that the author of this thesis similarly understands reuse, preservation and restoration as sub-categories of conservation.

[163] Heike Oevermann and Harald Mieg, *Industrial heritage sites in transformation: clash of discourses*. (New York: Routledge, 2015).

[164] Alex Towle, *The Challenges Associated with the Regeneration of Industrial Heritage* (London: PAYE Conservation, 2016), 12.

industrial sites. For instance, the Venice Charter, which already applies to industrial heritage, draws attention to the process of conservation by highlighting that 'wherever

the traditional setting exists, it must be kept. No new construction, demolition or modification which would alter the relations of mass and colour must be allowed'.[165] The charter also refers to the reuse approach, emphasising that 'it must not change the lay-out or decoration of the building. It is within these limits only that modifications demanded by a change of function should be envisaged and may be permitted'. Similarly, the current version of the Burra Charter adopted in 2013 advocates minimal interventions characterising a 'cautious approach 'to conservation that is 'based on a respect for the existing fabric, use, associations and meanings, changing as much as necessary but as little as possible'.[166] Moreover, this charter classifies repair in three levels: preservation, restoration, and reconstruction. These fundamentals are commonly used in conservation plans and by national heritage bodies.[167]

3.1.2 Authenticity as a guiding principle

Industrial Heritage conversion needs to take into consideration several principles. Authenticity, although a controversial notion, is placed among the most important

[165] ICOMOS, *The Venice Charter 1964* (Venice: 2nd International Congress of Architects and Technicians of Historic Monuments, 1965).
[166] ICOMOS Australia, The Australia ICOMOS Charter for Places of Cultural Significance, the Burra Charter (Burwood: ICOMOS Australia, 2013).
[167] Conservation plan is a document that identifies the site's significance and shapes the policies that are appropriate to guide the protection of the site's significant features throughout reuse or transformation. See more in: James Kerr, *The Conservation Plan: A Guide to the Preparation of Conservation Plans for Places of European Cultural Significance* (Sydney: National Trust of Australia, 2000); Kate Clark, Conservation Plans in Action: Proceedings of the Oxford Conference (London: English Heritage, 1999); Heritage Lottery Fund, *Conservation Plans for Historic Places* (London, 1998).

principles that need to be addressed during any alteration to the original structure.[168] [169] A systematic study on authenticity was published by Sophia Labadi in 2013.[170] In her book, Labadi dedicates more than one chapter to analysing the evolution of the definition as well as its understanding, interpretation, and application.[171] In short, the debate has focused on the fact that the meaning of authenticity has been primarily linked to physical evidence.[172] Although traditional definitions of authenticity refer to original form, design, workmanship, and material as key criteria for preservation, it was not until 1994 with the Nara document that the definition of authenticity started embracing other perspectives, such as intangible social or cultural values that are associated with cultural heritage.[173] This is specifically stated in its Article 13: 'Depending on the nature of the cultural heritage, its cultural context, and its evolution through time, authenticity judgements may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined'.[174] This more inclusive perspective on authenticity plays a major role when investigating the assessment of significance and the reuse practices of industrial heritage in this thesis.

[168] Cornelius Holtorf and Tim Schadla-Hall, "Age as artefact: On archaeological authenticity." *European Journal of Archaeology* 2, No. 2 (1999): 229–47; Denis Byrne, "Chartering Heritage in Asia's Postmodern World." Getty Conservation Institute Newsletter, 2004. Available at: www.getty.edu/conservation/publications_resources/newsletters/19_2; Kathryn Lafrenz Samuels, "Value and significance in archaeology," *Archaeological Dialogues* 15, No.1 (2008): 71–91.

[169] To be 'authentic' is to be 'of undisputed origin; genuine; accurate, reliable'; it also means 'made or done in the traditional or original way, or in a way that faithfully resembles an original'. See: Oxford Dictionaries. 2019. Definition of authentic – Oxford Dictionaries Online (World English). Available at: http://oxforddictionaries.com/definition/ authentic [accessed 16th August 2019].

[170] Sophia Labadi, *UNESCO, cultural heritage, and outstanding universal value: value-based analyses of the World Heritage and Intangible Cultural Heritage Conventions* (Plymouth: Ed. AltaMira Press, 2013).

[171] Labadi, *UNESCO, Cultural Heritage, and Outstanding Universal Value*, 113 - 126.

[172] Jukka Jokilehto, "Authenticity in restoration principles and practices," Association for preservation technology bulletin XVII (1985), 5-11.

[173] Labadi, *UNESCO, cultural heritage, and outstanding universal value*, 38-39; Raymond Lemaire and Herb Stovel, Nara Document on Authenticity (Nara, Japan, 1994).

[174] Lemaire and Stovel, Nara Document, 47.

Several studies suggest that the original definition of authenticity was linked to European and Western cultural heritage.[175] This is based on the assumption that authenticity is linked to original materials which should be preserved during conservation.[176] However, Pressouyre indicates that vulnerable materials often used in non-Western societies, such as timber or clay, cannot successfully pass this 'test of authenticity in materials'.[177] According to Labadi (2010), such Eurocentric perceptions can be also found in the 'Management Guidelines for World Cultural Heritage Sites', an official publication written by Feilden and Jokilehto and edited by the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) and The International Council on Monuments and Sites (ICOMOS), where the four dimensions of authenticity are elaborated.[178] [179] More specifically, Feilden and Jokilehto identify 'minimum intervention 'as the process of 'avoiding replacement of even the oldest structures so far as these form the historical continuity of the area'.[180] They believe that the replacement of original materials is only acceptable 'if it is vital for the survival of the remaining original structure'.[181] Their statements, although they comply with the vision of the World Heritage Convention, do not incorporate a non-European concept of authenticity that is not merely linked to the maintenance of original materials. Thanks to the Nara Document (1994) these limitations have been addressed and the intangible values of historic structures can be assessed as equally significant.

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[175] Michel Parent, "Comparative Study of Nominations and Criteria for World Cultural Heritage," Third session of the World Heritage Committee in Cairo and Luxor, 22-26 October 1979, (Paris, 1979): 19; Orbaslı, *Architectural Conservation*, 52; Jeanette Atkinson, *Education, Values and Ethics in International Heritage: Learning to Respect* (Surrey: Ashgate Publishing Limited, 2014), 87.

[176] Jonathan Kemp, "Practical Ethics," in *Conservation: Principles, Dilemmas and Uncomfortable Truths*, ed. by A. Richmond and A. Bracker (Oxford: Butterworth-Heinemann, 2009), 60–72.

[177] Leon Pressouyre, *The World Heritage Convention, Twenty Years Later* (Paris, UNESCO, 1996), 12.

[178] Labadi, *UNESCO, cultural heritage, and outstanding universal value*, 71-72; According to the Operational Guidelines of the Convention, a monument or site that is nominated to the World Heritage List must meet the criteria of authenticity in relation to design, workmanship, material and setting. See more in: Feilden and Jokilehto, Management Guidelines for World Cultural Heritage Sites, 66–75.

[179] For more recent publications on managing world heritage sites please see: UNESCO, Resource Manuals, accessed August 16, 2019, https://whc.unesco.org/en/resourcemanuals/.

[180] Feilden and Jokilehto, Management Guidelines for World Cultural Heritage Sites, 67; The minimum intervention as a principle was strengthened by the Burra Charter. It acquires in depth understanding of materials and techniques so that a 'cautious approach' can be applied during conservation. See more: ICOMOS Australia (2013) The Burra Charter; Earl, *Building Conservation Philosophy,* 6; Correia, *Conservation Intervention in Earthen Heritage*, 84.

[181] Feilden and Jokilehto, Management Guidelines for World Cultural Heritage Sites, 69.

When it comes to industrial structures, which may be heavily reconstructed over time, any discussion about authenticity may be challenging. In his report, Mattias Legner discusses the concept of authenticity of industrial character.[182] He describes conflicts between developers and preservation officials over preservation issues associated with industrial buildings. Using the example of Clipper Mill, he confronts practical issues related to the choice of materials or method during rehabilitation.[183] Finally, Labadi refers to New Lanark as a characteristic case. Its restoration and maintenance practices have proven that authenticity can be considered an extrinsic process.[184] According to the ICOMOS evaluation of New Lanark, the authenticity of the place is 'relatively high' due to restoration based on a thorough analysis of archival data.[185] On the other hand, Jokilehto insists that the 'period restoration' of New Lanark chose 'an earlier period as a guideline for the choice of what to keep, what to remove, and what to reconstruct. At the end of the restoration, the historic building tends to have lost its authenticity and to have become a modern interpretation'. [186] This example helps us understand that the authenticity of industrial sites is not only found in its tangible attributes but in its use, materials, and workmanship, and that the value can vary according to the observer or circumstances.

3.1.3 Contemporary approach to conservation and management

Among the latest initiatives towards the understanding and management of historic urban environments is the Historic Urban Landscape (HUL) approach, adopted on November 10th 2011 by UNESCO's General Conference.[187] According to the HUL Recommendation, the urban area is "understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of 'historic

[182] Mattias Legner, *Historic Rehabilitation of Industrial Sites: Cases from North American and Swedish Cities* (Linkoping University: Linkoping, 2009), 64-69.
[183] Legner, Historic Rehabilitation of Industrial Sites, 64-69.
[184] Labadi, *UNESCO, Cultural Heritage, and Outstanding Universal Value*, 144-146.
[185] ICOMOS, *Evaluation of the nomination of New Lanark for Inclusion on the World Heritage List* (Paris: ICOMOS, 2001).
[186] Jokilehto, *Conservation and creative approach*, 8 (Found in Labadi, UNESCO, Cultural Heritage, and Outstanding Universal Value, 145).
[187] UNESCO, *Recommendation on the Historic Urban Landscape* (Paris: UNESCO, 2011). [Online]. Available at: http://portal.unesco.org/en/ev.php-URL_ID=48857&URL_DO=DO_TOPIC&URL_SECTION=201.html [Accessed at 16 August 2019].

centre' or 'ensemble' to include the broader urban context and its geographical setting".[188] More specifically, it indicates that:

> *this wider context includes notably the site's topography, geomorphology, hydrology and natural features, its built environment, both historic and contemporary, its infrastructures above and below ground, its open spaces and gardens, its land use patterns and spatial organization, perceptions and visual relationships, as well as all other elements of the urban structure. It also includes social and cultural practices and values, economic processes and the intangible dimensions of heritage as related to diversity and identity. (UNESCO, 2011b, Art. 9)*

This approach encourages a more holistic perspective to the problem of preservation in historic industrial towns and cities as it 'provides the basis for a comprehensive and integrated approach for the identification, assessment, conservation and management of historic urban landscapes within an overall sustainable development framework.'[189] Seeing and interpreting the city as a continuum in time and space, the HUL approach aims 'to identify, conserve and manage historic areas within their broader urban contexts, by considering the interrelationships of their physical forms, their spatial organisation and connection, their natural features and settings, and their social, cultural and economic values.'[190] According to Bandarin and Van Oers, this 'flexible, open-ended and people driven approach to conservation' has proven able to guide urban conservation and management in the sustainable enhancement of the city's natural and cultural resources for future generations.[191]

Industrial urban landscapes, as any other type of historic cultural landscape, can benefit from the HUL approach. Without focusing on a particular type of heritage, the HUL approach builds on the assumption that 'development without the conservation of key resources cannot be sustainable, while conservation cannot succeed without

[188] UNESCO (2011), Art. 8.
[189] UNESCO (2011), Art. 10.
[190] UNESCO (2011), Art. 5.
[191] Francesco Bandarin and Ron van Oers, *Reconnecting the City: The Historic Urban Landscape Approach and the Future of Urban Heritage* (Oxford: Wiley-Blackwell Publishers, 2015), 14.

development to sustain its efforts.'[192] In the case of historic industrial cities, where change is constant, industrial heritage can support development and can be used as a resource to build sustainable and resilient environments.[193] Therefore, there is a need to interpret historic industrial landscape as a 'layered, dynamic, cultural construct of urban resources that echo cultural identity and create cultural value.'[194]

There have been a number of studies identifying this 'new paradigm' for urban conservation and management as a critical transition in urban heritage conservation.[195] Among the key principles identified are the 'preparation of urban development plans by local authorities taking into account the area's values'; the understanding of values and responsibilities at local, regional, and national levels; cooperation between public and private stakeholders and the involvement of local communities in the decision making process; proper management of the historic urban landscape by promoting new innovative functions and economic initiatives that will ensure economic and social diversity; and the reinforcement of regulatory systems aiming 'at the conservation and management of the tangible and intangible attributes of the urban heritage.'[196] Applying or adapting many of the principles suggested by this new paradigm into a coherent strategy for the industrial city of Volos would potentially make its transformation more effective.

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[192] Bandarin and Van Oers, *Reconnecting the City*, 318; Loes Veldpaus, *Historic urban landscapes: framing the integration of urban and heritage planning in multi-level governance* (Eindhoven: Technische Universiteit Eindhoven, 2015), 23.

[193] Chris Landorf, "A Framework for Sustainable Heritage Management: A Study of UK Industrial Heritage Sites," *International Journal of Heritage Studies* 15, Nr. 6 (2009): 494–510; Karima Kourtit, Peter Nijkamp, Rachel S. Franklin and Andrés Rodríguez-Pose, "A blueprint for strategic urban research: the urban piazza," *Town Planning Review* 85, nr. 1 (2014): 97–126; Anna Pereira Roders, "How can urbanization be sustainable? A reflection on the role of city resources in global sustainable development," *BDC. Bollettino Del Centro Calza Bini* 13, Nr. 1 (2014): 79 - 90.

[194] Veldpaus, *Historic urban landscapes, 23.*

[195] Richard Engelhardt, "The Management of World Heritage Cities: Evolving Concepts, New Strategies," *RC: Revista De Cultura = Review of Culture* (2002): 26-40; Francesco Bandarin and Ron Van Oers, *The Historic Urban Landscape: Managing Heritage in an Urban Century* (Oxford: John Wiley & Sons, 2012); Gustavo Araoz, "Conservation Philosophy and its Development: Changing Understandings of Authenticity and Significance," *Heritage & Society* 6, Nr. 2 (2013): 144-154; Ron Van Oers, "Towards new international guidelines for the conservation of historic urban landscapes (HUL)," *City & Time* 3, Nr. 3 (2007). [Online]. Available at: http://www.ceci-br.org/novo/revista/docs2008/CT-2008-113.pdf [Accessed 16 August 2019]; Dennis Rodwell, "Sustainability and the Holistic Approach to the Conservation of Historic Cities," *Journal of Architectural Conservation* 9, Nr. 1 (2003): 58-73; Sophia Labadi and William Logan, "Approaches to urban heritage, development and sustainability," in *Urban Heritage, Development and Sustainability. International Frameworks, National and Local Governance* ed. by Sophia Labadi and William Logan (London and New York: Routledge, 2016), 1-20.

[196] UNESCO (2011).

3.1.4 The need to address a conservation theory framework in Greece

Despite thorough research in the field of industrial heritage conservation, there has not yet been sufficient research in industrial heritage conservation principles in Greece. Most of the literature concerning industrial heritage conservation is approached through design projects and unfinished design conversion proposals. Conservation theory is rarely taken into consideration when reusing industrial buildings, exceptions being the work of Polyzos et all (1998) and Nomikos (2001), as well as several isolated papers or university theses such as those by Papageorgiou et al (2007) and Tsagarakis (2010), who limit their attention to international charters.[197] Despite these few efforts, there is no clear guidance to inform the conservation of industrial buildings. This thesis aims to fill this lacuna by developing the first set of principles-criteria for the conservation of industrial heritage in Greece.

[197] Polyzos et all, *Historical industrial equipment in Greece*, 1998; Nomikos, *Restoration – rehabilitation of monuments*, 2001; Papageorgiou, et all, "Restoration study of the Fixed Industrial Complex in Thessaloniki," 405-416; Konstantinos Tsagarakis, "The rebirth of the giants. Reuse and exploitation of industrial heritage. Case study of Piraeus Street" (PhD diss., Harokopio University, 2010).

3.2 Adaptive reuse practices on industrial heritage

Recent developments in the field of industrial heritage conservation have led to an increased interest in adaptive reuse.[198] A number of authors have tried to establish the context and importance of this topic. According to Bullen, adaptive reuse is the process of finding a new use for a historic building.[199] Wilkinson et al see adaptive reuse as a change of use that maintains the original structure of a building or site.[200] It is considered an effective and sustainable strategy for the protection and promotion of industrial heritage.[201] Fragner describes adaptive reuse as 'a tool with which to preserve threatened values and drive sustainable development', and refers to the various factors that need to be taken into consideration for a successful transformation.[202] Furthermore, he adds that a successful intervention is one 'which does not efface the assets that led to the decision to conserve the industrial site in the first place'.[203]

A broader definition of adaptive reuse can be found in the Burra Charter document, where it states that 'adaptation may involve additions to the place, the introduction of new services, or a new use, or changes to safeguard the place'.[204] Similarly, UNESCO depicts adaptive reuse as the 'finding of a new use(s) suitable for a place which respects its form, character, structure and historic integrity. This often requires some careful changes to a place'.[205] A clear explanation can be also found in the Nizhny Tagil

[198] The discourse of adaptive reuse, although being carried out for a long time, has been officially recognised after a number of successful industrial heritage projects in the 1960s and 1970s in the United States. See more: Matthias Legner, *Redevelopment through rehabilitation. The role of historic preservation in revitalizing deindustrialized cities: Lessons from the United States and Sweden*, (Norrkoping: Linköping University, 2007), 23.
[199] Bullen, "Adaptive reuse and sustainability of commercial buildings," 20-31.
[200] Sara Wilkinson, Hilde Remoy, and Craig Langston, *Sustainable Building Adaptation: Innovations in Decision-making* (Chichester: John Wiley & Sons, 2014).
[201] Alfrey and Putnam, *The Industrial Heritage*, 93-110; Bullen, "Adaptive reuse and sustainability of commercial buildings," 20-31; Jie Chen, Bruce Judd, and Scott Hawken, "Adaptive reuse of industrial heritage for cultural purposes in Beijing, Shanghai and Chongqing," *Structural Survey* 34, no. 4/5 (2016):331-350; Douglas, James. (2002) Building Adaptation, Oxford: Butterworth-Heinemann; Jonsen-Verbeke, "Industrial heritage," 70-85; Wilkinson et all (2014), Sustainable Building Adaptation; Xie, "Developing industrial heritage tourism," 1321–1330.
[202] Benjamin Fragner, "Adaptive re-use," In *Industrial heritage re-tooled. The TICCIH guide to industrial heritage conservation*, edited by James Douet (Lancaster: Carnegie Publishing Ltd., 2012): 110.
[203] Fragner, "Adaptive re-use," 110.
[204] ICOMOS Australia (2013) Burra Charter, 7.
[205] UNESCO. *Caring for your heritage building: Building owner's information*. In association with the Indonesian Fund-in-Trust and the Republic of Indonesia Ministry of Education and Culture, 2015. http://unesdoc.unesco.org/images/0024/002432/243218e.pdf.

Charter which states: 'the adaptation of an industrial site to a new use ensuring its conservation is usually acceptable… new uses should respect the significant material and maintain the original patterns of circulation and activity, and should be compatible as much as possible with the original or principle use'.[206] Finally, an inclusive definition has been given by Burchell and Listokin (1981) in their book entitled 'The adaptive reuse handbook'.[207] Approaching the concept from an empirical perspective, they state that 'the underlying concept of adaptive reuse is its attempt to maximise the often-hidden value of real property and provide a process for the reemployment of this property'. From an environmental perspective, Mark Watson proposes that adaptive reuse is simply a process of recycling by retaining the energy use that is embodied in these buildings.[208] All these definitions represent industrial heritage transformation as a complex task that must not only satisfy regeneration objectives, but also protect the authenticity and significance of historic buildings.

3.2.1 Adaptive reuse and sustainability

Adaptive reuse can be characterised as a sustainable approach. As mentioned above, it embodies various initiatives such as environmental, social, cultural, and economic. According to Towle, sustainability was initially interpreted as an environmental aspect.[209] However, conservationists have over the past decades increasingly investigated the links between historic conservation principles and sustainability.[210]

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[206] TICCIH, and ICOMOS, *The Nizhny Tagil Charter for the Industrial Heritage,* Art. 5 (July 2003): 3. Available at, http://www.icomos.org/18thapril/2006/nizhny-tagil-charter-e.pdf.

[207] Robert Burchell and David Listokin, *The adaptive reuse handbook: Procedures to inventory, control, manage, and reemploy surplus municipal properties* (New Brunswick, NJ: Rutgers University, Center for Urban Policy Research, 1981).

[208] Mark Watson, "Adaptive re-use and embodied energy," In *Industrial Heritage Re-tooled. The TICCIH guide to Industrial Heritage Conservation*, ed. by James Douet (New York: Routledge, 2012): 136.

[209] Towle, *The Challenges Associated with the Regeneration of Industrial Heritage*, 41.

[210] See more in: Elizabeth Auclair and Graham Fairclough, "Living between past and future: An introduction to heritage and cultural sustainability," In *Theory and Practice in Heritage and Sustainability*, ed. by Elizabeth Auclair and Graham Fairclough (New York: Routledge, 2015): 1–22; Erica Avrami, "Heritage, values, and sustainability," In *Conservation: Principles, dilemmas, and uncomfortable truths*, ed. by Alison Richmond & Alison Bracker, (London: Butterworth-Heinemann, 2009): 177–183; Avrami, *Sustainability and the built environment*, 4–9; Barthel-Bouchier (2012) *Cultural heritage and the challenge of sustainability*; Boccardi (2015) *From mitigation to adaptation: A new heritage paradigm for the Anthropocene*, 87–98; Boyer (2003) *Sustainability and the city*, 65–77; Frey (2007) *Making the case: Historic preservation as sustainable development* ; Holland (2012) *The need for sustainability in city*

Among the most controversial issues has been social sustainability. In a review of the relevant literature, a number of authors find social sustainability to be a broad concept. Indeed, Vallace et al characterise social sustainability as 'a concept in chaos'.[211] However, in her article entitled 'Making Historic Preservation Sustainable', Avrami argues that this discourse is not as confusing as it may seem; it merely needs to recognise the sociocultural features and values that are associated with historic buildings.[212] She claims, however, that although the notions of social inclusion, community participation, and cohesion have come about through the application pf conservation and sustainability, there is quite limited research connecting them.[213]

Industrial buildings are a suitable category of built environment contributing towards sustainability. In a seminal book published on this topic, Stratton states that 'especially heritage industrial buildings, represent a sustainable resource from past generations which is capable of being 'recycled 'for new uses'.[214] This view is also propounded by Keith Falconer, who believes that sustainable reuse of industrial buildings of the last two centuries has been extensive.[215] In his study, Falconer presents a thorough list of initiatives in the UK such as 'Regeneration through Heritage 'and the 357 Conservation Area Partnership Schemes (CAPS), which have worked towards the appreciation and reuse of industrial heritage.[216] Finally, he demonstrates through a number of case studies the increasing availability of solutions for the sustainable and effective rehabilitation of industrial heritage.[217]

Several more studies have attempted to outline successful sustainable reuse projects of industrial heritage. For instance, an indicative list is presented by Nicholas Falk

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planning and preservation, 3–6; Keene (2003) *The links between historic preservation and sustainability*, 11–19; Listokin (1997) *Growth management and historic preservation*, 199–213; etc.

[211] Suzanne Vallance, Harvey Perkins and Jennifer Dixon, "What is social sustainability? A clarification of concepts," *Geoforum* 42, no.3 (2011): 342.

[212] Erica Avrami, "Making Historic Preservation Sustainable," *Journal of the American Planning Association* 82, no.2 (2016): 104-112.

[213] Avrami, Making Historic Preservation Sustainable, 109.

[214] Stratton, *Industrial Buildings*, 3.

[215] Keith Falconer, "Sustainable Reuse of Historic Industrial Sites." In *Understanding Historic Building Conservation* ed. by Michael Forsyth (Oxford: Blackwell Publishing Ltd, 2008): 74-87.

[216] The Regeneration Through Heritage is now an initiative within The Prince's Foundation for the Built Environment and is co-funded by English Heritage. 357 Conservation Area Partnership Schemes (CAPS) was supported by English Heritage, Heritage Lottery Fund, the European Union and the Single Regeneration Budget. See more in: Falconer, "Sustainable Reuse of Historic Industrial Sites," 74-87.

[217] Falconer, Sustainable Reuse of Historic Industrial Sites, 74-87.

(Founder Director of URBED) in Chapter 6 of the abovementioned book by Stratton.[218] He bases his selection on URBED's five principles: *'(1) Shared vision that unites both the owner of the property and the local authority and other regulatory bodies, so that there is the minimum of time wasted in conflict. (2) Impetus for collaboration, which may come from the promise of grants, or of the need to catch a wave of demand, or even sheer desperation at seeing a prominent building decay. (3) Balance of uses, and also a balance between pilot projects, that can be implemented fairly quickly to build confidence, and flagship projects that help turn an area around. (4) Driving force with the guts to take an innovative approach to development, to control and avoid all unnecessary costs, and to generate activity and interest. (5) Financial package or process that generates the necessary yield to satisfy both private investors and also sources of grants.'*[219] These basic elements show that the adaptive reuse of industrial heritage can contribute to the sustainable regeneration of a place and strengthen its socio-cultural, aesthetic, economic, and environmental features.

3.2.2 Challenges of Adaptive reuse

Following the abovementioned definitions, it can be understood that adaptive reuse is likely to involve a number of challenges needing solutions in order for an intervention to be successful. Referring to such challenges, Towle (2016) comprehensively analyses the difficulty in managing a balance between minimal intervention and change.[220] Using the examples of the 'High Line' in New York, the Middleport Pottery in Stoke-on-Trent, and the Battersea Power Station in London, Towle discusses different objectives of projects which may affect the new function. Likewise, Heritage Council Victoria (2013) discusses the potentials and difficulties attached to adaptive reuse of industrial heritage.[221] This project team uses twelve Australian industrial case studies to examine

[218] Nicholas Falk, "New uses for Old industrial buildings," *In Industrial Buildings: Conservation and Regeneration*, ed. by M. Stratton (London: E & FN Spon Press, 2000): 97-108.
[219] Falk, "New uses for Old industrial buildings," 98.
[220] Towle, *The Challenges Associated with the Regeneration of Industrial Heritage*, 37-42.
[221] Heritage Council Victoria, Adaptive reuse of industrial heritage: Opportunities and Challenges, (Melbourne: Heritage Council Victoria, 2013).

issues relevant to industrial heritage rehabilitation, such as social and environmental sustainability, heritage-led regeneration, and economic development.[222]

Among the main issues reported by scholars in adaptive reuse practice is the identification of an appropriate new use. Based on the Burra Charter, 'compatible use means a use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance'.[223] Hamond and McMahon find this approach quite challenging, emphasising that most industrial buildings change in form and plan when being reused.[224] In an effort to provide a solution to this challenge they add that retaining only the site's critical features could be enough for profitable reuse.[225] Elaborating further, the Heritage Council of Victoria adds that 'the new use, and the level of change required to accommodate that use, needs to be compatible with and appropriate to the heritage significance of the place and should be guided by the Statement of Significance'.[226] This leads us to understand that the level and type of significance of an industrial site are vital guidelines for adaptation and change.

Adaptive reuse may not only affect the physical evidence of industrial heritage but also strongly contribute to the social context of the community. In his major study, Legner (2007) quotes a characteristic text from an exhibit on the old Ghirardelli chocolate factory in San Francisco, which included pictures from 'before' and 'after' reuse. Emphasising social change, the main text panel explains that:

> '*Adaptive re-use can only be explained as part of a more general social re-evaluation occurring in the United States. This includes an awareness of our historic past, a realization that new need not mean better, a reconsideration of the meaning of progress, a respect for conservation, an appreciation of the handmade object, a susceptibility to nostalgia, the*

[222] Heritage Council Victoria, Adaptive Reuse, 8-18.
[223] ICOMOS Australia (2013) Burra Charter.
[224] Hamond and McMahon, *Recording and conserving Ireland's Industrial Heritage*, 30.
[225] Hamond and McMahon, *Recording and conserving Ireland's Industrial Heritage*, 30.
[226] Heritage Council Victoria, Adaptive Reuse, 11.

political and economic sophistication to make these values into forces of reform in many aspects of our lives'.[227]

Using comparative case studies in the United States and Sweden, Legner concludes that adaptive reuse of industrial heritage can lead to social recovery and reflection upon the needs of contemporary society.[228]

By drawing on the concept of social sustainability, Sonja Ifko has been able to systematically discuss the social dimension of industrial heritage reuse.[229] Ifko (2016), while referring to an extensive range of sources, shows that the social dimension is often neglected when discussing industrial heritage revitalisation. An explanation for this is given by Landorf, who points out that social benefits are not quantifiable and that local community attitudes to heritage can rarely be identified.[230] Furthermore, he describes stakeholder and community engagement throughout the decision making process as an 'idealistic 'approach to successful reuse. Adaptive reuse is not therefore merely the preservation of an industrial shell. Rather, it is an interdisciplinary process that should consider various aspects relevant to the building, the neighbourhood, and the city as a whole.

The various challenges that are associated with adaptive reuse may complicate or delay the whole process of rehabilitation.[231] In an attempt to develop a model for adaptive reuse of historic buildings, Mısırlısoy and Günce identified the main steps that need be taken into consideration.[232] These are: the definition of stakeholders; the study of the existing building structure; the selection of conservation actions; the

[227] Smithsonian Institution Archives, Record Unit 465, Renwick Gallery, c. 1967–1988, Box 8 of 17, main text panel. Quoted from: Legner, *Redevelopment through rehabilitation*, 28.
[228] Legner, *Redevelopment through rehabilitation*, 78-83.
[229] Sonja Ifko, "Comprehensive Management of Industrial Heritage Sites as a basis for sustainable regeneration," *Procedia Engineering*, no 161 (2016): 2040-2045.
[230] Chris Landorf, "A Framework for sustainable heritage management: A Study of UK industrial heritage sites," International Journal of Heritage Studies 15, No. 6 (2009): 494-510.
[231] Other challenges may include incompatibility of new use with the original building form, environmental issues, regulation, financial issues. See more in: Burchell & Listokin (1981) The adaptive reuse handbook; Florentina-Cristina Merciu, George-Laurenţiu Merciu, Andreea-Loreta Cercleux, Cristian Constantin Drăghici, "Conversion of Industrial Heritage as a Vector of Cultural Regeneration," *Procedia - Social and Behavioural Sciences* No. 122 (2014): 162-166; Wong (2017) *Adaptive reuse: extending the lives of buildings*.
[232] Damla Mısırlısoy and Kağan Günçe, "Adaptive reuse strategies for heritage buildings: A holistic approach," *Sustainable Cities and Society* 26 (2016): 91-98

evaluation of reuse potential (physical, economic, functional, environmental, political, social, and cultural); and the functional changes of a new use.[233] Commenting on Mısırlısoy and Günce, Evan Sugden expands on the criteria used to test whether an industrial heritage reuse practice has been successfully adaptive and to what extent.[234] More specifically, he refers to retention of the cultural heritage value and feasibility of economic incentives as the primary influential factors when evaluating adaptive reuse. Then, in combination with environmental, legislative, locational, and social parameters, he tests these factors across several industrial heritage case studies in order to understand the impact of reuse practices. Although both studies address significant issues related to adaptive reuse of heritage buildings, they suffer from some serious weaknesses. Both studies rely too heavily on content analysis, demonstrating methodologies that remain generic and could be considered as an obvious standard practice.

Understanding what characterises a successful adaptive reuse is essential in this research, as it will provide a rationale for the case study appraisal and comparative analysis in Chapters 5 and 6. A few studies thus far have tried to address the criteria for what constitutes a successful adaptive reuse project. According to Conjeros et al, the list of factors, grouped into physical, economic, functional, technological, social, legal, and political categories, is likely to be different for each successful case study.[235] Furthermore, in his analysis Murtagh identifies key factors that need to be taken into consideration prior to a design proposal.[236] He highlights the concept of integrity as the fundamental criterion of an architectural and historical evaluation and the heart of adaptive reuse.[237] UNESCO lists in a lengthy report the criteria used by UNESCO

[233] Mısırlısoy and Günçe, "Adaptive reuse strategies for heritage buildings," 91-98,
[234] Evan Sugden, "The Adaptive Reuse of Industrial Heritage Buildings: A Multiple-Case Studies Approach" (Mater thesis, University of Waterloo, 2017), 19–39.
[235] Conejos, S., Langston, C., and Smith, J, "Adapt STAR model: A climate-friendly strategy to promote built environment sustainability," *Habitat International* no.37 (2013): 95-103
[236] William Murtagh, *Keeping time: The history and theory of preservation in America* (New York, Chichester: John Wiley & Sons, 1997), 116-124.
[237] Murtagh, *Keeping time,* 116-124; By definition, integrity means: 'The state of being whole and undivided. The condition of being unified or sound in construction.' See: Oxford Dictionaries. 2019. Definition of authentic – Oxford Dictionaries Online (World English). Available at: https://en.oxforddictionaries.com/definition/integrity [accessed 16 August 2019]. Several authors have studied and referred to the concept of integrity, a few of these are: Derek Worthing and Stephen Bond, *Managing Built Heritage: The Role of Cultural Significance* (Oxford: Blackwell Publishing, 2008); Jokilehto, *History of Architectural Conservation*, 2002; Donald Hardesty and Barbara Little, *Assessing site*

Asia-Pacific Heritage (2000-2004) in order to recognise best practice in heritage conservation and adaptive reuse.[238] These criteria include, but are not limited to: 'the articulation of the structure's heritage values' and 'the manner in which the process and the final product contribute to the surrounding environment and the local community's cultural and historical continuum'.[239] Again here, the main problem with these studies is that there is no clear and comprehensive set of criteria guiding selection of a new use. All the previously mentioned methods remain either generic or fragmented. Therefore, they may not able to successfully guide the choice of new use for industrial buildings as they fail to fully acknowledge industrial heritage values or take compatibility and urban planning elements into account. Thus, this research will present the development of a new tool, that will potentially assist decision makers into choosing an evidence-based viable new use.

The following Table 2 is an initial classification and collection of sources that will help the author draft and organise notable aspects related to adaptive reuse of historic buildings. This classification together with the empirical analysis of this thesis will contribute to the creation of the novel tool – set of criteria for industrial building reuse.

significance: A Guide for Archaeologists and Historians (Plymouth: Altamira, 2009); Marta de la Torre, *Heritage values in site management: four case studies* (Los Angeles: Getty Publications, 2005).

[238] UNESCO, *Asia conserved; lessons learned from the UNESCO Asia-Pacific heritage awards for culture heritage conservation: 2000–2004,* (Lord Wilson Heritage Trust and UNESCO, 2007), 2-3. Retrieved from http://unesdoc.unesco.org/images/0015/001557/155754e.pdf

[239] UNESCO (2007) *Asia conserved*, 2-3.

Table 2. List of factors identified in existing research on adaptive reuse

Factor	Interpretation	Relevant Literature
Material Evidence	Structural Condition	Conjeros et al (2013); Davison, et.al. (2006); Douglas (2002); Gorse and Highfield (2009); Grammenos and Russell (1997); Horvath (2010); Legner (2007); Misirlisoy and Günçe (2016); Murtagh (1997); Osbourne (2013); Russell and Moffat (2001); Siddiqi (2006); Yudelson (2010)
	Quality of structure	Douglas (2002); Osbourne (2013); Prowler (2008); UNEP (2007)
	Building design and architectural elements	Browne (2006); Grammenos and Russell (1997); Hamond and McMahon (2002); Murtagh (1997); Russell and Moffat (2001)
	climate change and weather conditions	Heritage Council Victoria (2013); Sugden (2017); Wilson and Ward (2009)
	Spatial characteristics	Campbell (1996); Conjeros et al (2013); Hamond and McMahon (2002); Heath (2001);
Accessibility	Location within the region or city	Campbell (1996); Fealy (2006); Langston et al. (2008); Murtagh (1997); Sugden (2017)
	Accessibility to public buildings, facilities, main roads and transportation	Heath (2001); Prowler (2008); UNEP (2007)
Suitability	Capacity to accommodate the needs of the new function	Arge (2005); Douglas (2002); Graham (2005); Horvath (2010); Langston et al. (2008); Misirlisoy and Günçe (2016); Nakib (2010); Prowler (2008); Russell and Moffat (2001); UNEP (2007); Vakjli- Ardebili (2007)
	Capacity of being divided or spatially converted	Davison, et.al. (2006); Horvath (2010); Misirlisoy and Günçe (2016); Russell and Moffat (2001); Zeiler et al. (2010)
Community awareness	Sense of place and local identity	Bond and Charlemagne (2009); Conjeros et al (2013); Curry (1995); DEH (2004); Fournier and Zimnicki (2004); Harmon et al. (2006); Heritage Council Victoria (2013);

		ICOMOS (1994); Ifko (2016); Jokilehto (2002); Legner (2007); Marquis-Kyle and Walker (1992); NSW Department of Planning (2008); Sugden (2017); UNESCO (2007 and 2009)
	Community participation	Browne (2006); HMSO (1987); Landort (2009); Langston et al. (2008); Misirlisoy and Günçe (2016)
	Local traditions and practices	Bond and Charlemagne (2009); Curry (1995); DEH (2004); Fournier and Zimnicki (2004); Harmon et al. (2006); ICOMOS (1994); Jokilehto (2002); Marquis-Kyle and Walker (1992); NSW Department of Planning (2008); Prowler (2008); UNESCO (2007 and 2009)
Legal framework	Regulation and protective measures to guide high standard conservation and management practices	Conjeros et al (2013); Holborrow (2008); Misirlisoy and Günçe (2016); Osbourne (2013); Park (1998); Sugden (2017)
	Health and safety measures	City of New York Department of Design and Construction (1999); Douglas (2002); NSW Department of Planning (2008); Prowler (2008);
Political and Institutional dimensions	International and regional charters on the protection of tangible and intangible heritage	Curry (1995); Fournier and Zimnicki (2004); Harmon et al. (2006); ICOMOS (1994); Jokilehto (2002); Legner (2007); Marquis-Kyle and Walker (1992); UNESCO (2007 and 2009);
	Zoning and land uses	Browne (2006); Campbell (1996); City of New York Department of Design and Construction (1999); Conjeros et al (2013); Douglas (2002); Legner (2007); Murtagh (1997); Wilson and Ward (2009)
Economic incentives		Conjeros et al (2013); Heritage Council Victoria (2013); Legner (2007); Sugden (2017)

Source: M. Dimitriou 2019

3.2.3 Creative industries as distinctive adaptive new use

A large and growing body of literature has examined the adaptive reuse of industrial heritage for cultural purposes.[240] Recent attention has focused on describing creative industries as a key driver of transformation and economic growth in post-industrial inner cities.[241] According to Kiroff, creative industries "located in heritage districts are directly linked to the reconstruction of inner-city buildings, sites and urban landscapes through their adaptive reuse".[242] Furthermore, Hutton suggests that such reconstruction and adaptive reuse of industrial buildings and sites results in these landscapes becoming an integral part of the postmodern city.[243]

Creative quarters emerge primarily in inner cities which have faced a decline due to deindustrialisation and the process of commercial and residential suburbanisation. Creative industries concentrate primarily in core urban areas, within which they often form specialised clusters or quarters.[244] Cultural quarters have a similar structure, emerging particularly in historical urban areas with high aesthetic and symbolic value, not only because they offer premises with low rents and minimum formal control, but also because invention and creativity can be stimulated by urban landscapes.[245] A spatial concentration of cultural or leisure activities can be found not only in cultural

[240] In the 1990s, the concept of culture-led regeneration was extended to include creative cities (Landry 2000), cultural clusters (Mommaas 2004), thematically-oriented quarters or so-called urban villages (Bell & Jayne 2004), and creative industries (Rumpel et al. 2010a, b).

[241] See more about Creative Class in Graeme Evans and Phyllida Shaw, *The Contribution of Culture to Regeneration in the UK: A Review of Evidence*, London: DCMS, 2004. See more about Cultural Economy in Brian Graham, "Heritage as knowledge: capital or culture?" *Urban Studies* 39, no 5-6 (2002): pp.1003-1017. See more about Creative Industries in Michael Keane, "The capital complex: Beijing's new creative clusters," In: Kong, L. & O'Connor, J. (eds) *Creative Economies, Creative Cities*, pp.77-98, London: Springer, 2009a.

[242] Lydia Kiroff, "Nexus between creative industries and the built environment: Creative placemaking in inner Auckland," *Frontiers of Architectural Research* no.9 (2020): 123.

[243] Thomas A. Hutton, "Spatiality, built form, and creative industry development in the inner city," *Environment and Planning* 38, no. 10 (2006): 1819-1841.

[244] Hutton, "Spatiality, built form, and creative industry development in the inner city," 1819-1841; See more in: Ivo Mossig, "The networks producing television programmes in the Cologne media cluster: new firm foundation, flexible specialization and efficient decision-making structures," *European Planning Studies* 12 no. 2 (2004): 155–171.

[245] Jacqueline Groth and Eric Corijn, "Reclaiming Urbanity: Indeterminate Spaces, Informal Actors and Urban Agenda Setting," *Urban Studies* 42, no. 3 (2005): 503-526; Graham Drake, "This place gives me space: place and creativity in the creative industries," *Geoforum* 34 no. 4 (2003): 511-524.

quarters, but also in other areas where consumption of creative industries prevails over production.[246]

Empirical research in various urban contexts presents evidence for the potential of creative industries in the regeneration of post-industrial cities.[247] There are a number of cities which have been successful in transforming their image, or "in preserving and enhancing their reputations by removing the scars of industrialisation".[248] One study by Gomez focuses on Glasgow's changing image and on the imitation of the same process by the city of Bilbao.[249] Moreover, creative reuse of industrial sites such as London's Shoreditch and Manchester's Northern Quarter illustrates how the creative economy (defined as companies from the private sector which are economically involved in the creation, production, distribution, and/or media dissemination of artistic and creative goods and services) has affected spatial and functional strategies.[250]

Former industrial buildings have considerable potential for functional adaptation that "opens unexpected perspectives for reuse".[251] In many conversion cases only the historic facades have remained nearly intact, while the interiors have demonstrated remarkable transformation potential, developing flexible layouts to accommodate creative firms. A recent study by Kiroff examined the outcomes following conversion of industrial buildings in Parnell, Auckland, into creative units. By discussing restoration

[246] Aspasia Gospodini, "Portraying, classifying and understanding the emerging landscapes of the post-industrial city," *Cities. The International Journal of Urban Policy and Planning* 23 no. 5 (2006): 311–330; Daniel Campo and Brent D. Ryan, "The entertainment zone: Unplanned nightlife and the revitalisation of the American downtown," *Journal of Urban Design* 13 no. 3 (2008): 291–315; Paul Chatterton and Robert Hollands, "Theorising urban playscapes: Producing, regulating and consuming youthful nightlife city spaces," *Urban Studies* 39 no. 1 (2001): 95–116.

[247] Franco Bianchini and Michael Parkinson, *Cultural Policy and Urban Regeneration: The West European Experience* (Manchester: Manchester University Press, 1993); Petr Rumpel, Ondrej Slach and Jaroslav Koutsky, "Researching creative industries in the Czech Republic: a case study from the city of Ostrava," *Regions Magazine* no. 277 (2010a): 8–19.

[248] Peter Hall, "Towards a general urban theory," In *Cities in competition* edited by Brocthie J.M., Batty M.E. & Blakely E. (Longman, Melbourne, 1995): 18.

[249] Maria V. Gomez, "Reflective images: The case of urban regeneration in Glasgow and Bilbao," *International Journal of Urban and Regional Research* 22 no.1 (1998): 106–121.

[250] The repurposing of former industrial buildings for creative activities can be supported by governmental intervention, or by private funders such as small-scale developers, artists, and creative entrepreneurs. Additionally, the combination of education activities with historic building preservation and start-up entrepreneurship has proven successful in post-industrial regeneration projects worldwide. See: Kiroff, "Nexus between creative industries and the built environment," 123-124.

[251] Fazette Bordage and Phillippe Grombeer, "Trans Europe Halles," In *Factories of the imagination* edited by Trans Europe Halles (Birkhauser: Basel, 2002): 4.5-4.5.

practices, the author stated that “a common quality shared by all renovated industrial buildings was that the conversion process had not affected their original construction and authenticity” in addition to exploiting the attributes of spaciousness and good natural lighting.[252]

Similar outcomes have been analysed in literature evaluating conversion and renovation practices at former industrial buildings in London and Manchester, where existing work environments have been upgraded for creative industries.[253] For instance, the functional adaptation of the historic industrial complex at Spitalfields, London, required a reconfiguration of their internal spaces, which demonstrated a high level of flexibility and adaptability. Indeed, these small-scale internal spaces and tenancies reflect the social relations of the 21st century creative economy.[254] Creative companies and start-ups often seek premises near those of similar businesses, often in mixed-use, flexible spaces which can also offer attractively low rents. London’s Shoreditch and Manchester’s Northern Quarter are representative examples of this. Thus, industrial heritage can offer local authorities an opportunity to revive their towns and cities, encouraging new investment and growth and restoring local pride.

Given this wider discourse on creative cities, surprisingly little material has been published on Greece’s urban transformation processes. Although different aspects are indeed covered in the literature, this body of work is very limited.[255]

[252] Kiroff, “Nexus between creative industries and the built environment,” 124.
[253] Hutton, “Spatiality, built form, and creative industry development in the inner city,” 1819-1841.
[254] Such relations have replaced the supervision, control, and surveillance characteristics of 19th century large-scale industrial layouts.
[255] Sophia Lazaretou, "The smart economy: cultural and creative industries in Greece. Can they be a way out of the crisis? (in Greek)," Working Papers no. 175, Bank of Greece (2014); Hyz Alina and Kostas Karamanis, “Creative Industries in Greece. An Empirical Analysis from the Region of Epirus” (London: Palgrade Pivot, 2016).

3.2.4 Adaptive reuse in Greece

It is difficult to locate relevant research literature on the adaptive reuse of Greek industrial buildings or the sustainable revitalisation of former Greek industrial neighbourhoods or cities. Literature in this field is limited to a few papers that mostly focus on design projects. For instance, Karachalis and Kyriazopoulos discuss the reuse of the Vasiliades Shipyards as the Maritime Tradition Museum in Piraeus, Greece.[256] Limited to a description of this project, the authors fail to address the assessment criteria of this project. The same lacuna is found in the work of Marina Karavasili.[257] Even though she emphasises the need for a feasibility study prior to reuse, the methodology she proposes is limited to cultural production as a reuse approach.

In all the scholarly studies reviewed so far, there is neither theoretical nor methodological guidance, nor basic criteria for the effective reuse of industrial buildings and sites in Greece. Similarly, there is very limited research on the sustainable regeneration of industrial heritage, although a few mono-disciplinary publications may be mentioned. For example, George Mergos and Tzoulia Mouratidou, investigating the economic impact of industrial building reuse, discuss the tangible benefits of adaptive reuse for the local economy.[258] Their primary case study is an old tobacco warehouse reused as a hotel in Drama, which they use to address the problem of preservation. Although they identify economic value as significant for historic preservation, there is still the need for a multidisciplinary approach that realises the overall value and contribution to the urban environment.

In conclusion, based on existing research in Greece, it can be argued that there is lack of clear strategies, principles, and criteria that could help make reuse of industrial buildings efficient and viable. Therefore, this thesis provides an exciting opportunity to advance our knowledge and make an important contribution to the field of industrial heritage reuse in Greece.

[256] Karachalis and Kyriazopoulos, *The re-use of post-industrial space and waterfront development*, 2019.
[257] Karavasili, *The interpretation of industrial Heritage in Greece*, 1-10.
[258] Mergos and Mouratidou, "Old buildings, new uses," 357-366.

3.3 Summary

The purpose of this review is to understand different challenges posed by research on industrial heritage conservation and reuse, and to identify gaps which this thesis will attempt to fill. There has been much research and discussion conducted on industrial heritage transformation and reuse. However, importing ideas related to heritage or transferring approaches from one country to another may be complicated and impractical, not to mention the difficulties that may arise when adopting principles and strategies from other disciplines. It is clear from the research reviewed that there is no specific conservation and management framework focusing on the attributes of industrial heritage buildings and landscapes in Greece. Additionally, it is clear that evaluating significance and using conservation principles as guidance continues to be problematic in the discourse on industrial heritage preservation in Greece. This field of inquiry is vital, as at its centre is a concern for sustainable reuse while maintaining the authenticity of industrial heritage. More research and investigation are required to gain a better understanding of what and why it is significant, who defines it, and how the problem of preservation could be solved. The following chapter will begin to address these questions.

CHAPTER 4: ASSESSING THE SIGNIFICANCE OF INDUSTRIAL HERITAGE IN VOLOS

This chapter investigates the significance of industrial heritage in Volos, employing as a methodology the value-based approach discussed earlier in the thesis. This methodology involves the documentation of surviving industrial buildings, the analysis of unpublished archival data, and their interpretation with reference to industrial buildings elsewhere in Greece. The detailed examination of Glavanis Ironworks, which is the main case study, illustrates how under-represented, derelict, and at-risk industrial structures can provide evidence for overlooked industrial heritage values. This case study will also demonstrate the urgent need for an informed selection of a new use due to the vulnerable condition of the remaining historic industrial structures.

4.1 Introduction

Glavanis Ironworks played a major role in the development of the iron industry in Greece. It also contributed to the development of Greek industrial architecture and the transformation and expansion of Volos. The city's highly advanced iron-making operation began in 1895.[259] According to Nitsa Koliou, by the beginning of the twentieth century the ironworks was one of the country's greatest industrial sites, making the name 'Glavanis' very popular.[260] In 1980 the Glavanis Ironworks stopped operating, and despite a few efforts has now remained vacant for more than thirty years. The failure to rehabilitate this unique industrial complex, a microcosm of the formative years of industrialisation in Greece, shows that the significance attached to the site has been underestimated.

[259] General State Archives of the Prefecture of Magnesia, Exchequer Records, Business files: Glavanis Ironworks (1921-1983), 114144/27333/67. Based on a biographical book written by Elleni Kormazou, who was Kazazi's niece, the factory's industrial activity started earlier. However, there is no specific date-reference. The factory's activity began at a time when the population of the city of Volos was around 10,000 citizens and there were only two other such factories in Greece, both in the port of Piraeus. See: Eleni Kormazou, *Michalakis Kazazis:1850-1938* (Volos: Hores, 1995), 24.

[260] Nitsa Koliou, *The industry of Volos* (Volos: Municipality of Volos, Municipal Center for Historical Research and Documentation, 1994), 25.

Despite its tangible and intangible values, this historic factory is not adequately represented in the literature on industrial architecture or industrial heritage conservation in Greece.[261] Even though the complex is currently listed by the Greek Ministry of Culture, there has been no attempt to evaluate its significance.[262] The site's decay over many years and a belief that industrial buildings are not 'pretty 'makes it difficult to appreciate its unique values.[263] To help fill this lacuna, the author documented the surviving fabric of Glavanis Ironworks in detail during fieldwork in 2016 and 2017. This was followed by an analysis of previously unexamined archival documents.[264] This investigation together with semi-structured interviews and cross referencing with similar industrial buildings provided essential evidence for the site's significance.

The methodology reveals unknown aspects of the history of the Glavanis Ironworks and helps to establish its place in the development of Greek industry as well as documenting the physical evolution of the site. This analysis is followed by a discussion of the various heritage values of the complex, which are finally summarised in a statement of significance. Assessing the ironwork's significance is essential in order to illustrate how the current state of an industrial building or any threats to its significance can help identify conservation principles that should be observed in any future reuse practice. However, before we examine the building's significance a few preliminary words are necessary to discuss the methods used in its evaluation.

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[261] Spiridoula Arathimou, "Historic archival data of industrial businesses in Volos," *En Volo, Industrial Heritage in Magnesia*, no. 23 (Oct-Dec 2006): 66-67; Eleni Triantou, *Volos through the fog of the time* (Volos: ed Grafi, 1994), 116-119; Mixalis Psalidopoulos, *Texts for the Greek industry in the 19th century* (Athens: ETVA Cultural Technological Foundation of the Hellenic Bank of Industrial Development, 1994), 11-26.

[262] Under the Archaeological Law 3028/2002 by the Ministry of Culture & Tourism and the Department of Modern and Contemporary Architectural Heritage.

[263] Orbasli (2008) Architectural conservation, p.29

[264] It should be noted that the archival inventory was difficult to carry out due to the lack of prior research on the topic and a lack of bibliographic material. The analysis is based on original data which were recorded and organised by the author. These included unpublished archival documents which the author identified in the Archives of the General State Archives of Magnesia, Volos' Municipal Centre for History and Documentation, the Historical Archive of the National Bank of Greece and the Historical Archives of the Piraeus Bank Group Cultural Foundation.

4.2 Value interpretation

The assessment of Glavanis Ironworks began with the study of plans and photographic records, published here for the first time.[265] It soon became apparent that these illustrations did not only allow for an in-depth understanding of its historic origins, but also that they provided evidence for structural changes and a chronology of degradation. For instance, ground floor plans dating to 1930, 1956, and 1970 indicate that the industrial site originally consisted of individual workshops, which were gradually transformed into the single structure visible today (Fig. 5, 6, 7).

These preliminary observations were tested through hand sketches recording changes in the building fabric (Fig. 8, 9). The first sketches helped the author to embrace the work of craftsmen and the changing use of materials in its architecture. They also contributed to a familiarisation with various technical achievements of the workers and the building's development through time. In general, the sketches showed that the building is an essential source of information on the history of the ironworks as well as the architectural practices of the era.

Unfortunately, archival documents with reference to the case study's architectural features, form, and structure were fragmented and limited to general descriptions.[266] Initially it seemed impossible to use them for establishing architectural development or techniques used in the design of the building. Comparisons with a wide range of similar structures elsewhere in Greece played a major role in overcoming this problem, making it possible to infer the combination of architectural practices used at Glavanis.

Besides its historical significance and architectural merit, Glavanis Ironworks also constitutes an ideal source of information on wider technological developments of iron and steel manufacture in Greece. The author's discovery of previously unknown

[265] Ministry for the Environment, Physical Planning and Public Works of Greece, Town Planning Diagram of the City of Volos, 31 March 1930, box 102, folder 93940, plan number 5, Building Service Directorate, Municipality of Volos, Volos; Ministry for the Environment, Physical Planning and Public Works of Greece, Aero-topography of the City of Volos and Nea Ionia, 23 June 1956, box 144, folder 22924, plan number 1, Building Service Directorate, Municipality of Volos, Volos.

[266] Adamakis, The industrial Buildings of Volos, 55-58; Dimitris Paliouras, "The architectural Development of Volos," In *Volos and its district through History*, edited by Petros Kypriotelis and Costas Liapis (Volos: Thessalian Research Society, 2004), 359-361.

business records revealed evidence that led into finding missing machinery and technological equipment of the factory. These included production equipment as well as intact final products used by farmers on the Thessalian plain. Disregarded as scrap and waste materials, this machinery has never been investigated before (Fig. 10, 11).[267] Its re-discovery is vital and sheds new light on the technological and scientific significance of Glavanis Ironworks.

Analysis of archival material led also to the realisation that the selected industrial building had been considered as a point of reference for and essential element of local industrial identity. Consultation with former workers and investigation of business records, which are published here for the first time, was essential in contextualising the social and economic values of Glavanis Ironworks. Additionally, semi-structured questionnaires were conducted in an effort to understand whether the local community would take pleasure from reusing an industrial building that has been part of hardship and suffering as well as progress and innovation.

The previous paragraphs show that a series of different methodological tools were employed in order to evaluate the significance of Glavanis Ironworks. The comprehensive understanding of the industrial heritage values is a major step towards the successful reuse of this historic building. Even though the significance of Glavanis Ironworks remains unknown, this does not mean that the evidence attributed to these values has disappeared. According to Belavilas, there is a lack of systematic mapping and evaluation of Greek industrial heritage, and traditional heritage conservation approaches do not offer sufficient tools for evaluating and preserving the remains of Greek industrial history.[268] Fortunately, the timely contribution of this thesis offers an opportunity to recover the overlooked significance of this unique industrial monument. The ways in which the above methods were adapted to the value-based approach are clear from the following analysis.

[267] Thanks to the author this machinery has been conserved by the Piraeus Bank Group Cultural Foundation and is currently being exhibited in the Rooftile and Brickworks Museum N. & S. Tsalapatas in Volos.

[268] Nikos Belavilas, "Documentation of industrial heritage", En Volo, Industrial Heritage in Magnesia, no. 23 (Oct-Dec 2006): 75.

4.3 The historic background and value of the site

The methodology outlined above made it possible to fill important lacunae in our understanding of a major industrial heritage monument. The conservation and reuse of Glavanis Ironworks has been one of the main local heritage aims since the first rehabilitation initiatives of former industrial buildings by the local government in Volos.[269] According to Eleni Kormazou, Glavanis Ironworks was at the forefront of Greece's industrial development and a famous landmark greatly contributing to Volos' industrial identity.[270] It was part of a long-term business strategy developed by two important figures, Kostas Glavanis and Michalis Kazazis.[271] Extending to approximately 8,000sq.m. and situated close to the old Byzantine castle of 'Golos' (today's Volos), it was later to become the 'heart' of the city and one of the most important factories in central Greece.[272]

At this stage, it should be noted that the history of the city is closely related to its industrial past.[273] As Vilma Hastaoglou reminds us, the new town of Volos, built shortly

[269] The building has for years been the subject of negotiations between the National Bank of Greece, who is the current owner, and the Municipality of Volos, a prospective buyer of the building. Since 1987, the owner has been the National Bank of Greece. However, conservation and stewardship of Glavanis Ironworks has never been their primary objective. The issue of its reuse was raised in July 2009 by the Municipality of Volos in order to build the New Town Hall. The National Bank of Greece wanted to sell it for 4.6 million euros, and the municipality was not able to afford this sum. See: Stavros Dimopoulos, "Loan to buy the Glavanis industrial site?", *Thessalia Newspaper*, July 28, 2009; "Strong opposition to municipal borrowing of 4,6 million euros towards the ownership of the Glavanis Industrial site", *Thessalia Newspaper*, July 30, 2009, 14.

[270] Panagiotis Manos, "A survey of the factories in Volos: the social contribution of industries and the amazing progress of the Glavanis Ironworks in Volos," *Thessalia Newspaper*, 9 May 1934, box 34, folder 6, Industrial Company Glavanis, Historical Archive of the National Bank of Greece, Athens; Paratiritis, "Our Factory : Glavanis Ironworks and its huge progress. Impressions after a visit to the factory," *Thessalia Newspaper*, 31 Oct. 1936, box 34, folder 6, Industrial Company Glavanis, Historical Archive of the National Bank of Greece, Athens.

[271] Glavanis was the one who invested capital in order to buy the plot and build the factory, while Kazazis, an innovative ironmaster from Mytilene, after gaining practical and academic experience abroad (firstly overseas in the US and then in Manchester in the UK), moved to Volos driven by his dream to contribute to the industrial development of Greece. Together they changed the country's industrial history. See: Kormazou, *Michalakis Kazazis: 1850-1938*, 12-15.

[272] Built by the Emperor Justinian around a low hillock in the Gulf of Pagasitikos (in today's region of Palaia), the old Castle has a long history, demonstrated by the findings of archaeological excavations in the region. Archaeologists named the region 'the Citadel of Iolkos'. See in Kostas Liapis, "The Turkish occupation in Thessalo-Magnesia and the role of the Castle of Volos." In *Volos and its district through History* (Volos: Thessalian research Society, 2004), 193.

[273] Aspa Gospodini, "The structure of space as a mechanism for organising central functions in the city, the case of the Volos," *In The development of Greek cities: interdisciplinary approaches to urban analysis and policy,* ed. by Dimitris Oikonomou and Giorgos Petrakos (Volos: University Press of Thessaly, 2012), 371-396.

after Thessaly became part of the Greek state in 1881, was founded on commerce and industry.[274] The character of the new town was shaped by economic and urban innovations.[275] Starting as a settlement in front of the old castle of 'Golos', it expanded along the coast of the Pagasitikos gulf, and by the end of the nineteenth century was Greece's second most important industrial centre after Piraeus.[276] Indeed, industrial history has been the longest and most important chapter in the development of Volos.

The proximity of Glavanis Ironworks to the railway station and the port helped it to become one of the most productive ironworks in Greece.[277] According to Aigli Dimoglou, Glavanis was one of the first ironworks to focus on the production of affordable tools and machinery.[278] It trebled the machinery production of Volos and helped to improve agricultural methods in Greece.[279] Soon it made Volos the foremost iron tool producing region in the country, surpassing both Piraeus and Thessaloniki in output during the early twentieth century.[280] The decay of Glavanis Ironworks would therefore lead to the loss of physical evidence for an entire era.

[274] Vilma Hastaoglou, "Volos from the 19th to the 20th century: the rise of the industrial city," In *Volos. In quest of the city's social identity*, ed. by Thomas Maloutas (Thessaloniki: Paratiritis, 1995), 89 – 117; Charalambos Charitos, "Volos: the course of the new town," In *Volos and its district through history* (Volos: Thessalian research Society, 2004), 267.

[275] Dimitris Oikonomou and Ilias Beriatos, "Urban planning system of Volos: Geographic influence and location in the urban network," In *Volos. In quest of the city's social identity,* ed. by Thomas Maloutas (Thessaloniki: Paratiritis, 1995), 237 – 260.

[276] Charitos, "Volos: the course of the new town," 278.

[277] Vilma Hastaoglou, *Volos: Portrait of the city in the 19th and 20th century* (Volos: Municipal Centre of History and Documentation of Volos, 2002), 86-87.

[278] The first was the Stamatopoulos Ironworks in Volos, which has unfortunately been demolished. See Koliou, *The Industry of Volos*, 23-24.

[279] Machinery production included diesel engines, agricultural machinery, bridges for military use, domestic technology, and factory equipment. See: Konstantinos Glavanis, Report of the board of directors to the general meeting of shareholders, 12 June 1927, box 40, folder 93, Glavanis Public Industrial Company, Historical Archive of the National Bank of Greece, Athens.

[280] Association of Greek Industries, *The Greek Industry till 1945* (Athens: Association of Greek Industries, 1945), 67-69.

4.4 Identifying and articulating significance

Nikos Belavilas has analysed the decisions affecting the demolition of a number of industrial sites around Greece.[281] His publication investigates how industrial heritage significance is being valued as well as debates between local governments, architectural associations, and developers. The Dilaveri Pottery, the Fertiliser Factory of Drapetsona, and the Saporta tobacco warehouses are a few of the many cases referred to in Belavilas 'study, showing that there has been discrimination against the industrial era when compared to the conservation of buildings from other historic eras in Greece.[282] This view is supported by Nikolaos Karydis, who argues that 'discrimination between monuments may prove to be problematic when the criterion is not the significance of the monuments but their association with the most popular aspects of a community's history'.[283] These studies raise the question of whether the overall significance of Glavanis Ironworks could save it from demolition. To answer this question, it is essential to consider the various values linked to the site which will help us understand what should be preserved and why.

4.4.1 Architectural value

While local historians have recognised the importance of Glavanis Ironworks, and their observations provide us with precious information on the site's industrial past, scholarly interest has rarely been focused on the architectural and urban characteristics of the site. The urgency of recording and preserving the physical evidence of Glavanis Ironworks is prompted by the recent dramatic demolitions of many Greek production buildings and even whole industrial sites.[284] More importantly however, a recent fire which not only destroyed part of the ironwork's roof, but also

[281] Nikos Belavilas, "Industrial Heritage in Attica: Facts about the current situation," in *Strategies towards the promotion of industrial heritage issues,* ed. Universities of NTUA, AUTH, DUTH, UTH, UPATRAS and TICCIH Greece (Athens: National Technical University of Athens, 2011), 1-7.
[282] Belavilas, "Industrial Heritage in Attica," 3-4.
[283] Nikolaos Karydis, "Conservation of Historic Buildings along the Eroding Coastline of Northern Jutland," *Danish Journal of Archaeology* 3 (2014): 82-85.
[284] And other recent events, such as the destruction of the Chemical and Fertiliser Plant in Drapetsona (AHPL, owned by the National Bank), the demolition of the Klonaridis Brewery in Patissia (by the City of Athens), the mismanagement of the FIX Factory in Thessaloniki.

risked ruining the character of the building, made a comprehensive evaluation study and preservation strategy essential.[285] Therefore, the aim of this section is to analyse its unique architectural and urban features and thereby inform future conservation and reuse.

The diverse, undocumented modifications of the original buildings, especially between the 1940s and 1960s, make it difficult to map the significance of the features of each substructure. The ironworks developed over an 80-year period, during which time new buildings were constructed and existing buildings were regularly altered or extended to adapt to changes in the manufacturing process and to the economic fortunes of the ironworks. In broad terms, the remaining buildings date to three main periods: the foundation and early growth of the works in the 1890s under the direction of K. Glavanis and M. Kazazis; expansion from 1933 onwards, partly stimulated by the rise of metallurgy and the labour movement in central Greece;[286] and partial reconstruction following strong earthquakes between 1954 and 1957, leading to a 'Golden Age 'under the leadership of Vaggos Glavanis. Industrial building construction relies on two basic traditional technologies: stone masonry and carpentry. These were intimately associated and mutually complementary from the first to the final phases of the site, solving the problems and satisfying the needs of production.

Phase 1 - Foundation and early growth

The author's survey showed that evidence for the earliest structures on the site has not been entirely lost. Observation revealed parts of the building whose potential as evidence for architectural value had until now been underestimated. The evidence came from two distinct areas, the first being the load-bearing structure of the forge shop and machine shop (Fig. 12), which belongs to one of the earliest surviving buildings and which can be described as the 'heart 'of the complex, in terms of both position and function. This stone hall was the location for machinery repairs and the

[285] Belavilas, "Industrial Heritage in Attica," 3-4.

[286] Ministry for the Environment, Physical Planning and Public Works of Greece, Town Planning Diagram of the City of Volos, 31 March 1930, box 102, folder 93940, plan number 5, Building Service Directorate, Municipality of Volos, Volos; Ministry for the Environment, Physical Planning and Public Works of Greece, Aero-topography of the City of Volos and Nea Ionia, 23 June 1956, box 144, folder 22924, plan number 1, Building Service Directorate, Municipality of Volos, Volos.

production of components that supported the overall work of the site. The second area consists of a load bearing wall of the foundry workshop (where iron was melted), whose height was later inefficiently increased during expansion (Fig. 13).

The level of importance of both these areas is very high because they bear testimony to masonry and other construction skills during the late nineteenth century in central Greece. Stone is a ubiquitous local resource due to the natural environment of nearby Mount Pelion.[287] According to Rea Stylianou, stone was also used as the main material (together with timber frames) for the construction of vernacular houses and castles during the seventeenth and eighteenth century in Pelion.[288] This durable traditional construction material, according to Kitsos Makris, was first used in settlements in Pelion and later in Volos.[289] This history has been investigated through the study of surviving vernacular houses, such as the current Hellenic Museum (Rigas Feraios Museum) built in 1762 in the village of Zagora, the manor house of Glavanis built around 1750 in the village of Agios Lavrentios, and the castle of Kokoslis built at the end of the seventeenth century in the village of Lechonia.[290] Their investigation revealed that both parts of the Glavanis Ironworks are typical examples of traditional construction also found in these comparative houses. It is therefore very likely that they were built by masons who originally came from Pelion.

Stone, wood, and brick were the primary materials of construction. The walls are mainly stone, while wood is used for horizontal and vertical beams embedded in these walls. Masonry construction is the same as that widely used throughout the Ottoman Empire: roughly hewn stones (also not arranged in courses) set in earth mortar bound at intervals by horizontal or vertical timber tying grids (with brick rubble cavity fill). (Fig. 14) Beams are made of locally available timber such as oak or chestnut, and are

[287] The fact that most construction materials could be found close to the city of Volos, without transport and import costs, was of great economic importance for 'architectural production'. See: Rea Stylianou, *Greek Vernacular Architecture: Mount Pelion* (Athens: Melissa Press, 1992), 83.
[288] Stylianou, *Greek Vernacular Architecture,* 83-84.
[289] This special knowledge was transferred from father to son in a closed profession organised in groups with internal hierarchy. Teams of craftsmen travelled wherever needed, so when the population of Pelion moved to Volos in the 19th century, the craftsmen followed. See: Kitsos Makris, *Folk Art of Pelion* (Athens: Melissa Press, 1976), 44.
[290] An interesting survey of the construction techniques of the Hellenic Museum in Zagora and the castle in Lechonia can be seen in Stylianou, *Greek Vernacular Architecture: Mount Pelion*, 43-44, 62-63. For the manor house in Agios Lavrentios see Dimitris Paliouras, 'Network of cultural spaces and modern cultural heritage museums in Mount Pelion', *En Volo* issue 9 (Spring 2003), 82-87.

around 10cm thick. According to Kizis, 'the jointing of the timber ties was extremely important since this ensured the unity of the walls. 'The ties increased resistance to earthquakes, and during the erection of the wall they evenly transferred pressure exerted by the overlying masonry without danger of abrupt settling.[291] The fact that Glavanis Ironworks has survived the effects of multiple destructive earthquakes occurring between 1954 and 1957 demonstrates the durability of this building system.[292] Preserving this system can not only stimulate interest in local traditional practices but also helps us expand our knowledge of durable historic construction.

Glavanis Ironworks is thought to be one of the country's largest well-known iron workshops and one of the few surviving industrial heritage buildings of such scale.[293] Occupying three sizeable urban blocks, it dominated a large area of Volos. The factory's closure therefore deprived this area of its most important activity. Finding a successful new use for the factory is essential not only for preserving the site's value but also for stimulating new life in the neighbourhoods surrounding it.

Phase 2 – 1933 to 1955

The site's first expansion came in 1933 when a corner single-storey building that housed the manager's office and a two-storey warehouse on Vernadaki Street were added to the site. Both buildings have survived almost intact and remain in good condition. During this phase the building methods and materials employed were similar to that of those founding period. However, in the mid-1930s, the manager's

[291] Until the end of the last century the technique of timber tied wall building was employed extensively throughout the Balkans and Asia Minor, a centuries–old and deep-rooted tradition of Byzantine, and later Islamic, culture. See: Kizis, Pilioritiki *Ikodomia, Domestic Architecture in Pelion (17th-19th c.)*, 154-55

[292] The load-bearing walls were built with coarsely carved limestones and finer slates on the outside, at a width of 70 cm, and the gap between them filled with debris, stones, and mud. The mortar has been eroded over time by the rain, giving today the impression of dry-stone construction. At the corners, higher quality and more carefully processed stones were used. At vertical distances of 1-1.5m, tie-beams were installed creating a grate, which functioned not only to connect the two faces of masonry, but also strengthened the buildings against earthquakes. See Giannis Kizis, *Pilioritiki Oikodomia*, *The Architecture of houses in Pelion from 17th to 19th century* (Athens: ETVA Cultural Technological Foundation of the Hellenic Bank of Industrial Development, 1994), 153-182.

[293] Comparable to the Henry Boot Ironworks in Trikala, the Vasileiadis Ironworks in Piraeus (unfortunately demolished), the Hellenic Railways Organisation Ironworks in Piraeus, the French Mining Company in Lavrion, and the Neorion Ironworks on Syros Island.

office was built with good-quality stone facings and a decorative dressed stone outer skin in the upper half of the façade. Although it had austere, relatively low-rise volume, particular attention was paid to its symmetry, colour, and manner of access.[294] (Fig. 15) Similarly, the warehouse had an unpretentious neoclassical appearance with rectilinear geometry, both in its general shape and in the forms of its windows and doorways. The architect of these buildings is unknown, although Evaristo De Chirico, father of Giorgio de Chirico, was commissioned to produce designs for the neighbouring railway station.[295]

The author's examination of the interior of the administration building revealed intact layout and decoration, valuable evidence for the building's embellishment that has been previously overlooked. Patterns of floor tiles and floor tile decorations are modelled on Victorian fashions.[296] Other elements of interior decoration include woodcarvings on the doors, shutters, and partitions. The one-leaf doors with rectangular casements are less elaborately decorated than the reception (Fig. 17).[297]

This refined decoration is reminiscent of the architecture of Mount Pelion. As Kizis claims, this region is famous for its sophisticated carpentry and wood carving.[298] The interior of Glavanis Ironworks quite unexpectedly preserves elements of this tradition. This is extremely rare: the interiors of most other industrial buildings in the city have been completely destroyed during refurbishment. This elegant interior is therefore the only opportunity for the local community to remember and understand the craftmanship associated with industrial interior spaces.

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[294] During phase 2 the manager's office entrance was initially on the corner of the building but was later moved to the southwestern façade of the building. On the redesigned corner they set the company's coat of arms, which remains almost intact.

[295] https://e-thessalia.gr/sidirodromikos-stathmos-volou-to-kosmima-tis-polis-axiotheato-ton-touriston-photos/. https://e-thessalia.gr/sidirodromikos-stathmos-volou-to-kosmima-tis-polis-axiotheato-ton-touriston-photos/.

[296] Possibly constructed by a local manufacturer at the Mefsout ceramic tile factory.

[297] The Mefsout industrial site, which is among the industrial sites in the city centre of Volos that remain abandoned, used to be a factory mainly producing floor tiles of good quality. See Annita Prassa, "Volos: Industrial Development and deindustrialisation. A brief review," *The Industry of Volos, Yesterday and Today,* special edition Magnesia Newspaper (2013): 4-16.

[298] The wood carving craft developed due to the many forests of chestnut and oak local to Pelion. Plane trees and poplars were also used in the Pelion construction industry, while pine wood - which is rare in Pelion - appears only in more modern constructions. See Kizis, *Pilioritiki Oikodomia*, 191-210.

The complexity of the Glavanis Ironworks makes the interpretation of its architectural character difficult. The warehouse, on the southern side of the complex, displays all the characteristics of a typical vernacular house on Mount Pelion. According to Paliouras, it represents kinship between local industrial design and 'classical Mount Pelion architecture'.[299] For instance, this affinity is expressed by the top storey's band of windows, which protrude slightly over the lower storey.[300] Adamakis also adds that on its façade one can recognise 'borrowings 'from other building types, such as houses and churches of the neoclassical period.[301]

The ironworks 'external appearance and structural design seem to have influenced the construction of later industrial buildings in Volos and wider Greece. For instance, its stone and timber structure can be compared with the elegant one-storey Vranas olive oil factory on the island of Lesvos, another former industrial centre.[302] The facings and rusticated ground floor at Glavanis are comparable to those at the Vranas factory, which are characterised by the robust handling of materials and subtle variation of uncomplicated elements. The stone walls, the brick-arched closely-spaced openings, the ashlar quoins, and the bold string courses were so solidly constructed as to have survived in the Glavanis Ironworks until today.[303] The impressive size and regularity of the architectural elements reveals the long experience of the stonemasons.[304] Restoring the Glavanis Ironworks can therefore help professionals develop skills and

[299] Paliouras, "The architectural development of Volos," 360-363.
[300] 'The quest for the provenance of the common architectural characteristics leads back to the imperial buildings of Istanbul and to the provincial mansions of the administrative aristocracy. The relation between metropolitan models and local tradition has always been dialectical. So, despite the myth woven around the famous 18th and 19th century mansions in the Greek towns of Macedonia, Thessaly or even southern Greece and the Aegean islands, as well as in other Balkan or Anatolian towns, these are, in fact, no more than provincial manifestations of a supra-national architecture based on monumental models of exceptional quality. A bourgeois model, in its mature formation in the ottoman capital, has been copied totally or partially, radically or superficially, by landlords, Christian merchants, Muslim rulers, clergy, educators, and so on'. See: Kizis, *Houses in Pelion from the 17th to the 21st century*, 3.
[301] Adamakis, *The industrial buildings of Volos*, 56-58.
[302] Sifounakis, *Industrial Buildings in Lesvos*, 95.
[303] In the main production area, which is a large rectangular hall 22m long and 12m wide, the wooden roof is 13m wide without intermediate columns or supporting walls. The great cylindrical wooden beams (tabania) which support the roof are constructed from timber originating either from the Black Sea or from Mount Athos. See: Nikos Sifounakis, *Vranas Olive Press Museum, Parados, Gera, Lesvos* (Athens: Archipelagos Society, 2013), 52-66.
[304] Stylianou, *Greek Vernacular Architecture: Mount Pelion*, 109.

knowledge in industrial heritage conservation, care, maintenance, and traditional construction techniques.

Phase 3 – 1955 to present

The latest additions to the Glavanis Ironworks were built following the earthquakes of 1954 and 1955. During this period, the complex attained its current form. According to the most recent plans, it consists of twelve buildings and two yards close to the entrances of the site.[305] The layout of the buildings follows the production chain, helping us understand the way this industrial site functioned. The main activities were placed at the centre of the plot, for example the machine shop where different components would arrive in order for the final product to be assembled.[306] Additionally, the location of the tool making room (where bolts and screws were made) at the back of the plot kept the noisiest activity away from the main street.

The site's form is simple but ingeniously conceived to accommodate manufacturing processes. Rectangular buildings with pitched roofs and openings in line reflected the building technology of the time and ensured fire and workplace safety.[307] According to Konstantina Demiri and John Peponis, in the days before electricity, flooding workspaces with as much daylight as possible was of the utmost importance.[308]

[305] Ministry of Industry (Nowadays it is the Ministry of Economy and Development), ground floor plan, 25 February 1970, box 2254, folder 2252, Architectural Drawings, Archive of Glavanis Factory, Archives of Magnesia, General State Archives, Volos.

[306] Kouroumalos, former worker in Glavanis Ironworks, in discussion with the author, September 2017.

[307] 'The environmental conditions in all working premises, should provide safe and healthy conditions for employees, and for the quality of products. Safety problems are associated with hazards caused by unguarded and uncovered moving parts of machines, by handling heavy loads, by electricity and by fire and explosives. Measures to prevent these affect matters such as the workshop layout, the design of machines and equipment, and the planning of work. However, these preventive measures do not have a substantial influence on factory design apart from those associated with fire prevention and especially those related to compartmentation and structural prevention, which affect the articulation of spaces and the building materials.' See Konstantina Demiri, "A typological Investigation of Mill Buildings in Greece" (PhD diss, University of Edinburgh, 1986), 69; Nikos Belavilas, "The desiccation factory of Thessaly in the city of Trikala", 410.

[308] Konstantina Demiri, "The evolution of the architecture of industrial buildings in Greece since the end of the 19th century till today", *Arhitektonika Themata* no. 25 (1991): 57; Peponis John, "The Spatial Culture of Factories", *Human Relations* 38, no. 4 (Apr. 1985): 357-390; Alexandros Tobazis, "Architecture of Industrial Buildings in Greece", *Arhitektonika Themata* no. 25 (1991), 88.

Elongated buildings had open and unobstructed internal spaces to accommodate as many machines and workers as possible. Narrowness not only allowed light and air into the centre, but also efficiently enabled machines on both sides of the building to be powered from a single central shaft.[309] The form and shape of Glavanis Ironworks provide invaluable information about historic processes of manufacturing that have disappeared.

Seeing value in this building will be critical to its renovation. Although there are many reasons for the reuse of Glavanis Ironworks, its industrial aesthetic cannot be dismissed and is indeed crucial to the success of its redevelopment. Only by studying this building can one understand the evolution of industrial architecture in Volos and the district's distinctive landscape. The twelve buildings and the machinery, which could be returned to the site, form a significant collection of evidence demonstrating the historical development of the works from the 1890s onwards. Understanding how Glavanis Ironworks assumed its present form is crucial to the presentation of the building as a precious part of the nation's industrial heritage.

4.4.2 Economic value

The economic value of the Glavanis Ironworks is another important contribution to the significance of the historic site. The impact of the industry on the economic development of central Greece is documented here for the first time. This section will present how the selected company contributed significantly to the agricultural development of central Greece and to the transformation of Volos from a small town into an industrial and commercial powerhouse. It will investigate the impact of the Glavanis Ironworks on the economic development of central Greece from its early

[309] 'Natural ventilation is based on the combined effects of wind and temperature difference between the internal and external air of the building. It is affected by the general roof outline of the factory and the position, type and size of side windows.' See Demiri, "A typological Investigation of Mill Buildings in Greece". Furthermore, lighting is an important aspect of environmental conditions, which contributes greatly to feelings of comfort for employees. According to Jolyon Drury, 'a major interface between architectural and service design with an impact upon the basic building concept and probably affecting the choice of factory structure, roof design and building orientation'. See Jolyon Drury, *Factories: Planning, Design and Modernization* (London: The Architectural Press, 1981), 177.

years until its closure in the 1980s, including the most important waves of industrialisation in Greece.[310]

The primary productions of the complex were agricultural and farming machinery, targeting the country's most important economic sector.[311] The strategic position of the factory opposite the railway station and close to the harbour facilitated the import of iron from Belgium and Germany, as well as the trade of agricultural machinery via railway to the Thessalian plain. According to archival records presented here for the first time, the Glavanis Ironworks sold machinery to a wide range of clients in the cities of Larissa, Trikala, Karditsa, and Tyrnavos, as well as in Thessaloniki and Attica (Fig. 26). The factory also exported its products to Turkey and the Balkans.[312] Business initiatives included modernisation of technological and agricultural equipment, which along with an increase in agricultural productivity contributed to the agricultural reform of the Thessalian plain.[313] This evidence can inform possible future conservation and reuse of the factory. Understanding how the factory worked helps us to gain a better sense of its significance and to identify a new use that is compatible with the factory's identity.

It is not surprising that Glavanis Ironworks helped boost the city's development and was among the main factors leading to the industrialisation of Volos. During the interwar period, the progress of the company was rapid, and production included ploughs, harrows, and ginning machines (Fig. 27). By this time, the company owned

[310] Greek industrialisation is characterised by two main elements. Firstly, it is labour-intensive, as opposed to the British or American pattern of capital-intensive industrialisation. Secondly, the industry developed in Greece almost exclusively in certain cities – especially port cities – which formed islands of modernity surrounded by traditional countryside. We must also remember that the region of Thessaly became part of Greece in 1881, and here the contribution of agriculture was even greater than in the other territories, which in a way re-ruralised the country – at least in terms of national averages. See: Agriantoni, Interview.
[311] The mechanical equipment consisted of agricultural and farming machinery such as tractors, machinery for tillage, planting, seeding, fertilising, pest control, irrigation, harvesting, haymaking, produce sorting, loading, milking, grinding and mixing, wool pressing, and also windmill machinery. See: Iakovos Georganas, Evaluation of Glavanis Industrial Co. LTD Volos, 29 July 1959, box 68, folder 1, pp. 32-43, The Economic Development Finance Organization (OECD), Industrial Company Glavanis, Historical Archive of the National Bank of Greece, Athens.
[312] Kostas Glavanis and Michalis Kazazis, "Illustrated Catalogue: machine workshop Sfyra in Volos, founded in 1895, Agricultural Section," 1911, Glavanis Archive 266, General State Archives in Magnesia.
[313] Michalis Kazazis, "Delivering Binders in Greece," *The Harvester World,* Vol. 4, No. 12, ed. International Harvester Company (Chicago, December 1913): 24-25.

three industrial sites in Volos[314] and employed around 1,200 people.[315] The ability to recruit such a large number of workers demonstrated its economic importance in the local community and in the development of the region.

The ironworks' activities should be seen in the context of the relative conservatism of local farmers and the industrial sector in general. As early as 1900, Michalis Kazazis was already lamenting Thessalian farmers 'lack of awareness and insistence on retaining a 'primitive and antiquated farming method'.[316] According to his enlightening article published in the American journal 'Harvester World 'in 1913, it was very difficult to introduce new ideas or machinery amongst the farmers and local ironmasters, who preferred traditional methods.[317] As a result, it took some time before modern farming was introduced in Greece.[318]

The ironworks 'contribution to the local economy became much more important after the Second World War. Although the country was facing economic fluctuations, Glavanis contributed to post-war economic recovery and the improvement of the socio-economic status of the region.[319] This may be due to the fact that business knowledge and original patents used during the war were already in place to increase the production of various components such as ploughs, harvesters, harrows, cylinders, mowers, lawn mowers, shredders, and ginning machines.[320] Wooden ploughs were

[314] Including six departments: machine workshop, blacksmithing workshop, steelworks, foundry, saw mill, and screw workshop. In 1938, the headquarters moved to Athens so that they could be closer to the Greek political and economic centres (Address: 21, Akadimias Street). See General Mechanical Products SA 1936-1940, memo no. 3, 23 October 1939, box 23, folder 1, Industrial Company Glavanis, Historical Archive of the National Bank of Greece, Athens.

[315] During the inter-war period – when the greatest number of refugees from Asia Minor settled in rural areas – the Greek state systematically pursued a policy favourable to agriculture, in order to ethnically homogenise new territories. This contributed to the maintenance of an overpopulated, feebly productive agricultural sector with high rates of unemployment. See Agriantoni, Interview.

[316] Kazazis, "Delivering Binders in Greece", 24-25.

[317] Kazazis, "Delivering Binders in Greece", 24-25.

[318] Nitsa Koliou, *The Industry of Volos: Short references to the past and to the present* (Volos: Municipal Center for History and Documentation, 1994), 25.

[319] Nikos Tzafleris, "The role of the Greek military industrial production during the Greek-Italian war (1940-1941)," Paper presented at the *Economic and Social History International* Conference, Rethymno, 2008, School of Philosophy Press, University of Crete: 160-161.

[320] Industrial Company Glavanis S.A. to Greek Powder and Cartridge Company, 4 March 1941, Glavanis correspondence, Glavanis Archive 266, protocol no. 697, 709 and 749, General State Archives in Magnesia, Volos; More about Glavanis Ironworks' cooperation with the State Airplane Factory for the experimental manufacturing of airplane components at the Glavanis facilities. See: Industrial Company Glavanis S.A. to State Airplane Factory in Palaio Faliro, 4 March 1941, Glavanis correspondence, protocol no. 726, Glavanis Archive 266, General State Archives in Magnesia, Volos, also mentioning cooperation with the Hellenic Ministry of Shipping and Island Policy in the effort to build two steel casts for the Hydra "destroyer" («*η*

replaced with iron. Engine-powered machines (steam, diesel, and electric) suited to different tasks replaced human- and animal-powered machinery, while human-powered equipment was designed to meet pertinent ergonomic requirements. The application of such technology succeeded in enhancing and modernising Thessalian agriculture, forestry, and other related industries.

At this point, it is useful to mention the craftsmanship and high quality of training that was provided to the workers in Volos. In a letter to the Director at the National Bank of Greece, John Glavanis (son of Kostis Glavanis) emphasises the continuous training and skills development of the workers.[321] Compared to Piraeus and the rest of Greece, he reports that between 1968 and 1969 Volos benefited from an abundant supply of skilled craftsmen and labourers. Recovering these skills and professional knowledge might have an effect on the economic recovery of the building itself, and possibly on the city as a whole. Finding a new use that would help Volos regain its famed craftsmanship could help answer the third research question of this thesis.

Improvements in agricultural productivity and greater opportunities to engage in competitive markets created social and economic effects. With increased incomes, farmers could better feed their families, send their children to school, provide for their health, and invest in their farms. These investments could in turn spur the local economy, and farm surpluses could help expand food processing, distribution, and retail businesses.

The highest and most sustained production performance of the industry undoubtedly occurred between 1950 and 1975. This was a long period of peace and stability following the Second World War and the Greek Civil War (1946-49).[322] It was also a period of global growth known as the post-war economic boom. In Greece, reconstruction and very rapid urbanisation certainly favoured industrial development, as well as the expansion of infrastructure (including the national electricity network)

σημειωθείσα καθυστέρησις οφείλεται εις επανειλημμένας αποτυχίας χυτεύσεως, ως εκ των λεπτών τοιχωμάτων»). See: Industrial Company Glavanis S.A. to Hellenic Ministry of Shipping and Island Policy in Athens, 4 March 1941, Glavanis correspondence, Glavanis Archive 266, protocol no. 741, General State Archives in Magnesia, Volos.

[321] John Glavanis to Director of the National Bank of Greece in Athens, 17 May 1972, Glavanis correspondence, Glavanis Archive 266, General State Archives of Magnesia, Volos.

[322] Agriantoni, interview.

financed in part by the Marshall Plan. The 1953 currency reform ensured monetary stability, a beneficial factor for the economy as a whole.

The factory's productive capabilities, organisation, and knowledge were already recognised by the government and other agencies. According to previously unpublished sources, in 1951 Glavanis undertook the production of 6,000 pieces (agricultural tools, worth 1,115,000,000 drachmas) for the Ministry of Agriculture (Fig. 28).[323] This was possibly due to the fact that the industrial premises were located in a strategic position next to the Thessalian plain. The factory was able to cover much of Thessaly's requirement for agricultural machinery and tools, therefore playing a major role in the economic development of the region. This evidence is essential for mapping the significance of the factory and identifying the important role it once had.

John Glavanis himself did a lot to afford the factory this role.[324] Taking advantage of his political position and business connections, he strengthened the productive power of the factory. [325] The ironworks received funds through the Marshall Plan and the United Nations Relief and Rehabilitation Administration (UNRRA) agency. According to previously overlooked business documents identified by the author, the Glavanis Ironworks received material support from the Ministry of Supply, which was responsible for organising and distributing such assistance (Fig. 29). For example, in 1946 the ironworks received approximately 100 tons of steel bars in instalments.[326]

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[323] General State Archives of Magnesia, 29 January 1951, Glavanis correspondence, box 86, folder 2864, Glavanis Archive 266, General State Archives in Magnesia, Volos; and, Industrial Company Glavanis S.A. to Ministry of Agriculture, Contract for the Supply of Agricultural Tools Glavanis, Glavanis Correspondence, box 85, folder 2864, Glavanis Archive 266, General State Archives in Magnesia, Volos.

[324] The members of the Glavanis family belonged to the political, social, and business elite of Volos. In 1924 the company became anonymous, with founders Konstantinos, Evangelos, Athanasios Glavanis and Michalis Kazazis. The title was "Anonymous Industrial Company Glavanis SA", which later passed to the successors, John K. Glavanis and others. The activities of John Glavanis are dated mainly to the post-war period. He was repeatedly given the role of minister in various governments, for example Minister of Agriculture and National Economy (1945), Reconstruction (1947), Commerce (1951, 1965), and Minister of Industry (1951, 1966).

[325] Beyond industrial success, John Glavanis contributed to the implementation of various economic policies that would lead to much-needed local urban regeneration. During his career as a local political leader, he attempted to address the immediate social problems facing Thessaly, such as unemployment, the cost of living, and infrastructure requirements, thus gaining the trust and appreciation of his fellow citizens. Funding electricity and water projects, managing major infrastructure projects, and financially supporting institutions are a few examples of his contribution to Thessalian cities and villages. See: John Glavanis to Director of the Thessalia Newspaper, 8 October 1964, Glavanis correspondence, Glavanis Archive 266, General State Archives of Magnesia, Volos.

[326] UNRRA Iron sheets recording, 1946, box 83, folder 1984, Glavanis Archive 266, General State Archives of Magnesia, Volos.

This aid favoured the company's productive activity, enabling the entire process, from raw material to finished product, to be carried out in one place.

In summary, both the productive and commercial activity of the Glavanis Ironworks and the social activity of its owners indicate the scale and prestige of this enterprise as well as its importance for the Thessalian economy. By making the best possible use of available materials, patents, and the ingenuity of local engineers, this factory was able to enhance and promote the Thessalian economy. Finally, this industrial heritage site and its interaction with its surroundings prove to be vital components of the city's character, history, and identity. Its disappearance may therefore represent a far greater loss than an evaluation of its merit has so far suggested.

4.4.3 Technological value

The above investigation of the productive activities of the Glavanis Ironworks naturally leads us to examine another value of industrial heritage: its contribution to the development of manufacturing, engineering, and construction.

Glavanis has been among the very few Greek factories that have successfully met high expectations for development during industrialisation.[327] As Koliou reminds us, from its very beginning Glavanis Ironworks made rapid and outstanding progress.[328] Furthermore, one former factory worker describes during an interview conducted by the author that 'Glavanis 'was the first factory of its kind within Greece and the first one that laid the basis for further development of mechanical engineering in Volos. Its exports supplying both the Balkans and Turkey, in addition to Greece, led into technological advances and social development in central Greece'.[329]

In association with other old ironworks and machine shops in the immediate vicinity and elsewhere in the city centre, Glavanis illustrates the demand for machinery

[327] Steel production and processing in Volos began in the nineteenth century and was largely developed in the 1890s to 1960s. It developed into one of the main industrial sectors in an area known until then for its textile production. See Koliou, "The Industry of Volos: Short references to the past and to the present,"23-26.
[328] Koliou, "The Industry of Volos: Short references to the past and to the present," 25.
[329] Kouroumalos, in discussion with the author, September 2017.

production in the early- to mid-twentieth century. According to export records, in 1900 consumption reached 1680 ploughs per year in Greece and Asia Minor.[330] Between 1933 and 1935 the ironworks was expanding and establishing new fastening and foundry departments. The foundry was the first in central Greece that undertook the construction of military supplies and railway bridgeworks for the Greek army.[331] In 1930, the Glavanis company expanded their productivity by launching two new factories and increasing the number of workers to 1200.[332]

Development was enhanced by workers arriving in the city through a stream of internal migration and boosted from 1922 onwards by the arrival of refugees from Asia Minor.[333] In his investigation of the industrial history of Volos, Aris Tsalapatas, former owner of a brick factory, describes the scientific and economic significance of the local machine factories.[334] He explains that the rarity, quality, representativeness, and industrial consciousness of the machine factories in the area were based on the fact that the Thessalian Railways founded a technical school for craftsmen in order to repair railway wagons and steam engines. Exceptional craftsmen graduated from this school, making Volos an important centre of steel and mechanical engineering. Tsalapatas added that at that time, diesel engines were produced in Volos while ploughs were still being produced in Piraeus.[335] The Glavanis Ironworks serves to remind us of the pioneering role of Volos in the development of sophisticated tools.

The Glavanis Ironworks entrepreneurial initiative also included the modernisation of technological and agricultural equipment, which alongside the increase in agricultural activity contributed to agricultural reform on the Thessalian plain.[336] Production knowledge and original patents led the iron and steel industry to produce a variety of

[330] Koliou, "The Industry of Volos: Short references to the past and to the present," 25.
[331] This bridgework was a kind of makeshift bridge used during war time in 1941.
[332] Of a population of around 25,000 people in Volos in 1930, 1200 workers with their families is a considerable number demonstrating the factory's impact. See Koliou, "The Industry of Volos: Short references to the past and to the present.," 26.
[333] Nikos Tzafleris, "The deindustrialization in Volos: claiming the urban space between the historical machine workshops and the locals," Paper presented at the 5th Panhellenic Scientific Meeting TICCIH, Volos, November 22-25, 2007, Centre for History and Documentation, City of Volos: 447-576.
[334] Aris Tsalapatas, "Industrial Heritage: dedicated to Volos (1/2)," filmed June 2012, Volos, video, 13:42, https://www.youtube.com/watch?v=6Tsb1dc39gU.
[335] Piraeus is a large, bustling city and an integral part of Athens, home to the country's biggest harbour and bearing all the characteristics of a huge marine and commercial-industrial centre.
[336] Michalis Kazazis, "Delivering Binders in Greece," 24-25.

tools. The replacement of the wooden plough with iron and steel, the development of machinery from manual or animal engines to mechanical traction (steam, diesel, and electric), and the improvement of oil-powered machinery led to the modernisation of traditional agriculture, making the Glavanis Ironworks among the most influential engineering companies in central Greece.[337]

Finding a way to successfully reuse all aspects of a building's stock, including machinery, is among the priorities of functional restructuring and adaptive reuse of industrial heritage. Although the mechanical equipment of Glavanis Ironworks was removed and sold after closure in the early 1980s, a few pieces of early agricultural machinery have been revealed during the author's field work. [338] The author found rare ploughs and hand water pumps produced at the factory of Glavanis. This discovery, made in both Trikala and Larissa, confirms the contribution of the ironworks to the agricultural development of the Thessalian plain. Reintroducing the machines to the factory site may be an opportunity to preserve the place's intangible aspects of skills and knowledge. Thus, repairing historic machinery would prove an excellent example of a proactive approach to securing its precious technological value.

4.4.4 Social value

The decision to reuse the industrial heritage of Glavanis Ironworks is also linked to the challenge of preserving a building with a commemorative role, giving the local community a sense of their identity and place in the nation. As expressed by Kareklidis and Koutseris, the existence of industrial heritage shows how people have responded to technological change and cycles of industrial growth or decline over the decades.[339] Personal memories that remain etched in the grandparents 'mind are mainly linked to

[337] Kormazou, *Michalakis Kazazis:1850-1938*, 29-32.

[338] In the engine room there was a Marshall diesel engine; in the machine workshop's hall there were drills, lathes, and a revolver; in the foundry hall there were melting and drying furnaces and a crane; in the screws hall there were drills, presses, and many other pieces of equipment. See more in: Archival document, 94:2 verso, Advertisement Glavanis; Glavanis S.A., Oikonomopoulos contract 125527/16.8.1929 showing the condition of the newly built premises, archival item code: 1/68/11/1, Glavanis Archives, National Bank of Greece's Historical Archive, Athens.

[339] Kareklidis and Koutseris, "Mills, ironworks and tobacco shops have boosted the local economy," *The Industry of Volos, Yesterday and Today*, special edition Magnesia Newspaper (2013): 29-32.

the craftsmanship and intensity of that era in Volos. A former worker, during an interview conducted by the author, stated that '…when the workers were done with their shift they would crowd the streets, there were thousands of people walking and hanging around to the point that it could take several minutes just to cross a street, this created a truly extraordinary vibe for the small city of Volos…'[340] This description emphasises the presence of industrial production in the city's identity and everyday life.

The local community of Volos used to appreciate the contributions of Greek industrialists, engineers, craftsmen, and labourers, linking their names to powerful expressions of economic development, success, and progress.[341] Furthermore, the owners of the factory were politically active. Glavanis was mayor of Volos for seventeen years (1908-1925), winning a series of consecutive elections. Kazazis, the factory's co-owner, general manager, designer, and staff trainer, was also a prominent member of the community and was appointed National Representative of Greek Manufacturers in England in 1911.[342] These roles reflect the political engagement, power, and influence of industrialists such as Glavanis and Kazazis.

At this point, the importance of the labour movement in Magnesia should be emphasised. In 1908, Volos saw the formation of the Labour Centre, giving birth to the modern trade union movement and to one of the first subversive social clusters in Greece.[343] The trade union actively attempted to effect change by opposing certain working practices, and by demanding improved working conditions, better pay, or

[340] Kouroumalos, former worker at Glavanis Ironworks, in discussion with the author. September 2017.
[341] On the day following Mr Kazazis's death, June 10th 1938, the local newspaper published an article under the title: 'Special honour to the man who put his knowledge in service to the city and community', thereby showing the people's admiration and appreciation. See Kormazou, *Michalakis Kazazis:1850-1938*, 59-62; Annita Prassa, "The industrial Development of Magnesia. A Historical Retrospective. Towards deindustrialization," *Argo* Seminar Proceedings (Volos: General State Archives, Archive of Magnesia, 1998), 131-144
[342] The owners of such industrial buildings were part of the business elite and were one of the driving forces in the community of Volos until 1940 when the first economic crisis began. See Kormazou, Michalakis Kazazis:1850-1938, 43. The economic change and following industrial development had a direct impact on new social classes and changed social structure. See: Tzafleris, "The deindustrialization in Volos: claiming the urban space between the historical machine workshops and the locals," 448-449.
[343] The Labour Centre attracted intellectual demotists, socialists, trade unionists, and labour anarchists, providing them with a fertile ground for readjustment after the Greco-Turkish war of 1897. See: Charitos, "The first statute of the Labour Center in Volos," 12-13.

more benefits. Between 1910 and 1914 labour laws were passed allowing working-class men to have a vote and a voice in politics for the first time.[344]

The name of Glavanis Ironworks is historically linked to this protection of the common interests of workers. One of the earliest recorded strikes in Volos occurred in 1909 when workers from Glavanis demanded better wages, reasonable hours, and safer working conditions.[345] The organisation of workingmen's parties, strikes, and events by the Labour Centre marked the beginning of sustained trade union organisation among industrial workers.[346] This early labour movement, inspired by more than just the immediate interest of Glavanis Ironworks employees, fostered social equality and celebrated honest labour, enhancing the social value of the selected case study (Fig. 32).

To summarise, this social background is crucial for the research and greatly influences interpretations of the site, as it allows the Glavanis Ironworks to be examined from a much broader perspective. The social relations associated with Glavanis Ironwork help us understand the processes affecting the building's ruination. The strong tradition of local social engagement is a crucial factor that should be considered when deciding on a new use for Glavanis Ironworks, supporting the building's variety, character, and sense of familiarity.

[344] Michalis Koundouris, "The creation of the Labour party and the contribution of the Labour's movement of Volos," *En Volo*, no. 30 (July-September 2008): 88-91.
[345] Ilias Lefousis, "Drums of 1909," *En Volo*, no. 30 (July-September 2008): 30-31.
[346] Also, decline in manufacturing industries in the city as a whole meant a shift in the type and nature of jobs towards piecemeal, flexible, and largely non-unionised labour. Thus, community residents together with workers have been the main actors in local struggles over processes of social and economic change. However, due to deindustrialisation the workers' collective actions have eroded over time, and the community spirit of contestation was all that remained of the industrial worker's past. As a result, their shared industrial history has been in decline for over forty years. See: Stavros Katsouras, "The 'Februarians' of 1921," *En Volo*, no. 30 (July-September 2008): 42-49.

4.5 Statement of Significance

Briefly, the city of Volos contains industrial structures and buildings of enormous aesthetic and historical value that preserve invaluable information on the industrial era in Greece. The industrial sites and remains of standing structures seen by locals and visitors today were originally a creation of the 'Piliorites', traders and craftsmen who established their trade many years before constructing the city of Volos.[347] The study area is one of the very few surviving places in the city centre that belong to this lengthy industrial tradition. However, Glavanis Ironworks is principally the product of development from the first few decades of the twentieth century onwards. It reflects the growing importance of iron and metal industry in this period and is representative of other similar factories that were to be found within the city fabric.

Glavanis Ironworks is therefore an outstanding landmark that plays an integral role in Volos's industrial identity. Exemplifying a process of industrial settlement and development, it is significant in both local and national contexts. Marking a change from the small individual businesses and handicrafts of the early- to mid-eighteenth century to the massive industries of the later nineteenth to twentieth centuries, it helped to develop trade and had a substantial impact on the economic and spatial development of Volos. It symbolises an expansionist period and is a focal point for understanding industrial heritage and its objectives, it displays key aspects of industrial philosophy and the social structures which produced it, and in conjunction with other industrial sites in Volos, Glavanis Ironworks demonstrates aspects of the Greek industrial system.

The surviving building was one of the pre-eminent industrial factories in Volos, belonging to an iconic firm whose products and marketing were easily recognisable. The building was constructed during the early stages of Volos' industrialisation and is one of a group of similar buildings that remain within the city fabric. It is largely intact and still expressive of its original utilitarian purpose. Glavanis Ironworks has a very significant role to play in a largely intact industrial townscape of the later nineteenth and early twentieth centuries. It is the most imposing structure in the area and makes

[347] Piliorites were the locals coming from Mount Pelion who moved in the beginning of 19th century from eastern and southern Pelion to the castle area close to the port, where they would build Volos and transform the place into the most prominent industrial city in Greece during the interwar period.

a major contribution towards defining the historic role and character of this part of Volos. Along with the train station on the opposite side of Papadiamantis Street it creates a monumental entrance to the city.

The factory also has some cultural value relating to its rarity: very few other buildings survive from this period in Volos. It retains much of its original fabric and demonstrates several aspects that are relevant to the development of Volos and to ironworks in general. The place retains a high degree of integrity and authenticity, offering exceptional scientific research potential related to its architecture and other material culture which can provide valuable insight into the industrial experience. Additionally, the oral tradition, documentary evidence, collections, structures, features, and landscape have great potential for research and community education. Glavanis Ironworks is a landmark site in the history and development of Greek industrial heritage philosophy and practice.

4.6 Issues and opportunities

Following an analysis of the historical background and a recognition of the cultural significance of Glavanis Ironworks, this section will now identify its issues and vulnerabilities.

Heritage value

It is almost four decades since Glavanis Ironworks was shut down, and although it has great historic interest and visual character, it remains in a derelict condition. The building's sensitivity to degradation could over time further impact upon local appreciation of the site and memories of its primary function. Although it is abandoned, its cultural significance remains very high, justifying an urgent call for conservation and reuse. As previously mentioned, the ironworks is protected under Scheduled Modern Monument legislation and some of its structures are also listed by the Ministry of Environment and Energy in Greece. This supports the preservation of its overall significance. Consent is required for any building alterations, and as a result only sympathetic or minimal changes to the existing structure would be allowed in order to maintain or enhance its heritage significance.

Minimal changes would be required to reuse the manager's office and warehouse structures. As identified earlier, the forge shop, the machine shop, the manager's office and the warehouse have high historic, architectural, and technological value and need to be maintained. In order to make these buildings usable again, their shells and interior sections should be conserved, and any damaged sections should be reconstructed to their original form. More substantial changes would be needed in the tool making room and the foundry, but it would nevertheless be vital to preserve any surviving masonry, openings, or decorative features which would maintain their historic character. In general, structures with higher significance would be less adaptable to change than those with low or neutral significance. As the main goal is the sustainable long-term reuse of this historic industrial site, interventions that are sympathetic to its historic character are recommended.

Condition of redundant buildings

There are several main problems with the stability and condition of the site. Firstly, many of the current buildings have no roof or covering, which makes them vulnerable to the weather. Moreover, most of the existing structures do not have floors, which compromises the stability of the walls.[348] Animal infestation, health and safety issues, and fire hazards are also among the problems which make it unsafe.[349] Vegetation growing in the plot and out of the historic fabric could also lead to further structural deterioration. Currently the walls are generally sound, but all the aforementioned problems will cause further loss or degradation (Fig. 34, 35, 36).

The derelict condition of the site prevents its full appreciation. If the building is repaired, and until completion of the project, security measures should be taken. Reuse activities would help to make the wider area both more secure and better appreciated.

Use

Even though Glavanis Ironworks is a prominent landmark and an important historic monument for Volos and for Greece, preserving it solely as a heritage attraction would not be a viable solution for the local economy. Although its use as a heritage attraction would be sympathetic, it would not utilise the embedded values related to the original function, nor would it revitalise the city's economy. An appropriate adaptive reuse would enhance the site's significance as well as regenerate the surrounding area or city centre. Such an approach towards the adaptive reuse of the selected industrial site would incorporate the indicated values and attributes analysed earlier in this chapter.

These derelict buildings are a major regeneration opportunity. An innovative approach could release the property into the community and bring the site back to life. The

[348] This refers to the ability of the floors to connect the walls enhancing their 'group behaviour' during earthquakes. See more in: Pampanin Stefano, "Towards the 'Ultimate Earthquake-Proof' Building: Development of an Integrated Low-Damage System," in *Perspectives on European Earthquake Engineering and Seismology*, edited by Ansal A., *Geotechnical, Geological and Earthquake Engineering*, vol 39. Springer (2015): 321-358.

[349] Graffiti can be seen in a few areas on the property and there is evidence of drug use. Site safety is affected by the fact that the building is not on a well-frequented road, or well-lit at night. Fortunately, the author observed during her latest visit to the site that appropriate measures have recently been taken. A metal fence has been built around the plot, securely protecting it from any further risks.

Municipality of Volos previously considered converting Glavanis Ironworks into new town hall premises. However, this option was rejected due to municipal budget shortcomings. Therefore, there is still an opportunity to find a cohesive use for the site that can encompass the whole complex and prevent any further loss or harm of historic fabric.

Engagement and understanding

The restoration of Glavanis Ironworks represents an excellent opportunity for the local community to engage with the process of converting a local historic monument. Restoration works could offer specialist training in conservation work. This would allow people to learn from conservation professionals and get involved in guided tours, lectures, workshops, and other volunteer-run projects. Local community members and visitors would have the opportunity to learn and engage with the local industrial heritage as well as realise and promote the social value of the site. Through carefully considered and located interpretation panels, the history and significance of the site could be further explored and presented.

Ownership and Management

The site is currently owned by the National Bank of Greece. It has not been well managed in recent years and is currently at risk. Its destiny will not change unless the Municipality of Volos, a foundation, or a private investor buys the property and funds its transformation.

Management

These recommendations aim to guide the conservation, repair, and revival of the Glavanis Ironworks by providing a thorough understanding of its history, significance, and problems. The measures are to be adopted by Volos' City Council and the future tenants of the building (if applicable), as well as consultants and contractors working on the building. It will be the responsibility of the municipality or building manager to ensure that a conservation and management plan is disseminated to all relevant stakeholders.

In summary, the current challenges of Glavanis Ironworks as well as those affecting the delivery of industrial heritage services in the city of Volos, are identified through a SWOT (strengths, weaknesses, opportunities, threats) analysis below:

STRENGTHS
• Importance and quality of remaining industrial assets • Designation of many buildings as Scheduled Modern Monuments • Reuse of industrial buildings by the University of Thessaly and the City Council • Interesting conversion case studies of the Rooftile and Brickworks Museum N. & S. Tsalapatas and the Museum of the City of Volos • Proximity of the industrial network to the city centre

WEAKNESSES
• Lack of skills and guidance to assist with the conservation of industrial heritage • Low levels of awareness and recognition of the importance of industrial heritage • Lack of up-to-date information on industrial heritage assets accessible to interested stakeholders • Limited sources of public funding or private investment to support industrial heritage projects • Limited experience in delivering and managing heritage-led regeneration projects

OPPORTUNITIES
• Use of this thesis as a guiding plan by Volos City Council to help identify actions and priorities for efficient industrial heritage transformation • Develop training practices and collaborations with academics that will help develop relevant industrial heritage skills and knowledge • Develop shared understanding and recognition of the special character of industrial heritage • Improve community engagement and expand collaboration with new stakeholders • Develop an industrial heritage strategy that will protect and promote industrial heritage as a whole • Celebrate best practice of industrial heritage preservation and reuse that could influence other projects as well as attract investment and visitors

THREATS
• Balance between the preservation of the authenticity of the historic industrial monuments and development • Failure to appropriately educate and train people that may lead to further damage to the character of the industrial building after conversions • Inability to protect industrial heritage that is at risk, such as Glavanis Ironworks, leading to further decay and loss • Inability of the lead enforcement team to effectively manage key stakeholders and proactively oversee industrial heritage conservation and reuse

4.7 Summary

This chapter has systematically analysed the overlooked significance of Glavanis Ironworks in Greece. Both the assessment of the associated values and the identification of related issues reflect the potentials and challenges of this abandoned industrial structure. Explaining what is significant and why, this chapter provides a basis for further analysis of how these values could be integrated into the future preservation and reuse of industrial heritage in Volos

In view of its location and value, the Glavanis Ironworks should not be an abandoned industrial complex representing a lost industrial process. It is a site which materially contributes to the cultural heritage of Volos, but the large scale of the complex presents a formidable challenge for adaptive reuse. In the following chapters the opportunity for adaptive reuse will be discussed in a proposal that respects the history, physical evolution, cultural significance, and conservation potential of this important heritage site.

CHAPTER 5 – APPRAISING THE EXISTING REHABILITATION PRACTICES IN VOLOS

Following the evaluation of Glavanis Ironwork's significance, this chapter analyses how the historic factories of Volos have been reused in the last forty years. It also investigates whether the new uses and building alterations have protected or enhanced their cultural significance. In order to do this, the chapter will examine some of the most important industrial buildings of Volos, as well as paying attention to the regeneration strategies of the city as a whole.

5.1 Introduction

Since the early 1980s there has been a trend of vacant industrial property reuse in Volos. However, guidance on how to assess the significance or select a new use of an industrial building has been limited. Only in the past few years have conservation professionals and government officials acknowledged that historic industrial sites are being designated with limited appreciation of the qualities that require protection.[350] Heritage experts have also expressed concerns about the arbitrary nature of the designation process and the inadequacy of subsequent management measures.[351] We should therefore ask whether existing reuse approaches in Volos have in fact been able to maintain these buildings 'industrial identity as well as regenerating the city centre.

Numerous forms of reuse are found in Volos. Industrial buildings have been transformed into educational buildings, museums, commercial centres, and exhibition spaces. It seems that culture and entertainment have often been an essential component of local (and national) urban regeneration projects.[352] Although this approach has led to a slight increase in tourist numbers, has it always managed to protect the various industrial heritage values? To answer this question, it is necessary to consider the implications of these approaches for the authenticity of industrial

[350] Dimitris Dervenis, "The reuse and exploitation of the industrial buildings", 1-4.
[351] Vilma Hastaoglou, "The re-use of historic buildings that is a matter of concern," *En Volo*, no. 32 (January-March 2009): 34-39.
[352] Tourism is an increasingly common reason for changing the function of industrial sites in Greece.

heritage as well as their urban, social, and economic impact. Considering these implications is necessary for answering the research question regarding the limitations of current reuse approaches. At this point it should be noted that publications about industrial heritage in Volos are very few, and that those which do exist are fragmented and limited solely to historical descriptions. Publications relating to industrial building restoration strategies are almost non-existent. Therefore, the author will appraise projects of reused historic factories on the basis of her own site surveys and evaluations of their condition or conversion.

5.2 Existing initiatives concerning conservation and reuse

The reuse of abandoned industrial sites constitutes a notable initiative of the local government in Volos, with the support of the private sector. The municipality's early actions towards rehabilitation, dating back to the 1980s, demonstrated an urgent need to utilise the city's architectural resources effectively and provide space for new services.[353] Redundant industrial buildings in Volos were suitable for reuse because of their favourable size and location within the city. Their 'open', partition-free interiors were convenient for the accommodation of diverse new uses.

Based on a recent survey of industrial structures, 53 were scattered across the city, composed of 620.000sq.m. of open spaces and 270,000sq.m. of built spaces (Fig. 37).[354] Today, 38 (72%) of these factories have been rescued from demolition and 22 (58%) have been restored and reused. The renewed spaces have been converted into museums (17%), educational premises (29%), residential sites (5%), public and administrative services (5%), commercial centres (5%), and mixed-use spaces (39%).[355] These efforts indicate the city's support for the preservation of its historic factories and a desire to re-integrate them into the urban fabric.

[353] Adamakis, *The industrial Buildings of Volos*, 9 - 11.
[354] Kostas Adamakis, "The exploitation of industrial heritage as a lever for the region's development," *En Volo, Industrial Heritage in Magnesia*, no. 23 (Oct-Dec 2006): 44.
[355] Adamakis, "The exploitation of industrial heritage," 44 - 51.

Since the 1980s, the University of Thessaly has played a major role in the reuse of Volos 'redundant factories.[356] It has bought large industrial complexes, which together with other preserved buildings now constitute the 'university grid 'of Volos. Among these complexes are the Paparigas Steel Industry, housing the Schools of Architecture and Engineering; the Papastratos Tobacco Warehouse, housing the Central Administration and the Department of Pedagogy; the Matsagou Tobacco Factory, accommodating the School of Economics; and the Matsagou Tobacco Warehouses in Nea Ionia, where the School of Agriculture is located.[357] This contributes to the integration of the academic community as well as to economic growth supported by various academic activities.[358] According to Pantelis Lazaridis, the university has used the academic population and city infrastructure to solve a number of problems, both practical and social, without any expense.[359] He states that these buildings are the beating heart of the city once more.[360] On the other hand, he admits that no conservation plan has been made that would promote the architectural, commemorative value of these properties or their precious industrial identity.[361]

While the University of Thessaly was rediscovering the city's redundant factories, the Municipality of Volos bought and restored the large complex of the Herman Spierer Tobacco Warehouses. The complex was then converted into the Municipal Town Planning Office and the Municipal Centre for History (Fig. 38). Following this first reuse strategy and understanding the urgent need for urban renewal, the Municipality of

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[356] Undertaken by municipal administration with the help of the city's representatives - TEE, Association of Architects, 5th Ephorate of Modern Monuments, local press etc. See: Vilma Hastaoglou, *Volos: Portrait of the city*, 209.

[357] In total, with the re-use of 13 factories, it contributed around 100 acres of renewed land area for public use and over 27,000sq.m. of renovated buildings for public and shared functions. See: Hastaoglou, *Volos: Portrait of the city*, 209.

[358] Kostas Adamakis, 'The exploitation of the industrial heritage of Volos. A successful reuse experiment,' Greek Architects, Accessed 8th June 2019. https://www.greekarchitects.gr/gr/%CE%B1%CF%81%CF%87%CE%B9%CF%84%CE%B5%CE%BA%CF%84%CE%BF%CE%BD%CE%B9%CE%BA%CE%B5%CF%82-%CE%BC%CE%B1%CF%84%CE%B9%CE%B5%CF%82/%CE%B7-%CE%B1%CE%BE%CE%B9%CE%BF%CF%80%CE%BF%CE%AF%CE%B7%CF%83%CE%B7-%CF%84%CE%B7%CF%82-%CE%B2%CE%B9%CE%BF%CE%BC%CE%B7%CF%87%CE%B1%CE%BD%CE%B9%CE%BA%CE%AE%CF%82-%CE%BA%CE%BB%CE%B7%CF%81%CE%BF%CE%BD%CE%BF%CE%BC%CE%B9%CE%AC%CF%82-%CF%84%CE%BF%CF%85-%CE%B2%CF%8C%CE%BB%CE%BF%CF%85-id3025.

[359] Pantelis Lazaridis, "University of Thessaly. A prehistoric memorandum," *En Volo*, no. 29 (April – June 2008): 84.

[360] Lazaridis, "University of Thessaly," 85.

[361] Lazaridis, "University of Thessaly," 85.

Volos then participated in the URBAN Community Program I (1994-99), a European initiative for the revitalisation of degraded areas.[362] Major factories were restored and reused, including the Tsalapatas Rooftile and Brickworks Factory, which was transformed into an industrial museum and cultural centre; the former Electric Company (Fig. 39), now used as a Theatre and Municipal Dance School; the Adamopoulos Industrial complex, transformed into a sports centre; and the Silk Factory Etmetzoglou, now a cultural centre. According to Adamakis, the benefit of these conversions has been enormous as they have transformed and regenerated degraded inner-city areas.[363] From an opposing viewpoint, Hastaoglou states that although the buildings 'conversions have clearly created a livelier atmosphere, conservation failures and weaknesses have severely threatened the maintenance of the city's industrial architecture.[364] It seems, according to Hastaoglou, that these architectural conservation weaknesses and improvisations are largely due to a lack of relevant experience.

[362] The URBAN I Community Initiative was launched in 1994 as a response to the challenges facing Europe's towns and cities: high unemployment, risk of social exclusion, and a neglected physical environment. According to the post-evaluation report of the Urban Initiative 1994-99, a significant factor that hindered the effectiveness of the URBAN program was a change in leadership of the municipality after the 1998 local elections. See: GHK, *The ex-post evaluation of the URBAN Community Initiative 1994 - 1999, Final Report to European Commission, DG Regio*, (Brussels: GHK for European Commission, 2003), 37 - 38

[363] Adamakis (2019), 'The exploitation of the industrial heritage of Volos.'

[364] Vilma Hastaoglou, "The physiognomy and features of Volos," *En Volo*, no. 22 (July - September 2006): 93.

Table 3. Designation and reuse of redundant industrial buildings in Volos						
Name of Industrial Building	**Year of construction**	**Year of designation**	**Values selected when designated**	**Current Owner**	**Former Use**	**New Use**
Hermann Spierer	1926	1985	Architectural and social value	Municipality of Volos	Tobacco warehouse	Conference and exhibition centre, municipal services
Paparigas	1889	--	No values identified during designation	University of Thessaly (took ownership in 1987)	Steel industry	University Premises, School of Engineering (opened in 1990)
Papastratos	1926	--	No values identified during designation	University of Thessaly	Tobacco warehouse	University Premises, central administration (new use in 1989)
Mourtzoukos	1908	1996 (5th Ephorate of Modern Monuments)	Architectural, townscape and historical value	Municipality of Volos	Textile industry	Second chance school, educational centre and library
Tobacco Factory and Warehouse Matsagou	1890 and 1967 respectively	2006	Architectural, historic, commemorative, social, economic and technological value	University of Thessaly	The final decision of the Central Archaeological & Museum Council supported the partial preservation of the façades	University premises, Department of Economics and Agriculture respectively
Rooftile and Brickworks Factory Tsalapatas	1926	1995 (machinery in 1997)	Architectural, historic, commemorative value	Municipality of Volos (took the ownership in 1995) (URBAN II – Conservation by DEMEKAV, GEK TERNA and later by PIOP)	Rooftile and brickworks factory	Museum of Industrial Archaeology, conference and exhibition centre (opens in 2006)
Papantou Tobacco Warehouse	1920	--	No values identified	Municipality of Volos		City Museum of Volos (opens in 2014)

			during designation			
Adamopoulos Tobacco Warehouse	1940	--	No values identified during designation	Municipality of Volos	According to legislation (4608/71-8-1995 ΦΕΚ 669Δ') uses in the area may include housing, hostels and tourist facilities	Sport Centre
Electric Company in Volos	1911	1994	Architectural, townscape, commemorative value	Municipality of Volos	Electric company	Dance school, centre of multicultural theatre
Strychnine Production Plant	1922	--	No values identified during designation	Municipality of Volos	Restoration and change of use took place in 1995	Health Organisation and municipal centre
Karagats Tobacco Warehouse	1959-61	--	No values identified during designation	Municipality of Volos (in 1993 took the ownership)		Sport centre
Fertiliser industry	1963	--	No values identified during designation	Municipality of Volos	DEMEKAV supported towards reuse, URBAN II	Centre of energy applications
Tobacco Warehouse (in Oxigono district)	1926	--	No values identified during designation	Municipality of Volos (in 1994 took the ownership)	French tobacco company	Municipal School of Applied Arts, Municipal vocational training institute
Etmetjoglou	1924	Designated as listed by the Hellenic Ministry of Environment and Energy (ΦΕΚ 4/ 17-11-1995)	No values identified during designation	Municipality of N. Ionia (in 1996) URBAN II	Silk factory	Cultural centre, multiple leisure facilities

Source: M. Dimitriou 2019

5.2.1 Processes involved in identifying and designating industrial heritage

At this point it should be noted that in Greece, industrial heritage conservation and rehabilitation is preceded by designating a site or building and giving it the title of a 'preservable building '(in Greek 'διατηρητέο').[365] This is a binding protective measure given by heritage advocates to these properties and enforced by various bodies such as planning agencies, governments, and non-profit organisations.[366] The decision to designate a building is the strongest regulatory administrative act designed to protect and promote it and, therefore, it is the guiding system for preservation, protection, and reuse.[367] The designation decision and justifications are disseminated by the Government Gazette following the explanatory report of the relevant service and the

[365] Nikos Kallogirou, *Modern Greek Architecture no 5. Preservable: Building Rehabilitation – Reuse* (Athens: Malliaris Paideia, 2003); Nikolaos Triantafillopoulos, *Restoration and reuse of listed buildings. Institutional and economic dimensions.* (Hellenic Company of Environment and Culture, Architectural Heritage Council, Protection of Traditional Settlements and Contemporary Architectural Design - Conference Proceedings, 2015); Charalambos Bouras, *Notes of the course Restoration of the Monuments I*, (Athens: NTUA, 1983); Nomikos, *Restoration - Rehabilitation of Monuments,* 2001.

[366] Industrial heritage is considered a subcategory of cultural heritage and there is no specific evaluation process or list of criteria for industrial buildings. The evaluation process is the same in all cultural heritage types. See: Law 3028/2002, Government Gazette 153/28.6.2002, For the Protection of Antiquities and Cultural Heritage in general.

[367] During the 1980s, national interest in the preservation of the country's industrial heritage increased. One of the most important steps to stimulate this interest was the publication of the Technologia magazine by the Hellenic Bank for Industrial Development (ETVA), which was then a Public Benefit Foundation. (The ETVA, founded in 1981, is the forerunner of the Piraeus Group Cultural Foundation which is now investing in the conservation and reuse of industrial sites in Greece).
During the same period, the Hellenic Ministry of Culture established the Directorate of Folk Culture and local Ephorates of Modern Monuments were encouraged to make the development of redundant industrial monuments one of their objectives. See: The Ministry of Culture, Industrial Archaeology, TAPA, Athens 1989 and Ministry of Culture- DIPLAP- Ephorates of Modern Monuments, Industrial Monuments of Greece, Athens 1995.
Furthermore, the first conference on Industrial Archaeology organised by the magazine 'Archeologia', and the establishment of the Greek Department of TICCIH in 1992 created links between governmental and non-governmental bodies, under the initiative of the Centre for Neohellenic Research and its first president Vasilis Panagiotopoulos. During 1994-1997 the TICCIH Greece also published a Bulletin with 5 issues. For the conference, see: Archaeology 18 (Feb. 1986), pp. 8-62. The conference was held following the development of a new listing program for industrial buildings, and was a powerful demonstration of the reuse of such buildings at a time when their deteriorating condition, lack of statutory protection, and increasing redundancy were leading to significant losses up and down the country. Documentation for research programs or individual initiatives has been developing ever since. For the earliest examples, see: Industrial buildings in Lesvos, 19th and early 20th cent. Olive Oil-Soap industries, Prefecture of Lesvos, Lesvos 1986.
For recent and systematic studies, see: Konstantina Demiris, The Greek Textiles, Cultural and Technological Foundation of ETVA, Athens 1991; Kostas Damianidis, Hellenic traditional naval architecture, Cultural and Technological Foundation of ETVA, Athens 1996; Zapheiris Vassos-Stefanos Nomikos, Windmill in the Cyclades, Dodoni, Athens 1993.

Central Council for Architecture.[368] [369] According to Dr Marina Karavasili, legislatively there is very limited and superficial guidance on industrial heritage significance, and the assessment of historic buildings' features is inadequate and not fully justified.[370] On the other hand, Paliouras believes that this criticism is unfounded: the explanatory statements, including reports, photographs, and charts, specifically address the various values and use them as the basis for a decision.[371] However, a thorough investigation of the national Gazettes linked to designated industrial buildings in Volos confirms that the significance is illustrated through a brief reference to values without any further description or explanation.[372] Access to the primary explanatory report is not possible, as these documents either no longer exist or have been lost.[373]

This raises a concern about whether these brief reports or explanatory statements have still guided conservation and reuse decisions in Volos. A preliminary answer to this question may be given by Gagas, who believes that the conservation of industrial buildings in Volos has not been a transparent process and has not involved guidance or judgement by professionals during the process of repair.[374] Regarding reuse, selection of new uses has been made following the city's intention to meet political or

[368] The Government Gazette is the official journal of the Government of Greece which lists all laws passed in a set time period ratified by Cabinet and President.

[369] The Explanatory Report expresses and justifies the Office's intention to classify an element as preservable. The report may include historical data, architectural and urban descriptions, recording of phases and uses, photographs of the exterior and interior of the building and the surrounding space, topographical plans, and any ownership information. See: Konstantinos Parthenopoulos et all, "Preservable Buildings and Elements in Human Environment," 31.

[370] Marina Karavasili, *Management of industrial heritage in Greece. Twenty years' experience and modern perspectives in configurating cultural resources* (Athens: University of Athens, 2005), 7, https://www.greekarchitects.gr/site_parts/doc_files/69.13.06.pdf.

[371] Dimitris Paliouras, in discussion with the author, September 2017.

[372] See: Ministerial Decision ΥΠΠΟ/ΔΝΣΑΚ/42536/1174/1-6-2006 published in the Official Gazette 816/Β/04.07.2006 under which the Matsagos Tobacco Factory in Volos was designated as a historic preservable monument; Ministerial Decision ΥΠΠΕ/ΔΙΛΑΠ/20387/1282/6-5-1985 published in the Official Gazette 322/Β/24.05.1985 under which the Train Station in Volos was designated as a historic preservable monument; Ministerial Decision ΥΠΠΟ/ΔΙΛΑΠ/Γ/1779/29954/5-6-1995 published in the Official Gazette 593/Β/07.07.1995 under which the Tsalapatas Rooftile and Brickworks Factory in Volos was designated as a historic preservable monument; Ministerial Decision ΥΠΠΟ/ΔΙΛΑΠ/Γ/3059/54345/2-11-1994 published in the Official Gazette 864/Β/22.11.1994 under which the Old Electric Company in Volos was designated as a historic preservable monument; Ministerial Decision ΥΠΠΟ/ΔΙΛΑΠ/Γ/1769/2878/27-11-1995 published in the Official Gazette 68/Β/31.01.1996 under which the Mourtzoukos Factory in Volos was designated as a historic preservable monument;

[373] This conclusion was drawn after multiple visits and official applications which failed to provide access to designation records at the Ephorate of Contemporary and Modern Monuments of Thessaly.

[374] Giorgos Gagas, Head Manager of the Municipal Development Company SA, in discussion with the author. September 2017.

governmental needs.[375] According to Hastaoglou, this has led to dramatic changes, making industrial buildings vulnerable to interventions which alter their original image and interpretation.[376] Therefore, it can be argued that the listing, conservation, and reuse processes of industrial buildings in Volos have overlooked some aspects of these buildings 'significance.

Greek industrial heritage documentation is a rather recently introduced process, including collaboration with international organisations such as the International Committee for the Conservation of the Industrial Heritage (TICCIH).[377] An evaluation of publications over the last 30 years leads to the conclusion that there have been interesting attempts, not only in Volos but also in the rest of Greece, to record and rescue industrial buildings and sites, although these remain relatively few and randomly assigned. Among the most notable cases are the Open-Air Water Power Museum in Dimitsana (Peloponnese); The Museum of the Olive and Greek Olive Oil in Sparta (Peloponnese); the factory Kronos in Elefsina; and the industrial site of the French Mining Society in Lavrio.[378]

Most of these publications refer to industrial records without assessing their overall significance or following principles and specific regulations on industrial archaeology. According to Nikos Belavilas, documentation of industrial heritage in Greece started only recently. State records are particularly poor and a monument is usually recorded immediately prior to its demolition or re-use.[379] The few preserved buildings (when compared to the total number of existing industrial buildings) are designated without coordination between three different ministries: the Ministry of Culture and Sports; the Ministry for the Environment, Energy and Climate Change; and the Ministry for the Aegean. He further states that this system produces a labyrinth of protected monuments, the files for which are scattered across dozens of different institutions throughout the country.[380] Thus, the need to care for this category of cultural heritage

[375] Vilma Hastaoglou, 'The re-use of historic buildings that is a matter of concern,' *En Volo*, no 32 (January – March 2009): 34.
[376] Hastaoglou, "The re-use of historic buildings," 35.
[377] The International Committee for the Conservation of the Industrial Heritage. See: Nikos Belavilas, 'The documentation of Industrial Heritage', *En Volo*, *Industrial Heritage in Magnesia*, no. 23 (Oct-Dec 2006): 75 - 76.
[378] Belavilas, 'The documentation of Industrial Heritage', 75 - 76.
[379] Belavilas, 'The documentation of Industrial Heritage', 75 - 76.
[380] Belavilas, 'The documentation of Industrial Heritage', 75 - 76.

does not seem to have been deeply drawn into the consciousnesses of the relevant state bodies, nor into those of the individuals involved in deciding the fate of these historic monuments.

5.3 Compromise on aesthetic qualities

Alongside positive outcomes of the previously presented reuse schemes in terms of conservation, urban regeneration, and sustainability, there have also been controversial issues emerging from this process, such as practices which compromise the aesthetic qualities and original features of these buildings. There are avid supporters of these reuse practices, such as the public officers involved in the designation procedure and the architects involved in the building conversion activities. Opposing views come from local heritage professionals and archaeologists, who insist that preservation of historic industrial buildings is the fundamental objective of their protection, rather than the aesthetic reimagination of the past.[381] Furthermore, it is argued that administrators and technicians attached to many industrial heritage restoration cases in Volos have not been qualified to assess architectural values.[382] It became clear from an interview with Giorgos Gagas, who is the Head Manager of the Municipal Development Company in Volos, that inexperienced project teams confuse rules and lack authoritative guidance or enforcement, leading directly to unsuccessful conservation.[383] These conflicting views, together with the author's survey and observations, will here contribute to a better understanding of the limitations of existing reuse practices as well as to whether the local industrial significance has been put at risk.

Among the most recent reuse initiatives has been the transformation of the former Matsagos Tobacco Factory into the Department of Economics.[384] The complex is of

[381] According to Kizis, the extant genuine building value constitutes the only trustworthy vehicle for transmitting a historical message. See: Giannis Kizis, *Houses in Pelion from the 17th to the 21st century*, 9.
[382] Hastaoglou, "The re-use of historic buildings that is a matter of concern," 34-35.
[383] Giorgos Gagas, Head Manager of the Municipal Development Company SA, in discussion with the author. September 2017.
[384] The industrial history of Matsagos began in 1890 when the tobacco trader Nikolaos Matsagos founded a small tobacco factory, and in 1910 produced the first smoke machine in Volos. From 1918 onwards, the company evolved rapidly and in 1947-48 achieved first place among the Greek tobacco companies. In

listed status and is located in the city centre, occupying two urban blocks.[385] It consists of five buildings built at different phases between 1920 and 1936. The current owner is the University of Thessaly. The reuse project included the renovation of building E, the largest extension of the factory, built during the interwar period (Fig. 40, 41). The renovation project was completed in 2016 by the architectural team of K. Adamakis, A. Theocharopoulos, and K. Progidis, when the department also officially relocated there.

Originally, the structure was a representative example of the architecture of the modern movement in Greece, with features such as simple façades and large horizontal openings combining the demands of the production line with the architectural trends of the time.[386] The priority of the architectural team was the overall preservation of the building, which was originally made of reinforced concrete and survived in a relatively good condition. According to the project description, the initial architectural proposal was based on the general philosophy of minimal/limited interventions into historic buildings.[387] However, the following observations carried out during survey of the site indicate that the actual renovation heavily altered the building.

The building's façades were clad with perforated metal at a parallel distance of 1.6m from the façade (Fig 42, 43). This was justified by the architectural team as having a dual role: the parallel façade integrates the building's fire protection staircases and also acts as a sun filter.[388] Although this may be considered an effective bioclimatic way to enliven the façade of a cuboid structure, in this case it seems to damage the original style of the building. The metal skin disrupts the character of the lime-rendered modernist factory and hides the original façade that this building is known

1925, next to the first tobacco factory, a new four-storey building was built, covering an two blocks. At that time, the Matsagos factory produced around 500,000 cigarettes a year and employed 350 workers, while in 1940 there were 1050 workers. See: Nitsa Koliou, *The industry of Volos: short references to yesterday and today* (Volos: Municipal Centre for History and Documentation, 1994), 26-28.

[385] Ministerial Decision ΥΠΠΟ/ΔΝΣΑΚ/42536/1174/1-6-2006 published in the Official Gazette 816/B/04.07.2006 under which the Matsagou Tobacco Factory in Volos was designated a historic listed monument.

[386] Demiri, *The Greek textile factories*, 47 – 71.

[387] 'Restoration - conversion of the former Matsagos Tobacco Store to a University Building in Thessaly,' Adamakis Architects and Associates, accessed 8th June 2019, http://www.adamakis-architects.gr/data_info.php?photo_id=99&timicat1=52593&timicat2=94681&timicat3=0&timicat4=0&timicat5=0&timicat6=0&timicat7=0.

[388] 'Restoration - conversion of the former Matsagos Tobacco Store.'

for. This solution also contravenes governmental guiding principles requiring authentic representation of the original form and high visibility outcomes that can maximise public benefit.[389]

A similar intervention is used on the historic façade facing south-east. An interior glass wall has been installed at a distance of 1.6m parallel to the external wall, creating a corridor, possibly in order to deal with heating issues. Unlike the previous case, this solution does not introduce a visual barrier. However, it alters the interior entirely. This could also be observed in the way that floors and rooms have been cosmetically restructured to create classrooms. It seems possible for planning authorities and the architectural team to argue that the old building is still there, on the understanding that only the façade was worth retaining. In reality, based on the author's field work, a compromised interaction with the historic monument is experienced through the erection of a new structure inside the existing one.

The first impression when looking at the main entrance and the front façade of the building is that inappropriately dark colours and cement pointing have been used during restoration of the Matsagos Tobacco Factory, instead of light colours and authentic lime mortar.[390] According to Craig Frew, 'the use of cement mortars is widely recognised as being detrimental, as it can drastically alter the way in which a wall handles water and water vapour. Cement mortars tend to have a consistent and 'closed' pore structure that traps water rather than allowing the building to breathe.[391] It also seems that different colours have been used in different parts of the converted building.[392] The poorly-executed pointing as well as the non-systematic choices of colour seriously diminish the building's authenticity, as they lack the character of the original design.[393] A compromise in aesthetic quality can easily be demonstrated by

[389] The president of the Hellenic Republic, 'New Building Regulation,' Law Number 4067, First Issue, no. 79 (April 9, 2012): 2083.
[390] The use of cement pointing has been confirmed during the authors discussion with Kostas Adamakis, the Lead Architect of the conversion project.
[391] Craig Frew, "Pointing with Lime," accessed September 6, 2019, https://www.buildingconservation.com/articles/pointing/lime-pointing.htm; Philip Hughes, SPAB Information Sheet 4, The Need for Old Buildings to Breathe, SPAB, (London, 1986).
[392] For instance, on the front north-east façade a dark purple-grey colour with white finishing is used as opposed to the northwest façade, where the walls are coloured white and the frames around the windows red.
[393] Christopher Brereton, *The Repair of Historic Buildings. Advice on principles and methods* (English Heritage, 1995).

comparing photographs taken before and after the intervention. The photographs are useful not only for distinguishing between the authentic and the inauthentic, but also for observation of profound changes made to the building during restoration.

The conversion of the former Papastratos tobacco warehouse into the central administration centre of the university is another example of drastic architectural alteration of a historic factory in Volos.[394] The Papastratos complex used to occupy an entire urban block and is located in a prominent spot on the seafront. It consisted of two buildings: a three-storey stone house (built in 1926 and demolished in 1996), and a five-storey building with two characteristic domes. The remaining warehouse, built in 1935 and bought by the University of Thessaly in 1996, now serves as the Rector's office, as well as the Faculty of Human Sciences.[395]

Like the Matsagos factory, the Papastratos warehouse is a typical example of interwar industrial architecture. Both belong to a period of wider reflection in Greece that reconciled the quest for architectural renewal with neoclassical ideals. The original building's façade is divided into three zones: firstly, the basement and semi-basement are dressed with low-relief decorative elements. The second zone consists of the first, second, and third floors, which are connected by vertical decorative frames. The third zone is the fourth floor, covered with a tiled roof which retreats from the edge of the main building.[396] Unfortunately, none of the original decorations have been preserved, leading not only to an under-valuation of the architectural accomplishments of preceding generations, but also to a reduction in the architectural beauty of the historic building (Fig 44, 45).

Meanwhile, private enterprises, following the national creative boom that led to the conversion of vacant markets or warehouses into restaurants or retail spaces, proceeded to renovate historic factories in Volos.[397] Typical examples of this trend

[394] Adamakis*, The industrial Buildings of Volos*, 112 – 115.
[395] The building was reused following a national architectural competition.
[396] Adamakis, *The industrial Buildings of Volos*, 112 – 115.
[397] In Greece, rehabilitation of historic industrial buildings is mostly market-oriented. Most monuments are reused as entertainment centres or for other uses that are incompatible with their values and importance. It is very common to save only the external shell of a building. See: Karavasili, *Management*

occur in the districts of Ladadika in Thessaloniki, Psiri in Athens, and Manavika in Trikala. The character of these areas changed drastically when many of their historic buildings were transformed into restaurants. Similarly, in Volos a new shopping centre opened in the premises of the former Papageorgiou Textile Factory.[398] Within an area of four acres, two industrial buildings and four large new buildings (a total built-up area of 33,000sq.m) were intended to accommodate commercial, office, and entertainment uses. However, according to Hastaoglou, the project did not follow governmental restoration guidelines. During renovation only the historic façades were retained, while the interior has been completely replaced.[399] She further claims that the architecture of the new buildings fails to blend in with the existing structures.[400] In the same neighbourhood, the seven-storey Loulis mill has also been converted into an entertainment complex called Village Centre (Fig 46, 47).[401] A visit by the author to both sites confirms that the buildings' restoration appears neither to represent the originals, nor to foster deep appreciation for these famous structures. As a result, it could be argued that the preservation of the authenticity and the principle of minimum intervention are disregarded in these rehabilitation practices in Volos.

Such industrial transformation weaknesses may be partially caused by inadequate application of international recommendations. Conservation actions need guidance on significance and respect for the existing fabric, use, associations, and meanings of the historic places and buildings. Enhanced cooperation between Greece and the TICCIH, as well as the ratification of the Nizhny Tagil Charter for Industrial Heritage (2003), would certainly contribute to better approaches. International collaborations have the

of industrial heritage in Greece, 7. This attitude can be characterised as façadism, which is believed by some scholars to be a less elegant and useful version of heritage protection. See: Jonathan Richards, *Facadism* (London and New York: Routledge, 1994), 13 and David Highfield, *The construction of new buildings behind historic façades* (London: E & FN Spon, 1991), 11.

[398] The shopping mall Old City started its operation in 2004 run by two private companies, the Antoniou SA and the Juniors SA. See: Hastagolou, 'The re-use of historic buildings,' 34 - 36.

[399] Hastagolou, 'The re-use of historic buildings,' 34 - 36. More on the discussion about facadism please see: Jonathan Richards, *Facadism* (London: Routledge, 1994); David Highfield, *The Construction of New Buildings Behind Historic Façades* (London: E & FN Spon, 1991).

[400] Hastagolou, 'The re-use of historic buildings,' 34 - 36.

[401] Includes a cinema with four screening rooms, bowling rooms, restaurants, bars, cafes, and shops.

potential to encourage national and local institutions to follow certain procedures in the protection of industrial heritage.[402] Unfortunately, international recommendations have not been widely adopted by architectural and development agencies in Volos. A careful examination of restoration initiatives over recent decades reveals that although conservation is the main purpose of industrial heritage restoration, some of the worst architectural damage to these buildings has been caused by faulty restoration. This has gravely compromised the authenticity of these historic industrial buildings leading to loss of their architectural and aesthetic value.

5.4 Fragmented preservation of technological value

The current state of redundant industrial buildings in Volos, which now lie empty and derelict, makes it easy to forget that these were once productive workplaces. Empty mills, for instance, once contained manufacturing machinery and engines that powered it. Almost invariably, both disappear soon after closure.[403] Most of the industrial buildings that feature in the heritage debate on value, and subsequent discussions on their future, are thus empty husks, devoid of the life and activity which were the reasons for their existence.[404] Machinery in situ, and especially in working condition, is therefore a rare attribute that can confer exceptional value. Its presence can provide good justification for designation, sometimes at a high grade. Even when machinery has been removed, sufficient evidence of it may remain to allow a good understanding of manufacturing processes, and in some cases provide justification for designation either via listing or scheduling.[405]

The old Tsalapatas Rooftile and Brickworks Factory, restored in 2006 and transformed into an industrial museum and cultural centre, is a positive example of industrial

[402] The Nizhny Tagil Charter for the Industrial Heritage (2003) was adopted by the International Committee for the Conservation of the Industrial Heritage (TICCIH), Moscow, Russia, 17th July 2003 and is the international guidance document for industrial heritage.
[403] Redundant machinery is typically either replaced or sold for scrap.
[404] Douet, *Industrial Heritage Re-tooled*, 9 - 10.
[405] Historic England, "Industrial buildings: Listing Selection Guide," accessed 8th June 2019, https://historicengland.org.uk/listing/.

heritage reuse in Greece (Fig 48, 49).[406] Significant in realising the heritage value of the factory was the impact of its installations. The production chain has been reconstructed step by step. Trolleys, clay silos, grinders, compressors, cutters, dryers, and the imposing Hoffmann kiln, as well as end products such as bricks and tiles, are part of its restored workshops and industrial facilities (Fig 50).[407] All these attributes provide context and offer prolific evidence of an evolving community, from pre-industrial roots to post-industrial decay. Sadly, apart from the Tsalapatas Rooftile and Brickworks Factory, only one other reuse initiative in Volos has been able to retain early machinery. This is the former Silk Factory Etmektjoglu, the oldest silk factory in the city, built in 1924 and converted into a cultural centre in 1996 under the URBAN Community Program I.[408] Twentieth-century machinery is stored inside this cultural centre and can be visited only by appointment (Fig 51, 52).[409] Even though the original layout has been altered and the machinery has not been integrated into the new use, it provides evidence for the technology of silk production in early twentieth-century Volos.

Based on the author's survey, in all other cases where a radical change of use has occurred, only the building's façade was preserved. In most cases the original layout has been altered and all internal facilities and machinery were removed or destroyed. Removing machinery has often been thought necessary for adapting industrial buildings to a new use. The choice of this new use has often been the object of considerable debate. Although former industrial buildings tend to be easily adaptable due to their spacious interiors, unnecessary interventions needed by the new use may damage their significance. However, machinery and historic equipment should not be underestimated. They stand testimony to the lives of the workers who contributed to

[406] The Tsalapatas Rooftile and Brickworks Factory has been among the most recent thematic museums developed by the Piraeus Bank Group Cultural Foundation (PIOP). The Piraeus Bank Group Cultural Foundation (PIOP) supports the preservation and showcasing of Greece's cultural heritage, with an emphasis on its artisanal and industrial technology, and promotes the connection between culture and environment. For the creation and functioning of the museums, PIOP collaborates effectively with the Hellenic Ministry of Culture, local and regional self-government authorities, local society, and a broad network of specialists in environmental and cultural issues. See: PIOP, The Foundation, accessed 8th June 2019, http://www.piop.gr/en/idrima.aspx.

[407]http://www.piop.gr/en/diktuo-mouseiwn/Mouseio-Plinthokeramopoieias-Tsalapata/to-mouseio.aspx

[408] Georgios Tamias, "Museum of pre-war metalwork. At the Silk Factory Etmektjoglu in Nea Ionia," *En Volo*, no 9 (Spring 2003): 94 – 95.

[409] This is based on a site visit by the author. The old and rare machinery is randomly placed in a room labelled the 'Textile Museum'. This room is usually locked and access to the public is only allowed after formal permission is granted.

the development of Volos as a centre of industry. Preserving only the built fabric of industrial buildings is not enough, as these machines are essential aspects of an industrial building and removing them makes it difficult to appreciate their full significance.

5.4.1 A re-evaluation of the role of culture in regeneration

As mentioned above, there is a tendency to transform redundant industrial buildings into cultural institutions.[410] Such buildings in Volos have been transformed into museums, exhibition halls, educational spaces, and multipurpose spaces which can host theatrical performances or musical events. The Papandou Tobacco Warehouse is a typical example of this.[411] This historic industrial building, transformed into the new Museum of the City of Volos in 2009, houses installations connected with the history of the city and preserving its oral history.[412] [413] Similarly, the building that used to house the former electric company is now a dance school and centre of multicultural theatre.[414] These rehabilitation efforts aimed to strengthen the city's industrial identity while encouraging education and tourism. However, this has not always proven to be a successful 'therapy'. Hastaoglou strongly argues that the way this legacy is being managed lacks cohesion and involvement.[415] According to Polyzos, this may be due to

[410] Sifounakis, *Industrial Buildings in Lesvos*, 34 – 39. See more about the transformation of industrial sites into museums and cultural centres in: "Museum Network," Piraeus Bank Group Cultural Foundation, accessed 8th June 2019, http://www.piop.gr/en/diktuo-mouseiwn.aspx.

[411] The museum is located in Palia, a neighbourhood within the city limits of Volos and close to Nea Ionia. It was probably built around 1930, like other similar multi-storey tobacco storehouses (Spirer Warehouse, Yellow Warehouse, etc.). During the Asia Minor Catastrophe (September 1922), the warehouse was used as accommodation for refugees. See: Adamakis, *The industrial buildings of Volos*, 133.

[412] The study was commissioned by the technical department of the Municipality of Volos, which also supervised the project, based on the architectural proposal of Alkis Tsolakis (architect, Dean at the College of Art and Design, Louisiana State University) and the museological proposal of Vasilis Kolonas (architect-museologist, Associate Professor at the University of Thessaly) and Dionysis Tsasis (architect). The team also included Alexandros Psychoulis (artist, Assistant Professor at the University of Thessaly) and Spyros Papadopoulos (architect, Assistant Professor at the University of Thessaly).

[413] Beyond the 120 objects, the visitor may access 900 minutes of audio testimonials and audio-visual material reflecting the city's modern history. See: http://www.diki.gr/museum/mpolis.html

[414] In 1911 the Electric Power Company was founded in Volos, and a year later it started its operation. Machinery was bought from Germany and Austria. The fortunes of the company were significantly influenced by the Balkan War and World War I. In 1926, the Electric Company acquired exclusive rights to supply the city and its surroundings. In the 1940s, the company's privileges were revoked. See: Adamakis, *The industrial buildings of Volos*, 80-83.

[415] Hastaoglou, "The re-use of historic buildings that is a matter of concern," En Volo, no 32 (January – March 2009): 38 - 39.

the fact that in most cases, reuse practices lack conservation and management plans as well as selection criteria for reuse.[416] Therefore, it could be argued that radical change of use and the preservation of only a shell while all internal facilities or machinery are removed indicates a lack of evidence-based transformations.[417]

An imperfect understanding of space requirements for new functions and, more importantly, how existing structures can be adapted in ways that recognise their cultural significance, often results in poor proposals and conflict with the conservation authorities.[418] As Paliouras explains, restoring an industrial building amongst a group of 'new buildings 'requires a complex architectural design process.[419] It is a challenge to convert a huge building with special specifications and great importance for the community and country. Ignorance and a misunderstanding of the subject are the main factors negatively affecting the way Greece's industrial heritage is treated.[420] The timely identification of an industrial complex's value, raising awareness among owners, finding an appropriate use for the complex, regular real estate maintenance, and finding ways to preserve movable industrial heritage are major conservation goals requiring well-reasoned professional decisions to be made, especially since these areas represent the development potential of contemporary cities and an abundance of development interests.

[416] Polyzos, et all, *Historical industrial equipment in Greece*, 1998.
[417] Charalampia Agaliotou, "Reutilization of industrial buildings and sites in Greece can act as a lever for the development of special interest/alternative tourism," *Procedia – Social and Behavioural Sciences* 175 (2015): 291-298.
[418] Robin Nugent, *The Re-use of Industrial Buildings*, accessed 8th June 2019, http://www.buildingconservation.com/articles/indusbldgs/indusbldgs.htm
[419] By 'new buildings' Paliouras means the polykatoikia. The term polykatoikia (πολυκατοικία), literally 'multi-residence', is used in Greek to denote an apartment building. The block of flats imposed itself on the town's aesthetics as a housing solution to accommodate earthquake victims and internal refugees and ensuring more comfortable living conditions. One of the first, if not the first, apartment buildings in Volos was constructed in May 1965, situated on the streets of Korai and Gallias. It was built by the technical office of Spiros Paparrizos, under the surveillance of the engineer Alexandros Androutsos. See: Paliouras, "The architectural development of Volos," 369-376.
[420] Agaliotou, *Reutilization of industrial buildings*, 291-298.

5.5 Highlighting the weaknesses in engaging with, remembering, or using the industrial past

When investigating sustainable revitalisation through the reuse of industrial buildings, it is essential to take into consideration all possible aspects of these complex structures, including both social and economic values. The case study in Volos shows that the social dimension is often neglected. To treat industrial ruins purely as aesthetic objects romanticises them, and strips them of their social meaning and context.[421] Therefore, through an investigation of the concept of social value as well as through a conceptualisation of industrial ruination as a lived process, this research will try to examine the complex relationship between these landscapes and their legacies.

In an attempt to investigate whether and how former industrial life and work come to be locally remembered, I draw on interviews and questionnaires carried out in Volos in 2015 and 2016 (see Appendix). As the author understands it, modern Volos feels culturally distant from the experiences of industrialisation, highlighting the difficulty of attempting to engage with, remember, or use the industrial past. The aims of this section are therefore not only to foreground what has been overlooked, but also to identify diverse issues faced during industrial heritage conservation and management.

5.5.1 Social aspect

During fieldwork, it became clear that industrial power, voice, and their ability to shape development no longer exist in reused industrial buildings in Volos. This may be due to the fact that although local government proposes and approves rehabilitation plans, there has been no engagement with the local community or with the spirit of solidarity that used to exist among industrial workers and their families.[422] Change has not been interpreted as a collective experience. At this point, however, it should be mentioned that the local community considers most reused industrial buildings to be important landmarks. Several examples, such as the Rooftile and Brickworks Museum

[421] Agaliotou, *Reutilization of industrial buildings*, 196-97.
[422] Dimitris Konstandaras, historian, in discussion with the author, September 2017.

N. & S. Tsalapatas, the Papastratos Main University Building, and the Spierer Municipal Planning Office, are very well known for their new functions and services.[423] But what is missing is knowledge of their original functions and social and historical background.[424] The reuse initiatives have failed to demonstrate fully their industrial identity.

One might expect that social status, quality of life, and level of employment would increase due to the new functions of heritage buildings in Volos. However, when comparing local employment and occupational profiles to wider regional data, it can be seen that employment options and earning capacity in the city are relatively unattractive.[425] According to Dimoglou and Koutis, 'the new functions of the former industrial buildings do not meet with the needs of the region… people are not using the skills and the crafts that this town was famous for and could be famous for a long time to come.'[426] On the other hand, supporters argue that these reuse initiatives offer something important. As Adamakis notes, new uses have contributed to the functional redevelopment of degraded urban areas. Furthermore, he comments that 'the Municipality of Volos is already considered as a pioneer regarding the reuse initiatives and it is absolutely positive that rescue and recovery actions have been supported by local authorities.'[427]

Indeed, there have been various cultural benefits linked to industrial building conversions. For instance, local cultural and creative activities have been promoted in cases like that of the former Etmejoglou Silk Factory, which has been transformed into a cultural and multiple facilities centre; the former Electric Company, transformed into the municipal dance school and theatre; and the former Adamopoulos Tobacco Warehouse, transformed into a sport centre. Although these activities are organised individually and not under an umbrella strategy for cultural development, they do

[423] Citizen of Volos, in discussion with the author, September 2017.
[424] Except for the Tsalapatas Rooftile and Brickworks Museum, in all other cases the younger generations have no knowledge of the historical and social background of these landmarks. Conclusion based on questionnaires.
[425] Hellenic Statistical Authority, Office for National Statistics, *Census 2011: Social and Economic Characteristics of Greece's permanent population,* accessed 6th September 2019, http://www.statistics.gr/en/statistics/eco.
[426] Aigli Dimoglou and Giannis Koutis, *Volos: then and now* (Volos: Olkos, 2007), 123-125.
[427] Adamakis has been a member of the architectural committee making decisions on the conservation and reuse of historic industrial buildings in Greece. See: Adamakis (2019), "The exploitation of the industrial heritage of Volos."

attract local residents and thereby help enhance feelings of pride and self-confidence as well as expanding the local audience for culture and improving social cohesion.

5.5.2 Urban aspect

According to Oevermann and Mieg, industrial building rehabilitation should be part of a broader urban development strategy.[428] This invites us to go beyond the simplistic view of historic factories as isolated museums-monuments and consider them as parts of a broader cultural landscape. This approach has significant implications for the conceptualisation of industrial heritage.[429]

This approach is not currently applied in Volos. Although existing reuse initiatives are supposed to synthesise the industrial identity of the facilities, integrate them with their new uses, and provide a positive boost to culture, in practice this has not been the case. According to Adamakis, transformation of industrial buildings needs to be supported by their reintegration into the city.[430] A couple of relevant design projects have been published, but without any practical application. The most representative example is an article entitled 'Towards the ecomuseum of Pagasitikos', which is based on an academic research project under the supervision of Theologidou. As she explains, Eco-museums should promote and exploit pre-industrial and industrial heritage as well as the surrounding natural environment. Through a network of museums, sites, and attractions, alternative cultural paths can be created. Research outcomes could include the promotion of different aspects of the region's history in order to recover lost collective and individual memory or identity. At the same time, the ecomuseum would provide an opportunity for alternative economic prospects through the development of cultural and natural tourism. All of this can contribute to a

[428] Oevermann and Mieg, *Industrial Heritage Sites in Transformation*, 2015.
[429] Among former industrial cities (some of which will be also analysed later in this thesis) that have successfully applied this concept through Conservation Area Designation, Appraisal and Management Plans are: the Blaenavon Industrial Landscape in the UK; the Ruhrgebiet Industrial Cultural Landscape in Germany; and the Colònies del Llobregat Fluvial Park in Spain. In these cases, heritage functions in a way that makes local communities feel involved and connected to projects aiming to shift the area from a productive economy to a tourism-based one.
[430] Belavilas, "The documentation of Industrial Heritage," 51.

better quality of life for the local population.[431] Unfortunately, these promising strategies have not been realised.

5.5.3 Economic aspect

Industrial building conversion should be tackled through interdisciplinary research and evaluation. Thus, an assessment of the economic value and direct or indirect benefits of current reuse strategies in Volos will now try to provide a comprehensive discussion of their limitations. Primary data, such as interviews and questionnaires, and secondary data, such as business economic reports and relevant research data, are used as supporting evidence. It should be also noted that there is neither existing systematic data collection nor official evaluation of the economic impact of rehabilitation strategies in the city. As a result, the analysis in this section is new and essential.

The reuse of industrial buildings often aims to generate profit.[432] This compensates for economic decline caused by deindustrialisation.[433] Preserving industrial buildings without such profits is not feasible for post-industrial communities hit by poverty and unemployment. Even if the community is in favour of preserving local heritage, lack of funds often makes conservation projects impossible.

Local authorities tend to see the reuse of industrial buildings as a way to create jobs.[434] For instance, the premises of the University of Thessaly in Volos, established in 1984, house three faculties and twelve departments, most of them located in former industrial buildings in the city centre.[435] According to online published articles, they support more than 1700 employees in Volos, demonstrating the impact of the higher

[431] Belavilas, "The documentation of Industrial Heritage," 50.
[432] Evans and Shaw, *The contribution of culture to regeneration in the UK*, 20; Einar Bowitz and Karin Ibenholt, "Economic impacts of cultural heritage – Research and perspectives," *Journal of Cultural Heritage* 10, no.1 (2009): 1-8.
[433] Oevermann and Mieg, *Industrial Heritage Sites in Transformation*, 2.3.1.
[434] The Piraeus Bank Group Cultural Foundation (PIOP), "The Rooftile and Brickworks Museum N. & S. Tsalapatas. Business Plan," 12, accessed August 16, 2019. https://www.slideshare.net/FutureleadersGR/project-29381513.
[435] The University of Thessaly is a public Higher Education Institution of Greece based in Volos. It consists of six schools and eighteen departments, with university units in Volos, Larissa, Trikala, Karditsa, and Lamia.

education sector on the local economy.[436] In total, the University of Thessaly in Volos, together with their international students and visitors, contributes around 1,2 billion euro to the economy.[437] This is a larger contribution than that made by other sizeable industries, such as the public sector and the health industry.[438] At this point it should also be noted that while the influence on jobs and the economy is important, universities 'fundamental aim is to transform students' lives through education, skills development, and the production of vital research. According to formal statistics, the University of Thessaly in Volos has over 7000 students studying at its various campuses, making up 4.8% of the local population of 144,420 citizens.[439] These students also enrich the community by giving local people the chance to take part in art and music events. For example, each year the academic community attracts artists, musicians, and visitors through the organisation of cultural events such as the European Music Day in Volos and the Music Village Agios Lavrentios in Mount Pelion.[440] These events have had some economic impact, initiated by the reuse of vacant industrial buildings as university buildings, and supporting a better quality of life in the formerly deprived city of Volos.

Another profitable example may be considered the Tsalapatas Rooftile and Brickworks Museum. Attracting 18,269 visitors in 2011 alone, it provides measurable benefits to the local economy.[441] However, based on a survey conducted by the Piraeus Bank Group Cultural Foundation, only 741 out of these 18,269 visitors paid the full entry

[436] Although it is not certain that these jobs were created by the decision to reuse, the numbers do indicate economic activity. See: Michalis Zouboulakis, "The impact that the University of Thessaly has in Volos (2018)," accessed August 16, 2019, https://e-thessalia.gr/i-epidrasi-toy-panepistimioy-thessalias-ston-volo-2018/?fbclid=IwAR1rP2hfca7ZtSuJzhM55e35Iu_-tYIFtvCtKDWDaif8-lBWrXMNDKyKeg8.

[437] The University is the largest employer in the city and was one of the few able to increase employment during the nine years of the crisis. According to Zouboulakis, Professor at the Department of Economics at the University of Thessaly and Managing Director of the University's Property Management Company, 'the University of Thessaly has a huge and increasingly significant impact on the local economy and jobs. This puts the university sector above many other established sectors in terms of economic impact and regional job creation.' See: Zouboulakis, 'The impact that the University of Thessaly.'

[438] This view has also been expressed by Mr Paliouras, Architect and Director of the 5th Ephorate of Modern Monuments. During an interview with the author, he clearly stated that the University of Thessaly is possibly the largest employer in the area and through research, links with businesses, and by attracting students from all over Greece, it brings significant investment into the region.

[439] PIOP, "The Rooftile and Brickworks Museum N. & S. Tsalapatas. Business Plan,"

[440] "Music Village 2019, July / August, Aghios Lavrentios Pelion Greece," International Music Community, accessed November 1, 2019, https://www.music-village.gr/en/.

[441] The number rose in 2016 reaching 25,400 visitors. See: Foundation for economic and industrial research (www.iobe.gr), "The socio - economic impact of the PIOP museums at the local level," (May 2017): 7.

ticket (3 euros) while the rest were entitled to free entry.[442] Tickets therefore seem unable to provide enough profit to cover the building's maintenance costs and support a financially viable operation. When comparing the current annual number of non-local visitors to the museum (8,426) with the overall number of visitors to the municipality of Magnesia (236,583) we can see that the percentage of non-local visitors to the museum is only 3.5% of the total number of visitors in the area.[443] According to Aspasia Louvi, former General Director of the Piraeus Bank Group Cultural Foundation, 'the local community has to recognise and profit from the benefits that the museum generates in order to increase attendance. It is characteristic that during the first year of operation, the Tsalapatas Rooftile and Brickworks Museum had only 2,000 visitors compared to the 16,000 tourists that visited the Olive Press Museum in Lesvos, which was reused at the same period as Tsalapatas Museum and is located in an isolated village of Lesvos.'[444] Louvi made a further comment regarding municipal organisation, claiming that financial statements from the two museums show that the municipality plays a decisive role in developing tourism. In the case of Lesvos, the small municipality of Hagia Paraskevi incorporated the museum's management into its annual goals.[445]

The strategy of the URBAN Community Program I regarding economic development and urban regeneration through industrial heritage reuse clearly did not work as planned.[446] As Gagas notes, a depressed area with poor economic circumstances may experience conditions so severe that a single project may scarcely have a discernible economic impact.[447] In Volos, even though many former industrial sites have been reused thanks to private funding, the economic impact of these initiatives may have been limited due to low government investment and an inability to empower collaboration between private and public sectors. For example, transformation

[442] Foundation for economic and industrial research (www.iobe.gr), "The socio - economic impact of the PIOP museums at the local level," (May 2017): 9.
[443] PIOP, "The Rooftile and Brickworks Museum N. & S. Tsalapatas. Business Plan," 25 - 26, https://www.slideshare.net/FutureleadersGR/project-29381513.
[444] Aspasia Louvi, "Tsalapatas Museum, a jewel that needs protection," Taxydromos Press, July 20, 2008.
[445] Louvi, "Tsalapatas Museum, a jewel that needs protection," Taxydromos Press, July 20, 2008.
[446] There have been a few other regeneration programs such as the Ermis European cultural program, which was unsuccessful due to public/private tensions. Giorgos Gagas, Head Manager of the Municipal Development Company SA, in discussion with the author, September 2017.
[447] Gagas, in discussion, September 2017.

projects have sometimes taken up to ten years to be accepted due to state bureaucracy.[448] This inactivity has delayed various private efforts and regeneration projects that tried to help restore property values eroded over many years.

It seems that in Volos, reuse strategies have not yet proven to be the backbone of local economic development, culture, quality of life, or tourism. The reuse of abandoned industrial sites and the accommodation of new uses has been fragmentary and not carried out following an evidence-based approach or set of criteria that could help exploit and creatively transform industrial heritage while maintaining its identity and significance.

5.6 Summary

In this chapter, both qualitative and empirical research have helped the author to critically analyse existing reuse strategies in Volos. When reviewing the main trends in the preservation of industrial buildings here, a number of key issues have been recognised. The focus of the existing practices' evaluation is based on whether these have been able to restore the authenticity, recover the lost identity, stimulate the local economy, and regenerate the urban environment. Most notable is the fact that the rehabilitation of historic industrial assets has been addressed individually rather than in the context of a greater whole (the neighbourhood or city). Another significant issue is that most restoration practices have been poorly executed and negatively impact the industrial buildings' architectural value. Finally, the process of selecting new uses, which in Volos have mainly been cultural, office, and educational, has been neither based on the understanding of the sites' significance, nor on community vulnerabilities or needs. This has led to the application of ill-considered new uses that have not been able to preserve industrial heritage values while regenerating the city centre.

[448] Gagas, in discussion, September 2017.

CHAPTER 6 – REUSE PRACTICES IN EUROPE

Having previously discussed the limitations of current reuse strategies in Volos, this chapter moves on to discuss industrial heritage reuse approaches in Europe. This involves the selection of case studies categorised thematically depending on the factor-value they successfully address. Focusing on their strengths, the author explores alternative methods of protection, promotion, and reuse that can contribute to the selection of a viable new use for Glavanis Ironworks, and provide a solution to the problem of preservation in Volos and elsewhere. With reference to the challenges identified in Volos, this chapter discusses how the comparative cases have been able to preserve the architectural importance and physical evidence, recover the social value, stimulate the local economy, or transform the urban environment.

6.1 Introduction

The Albert Dock in Liverpool and the Former Spode Works in Stoke-on-Trent (UK), the Blaenavon Industrial Landscape (southeast Wales) and the Emscher Landscape Park in the Ruhr area (Germany) are some of the most sophisticated industrial heritage reuse projects examined in this chapter. Most of the case studies occupy central urban locations, and are either individual sites (such as the Tate Gallery at Albert Dock), or major heritage zones (such as Stoke-on-Trent). Their reuse strategies are not only relevant for the study of architectural conservation. Some of them seem to have successfully recovered the place's industrial identity after conversion as well as economically and socially revitalising decayed urban spaces. They are chosen for discussion because as a group they represent the diversity of new rehabilitation models in Europe, acting as links connecting contemporary life with the industrial era. Currently serving as centres of urban activity, the selected case studies can be used as sources of inspiration for industrial heritage reuse projects elsewhere.

These interesting cases raise questions about the future of Glavanis Ironworks and the city of Volos as a whole. One might ask what could be learned from each case and how these lessons can be combined and distilled into a single vision for Volos. To explore this, it is necessary to consider the conservation principles applied to protect threatened industrial heritage values as well as the factors taken into consideration for

the adaptive reuse of industrial buildings. These principles and factors, introduced in Chapter 2 and 3, are essential for answering questions regarding what should be done in Volos and how.

The findings presented in this chapter are based on research supported by various fieldwork strategies and secondary sources. In terms of fieldwork, the author visited the Albert Dock in Liverpool and the Blaenavon Industrial Landscape in order to observe and photograph as well as to have informal discussions with key protagonists, such as managing professionals and users. In addition to the usual academic sources, news media and consultancy reports were also addressed for background information. Such an approach was necessary given the range of topics covered.

It should be noted that the history, geography, socio-cultural and economic welfare of the comparative case studies discussed in this chapter vary from the primary case of Volos. Although this might be challenging to transpose, it is vital at this stage to provide a broad perspective on the incentives for industrial heritage protection and understand how each framework influences the success of an industrial heritage intervention. This understanding will then improve guidance and help achieve an informed selection of new use for Glavanis Ironworks. This thesis will try to achieve that by establishing factors-criteria that could help adjust or differentiate the line of enquire for each comparative case. The evaluation factors are related to those ones used to critically appraise the existing practices in Volos and include: restore the authenticity, recover the lost identity, stimulate the local economy, and regenerate the urban environment. These factors will help the author understand how communities, policies and governments work in order to design a better solution for industrial heritage in Volos.

6.2 Restoring the authenticity, Tate Liverpool

The decision to select the Tate Liverpool (in Liverpool Maritime Mercantile city) as a comparative example is based on its spectrum of heritage-led interventions. Studying the adaptation of this industrial site to a new use develops our understanding of the methods used to preserve its original character. These methods are likely to be relevant to the preservation of industrial buildings facing similar challenges in Volos. According to Keith Falconer, 'the Albert Dock, Liverpool, is an obvious starting point as its regeneration, which has spanned a quarter of a century, encapsulates so great many of the factors affecting sustainable reuse.'[449] Referring to it as 'vast, with a cathedral-like quality', he celebrates how its architectural space has been converted.[450] Not only is it described as a case of sympathetic industrial heritage conservation, but it has also become a vibrant part of Liverpool and benefits the surrounding area tremendously.[451] [452] Understanding what is significant in Tate Liverpool and how has this been preserved could potentially help select a viable new use that will maintain the architectural significance of the original structure in Glavanis Ironworks.

Following the Liverpool port's decline and subsequent closure in 1972 the entire Albert Dock complex was briefly abandoned, leaving the once profitable warehouses to decay.[453] Thanks to the creation of the Merseyside Development Corporation, the preservation and regeneration of the disused docklands and Grade I listed buildings was encouraged.[454] The Albert Dock was then gradually transformed into a cultural centre including the Merseyside Maritime Museum, the Conservation Centre, and the Tate Gallery (Fig. 53, 54).

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[449] Keith Falconer, "Sustainable reuse of historic industrial sites," in *Understanding historic building conservation,* ed. Michael Forsyth (Oxford: Blackwell Publishing Ltd, 2007), 81-82.
[450] Rossie Millard, "Thoroughly Modern Tate," in *Arts & Culture* (United Kingdom: BBC World News, 2000).
[451] Labadi, *Evaluating the Socio-Economic Impacts*, 37-58.
[452] Although a large area of Merseyside was granted World Heritage status in 2004, eight years later it was placed on the in-danger register due to concerns about unsuitable new developments. See: Greg Pitcher, "Liverpool keeps UNESCO title but stays on heritage-at-risk register," *Architectural Journal*, accessed May 1, 2019, https://www.architectsjournal.co.uk/news/liverpool-keeps-unesco-title-but-stays-on-heritage-at-risk-register/10031863.article.
[453] Falconer, "Sustainable reuse of historic industrial sites," 81.
[454] Deirdre Hennebury, "An Investigation of the Architectural, Urban, and Exhibit Designs of the Tate Museums" (PhD diss., University of Michigan, 2014), 148-149.

The Albert Dock (construction lasted from 1824 to 1860), designed by civil engineer and superintendent of Liverpool's port Jesse Hartley, is recognised for its aesthetic monumentality and functional magnificence. According to Edgar Jones, 'Jesse Hartley adopted many of the qualities urged by the Ecclesiologist Augustus W. N. Pugin: massiveness, fitness of materials and designs for their purpose and a reference to English medieval building.'Hartley followed design The [455]'s architectural decisions, and the building consists of cast iron columns and beams with brick arches and tiled floors, roofed with galvanised iron plates.[456] The u-shaped brick warehouses effectively combine classical and industrial features. As Helen Searing describes, 'the front façade … reads as a succession of visual and functional units arranged with the subtlety of a Renaissance or Beaux-Arts monument, the ground storey composed in counterpoint to the upper floors.'[457] Although the warehouses were once described by James Picton, architect and writer, as 'a great improvement on the massive ugliness of the Albert Dock', the overall architectural value and aesthetic quality of the waterfront have fortunately been preserved.[458]

A significant role has been played by the considerate conversion of part of one warehouse stack into the Tate Liverpool by James Stirling, Michael Wilford, and

[455] Edgar Jones, *Industrial Architecture in Britain: 1750-1939* (London: B.T. Batsford LTD, 1985), 115. More on Jesse Hartley find in: Nancy Ritchie-Noakes, *Jesse Hartley: Dock Engineer to the Port of Liverpool 1824-60* (Liverpool: National Museums and Galleries on Merseyside, 1980).
[456] Mersey County Archives, Liverpool, Mersey Docks and Harbour Board, Worked Up Papers No. 3, Albert Dock Warehouses, Vol I, 1882-1905, replacement of broken iron beams, 10 March 1886. Cited in: Edgar Jones, *Industrial Architecture in Britain*, 116; Moreover, James Maude Richards, editor of the Architectural Review between 1937-1971, referred to the architecture of Albert Dock as 'functional architecture'. See: James Maude Richards and Eric Samuel De Maré, *The Functional Tradition in Early Industrial Buildings* (London: Architectural Press, 1958).
[457] Helen Searing, *Art Spaces: The Architecture of Four Tates* (London: Tate Publishing, 2004), 73.
[458] James Picton, *Memorials of Liverpool, Historical and Topographical, Including a History of the Dock Estate* (London: Longmans, 1873), 691.

associates.[459] [460] The main objectives of this conversion were adaptation to the users ' needs and preservation of the unique authentic features of the original historic building. [461] For Stirling, 'the shapes of a building should indicate, perhaps display, the usage of the way of life of its occupants, and it is therefore likely to be rich and varied in appearance and its expression is unlikely to be simple.'[462] Preserving the surviving elements (such as machinery) of industrial heritage can provide evidence for the activities of the past occupants of industrial buildings, which as practice could be also applied in the conversion of Glavanis Ironworks in Volos.

Stirling's admiration of industrial heritage and vernacular architecture can be seen in his early photographs, taken when he was a young architect. [463] A number of them depict Liverpool's warehouses and docks, demonstrating his interest in their structural materials and the details of industrial style (Fig. 55, 56). This interest is also found in his writings. In his book 'Regionalism and Modern Architecture', Stirling describes his architectural intervention at Albert Dock as an approach that tried to maintain the authentic character of the structure and preserve the design, workmanship, material

[459] The original conversion was done by James Stirling but the building was given a major refurbishment in 1998 to create additional gallery space. In 2007, the foyer area was redesigned by architects Arca for an updated appearance and better proportions, as well as to improve visitor flow. The gallery cafe was also redesigned by Peter Blake and Liverpool-based architects, Architectural Emporium. See: Jade Wright, 17 August 2015, "Tate Liverpool unveils Sir Peter Blake's new Dazzle cafe", *Liverpool Echo*, retrieved 3 May 2019; "The Tate Gallery Café", *Architectural Emporium*, Retrieved 3 May 2019. For a comprehensive personal biography of James Stirling, see: Mark Girouard, *Big Jim: The Life and Work of James Stirling* (London: Chatto & Windus, 1998).

[460] This conversion was carried out as part of a broader regeneration plan. See: Charlie Parker and Catherine Garnell, "Regeneration and retail in Liverpool: A new approach," *Journal of Retail & Leisure Property* 5, Nr. 4 (October 2006): 292–304; Mike Biddulph, "Liverpool 2008: Liverpool's Vision and the decade of cranes," in *Urban Design and the British Urban Renaissance*, ed. John Punter (London: Routledge, 2010), 100-114; Alex Nurse, "City Centre regeneration to drive economic competitiveness? The case study of Liverpool one," *LHI Journal of Land, Housing and Urban Affairs* 8 (2017): 91-102.

[461] Stirling's interest in heritage and vernacular architecture can be seen in his early writings. In his seminal essay entitled 'Regionalism and Modern Architecture', he addresses the necessity for 'reassessment of indigenous and usually anonymous building and re-evaluation of the experience embodied in the use of traditional methods and materials.' See: James Stirling, "Regionalism and Modern Architecture," *The Architects Yearbook* 8 (1957): 62.

[462] James Stirling speech quoted in: Ann Lee Morgan and Colin Naylor, Contemporary Architects, 2nd ed., Contemporary Arts Series. (London: St. James Press, 1987), 873.

[463] "Jim was later to describe how 'somewhere in the middle years at Architecture School, I had a passion for the stiff art nouveau designs like Mackintosh and Hoffman…' Jim also remembered that at the end of his Liverpool time he started to look at and photograph Liverpool warehouses. George Hayes also remembers how, just before or just after he qualified, he was driving with George in the Wigan area and saw 'I think it was a colliery – it was one of those marvelous conglomerations of industrial buildings, with gantries that crashed down, things going up- it was industrial architecture at its very best, and he stopped and took some photographs of it, and raved about it.' " See: Girouard, Big Jim: The Life and Work of James Stirling, 38.

and setting of the asset.[464] This exploration through visual and written tools suggests the architect's concern for pragmatic and aesthetic issues.

The Tate Liverpool's original industrial use is also highlighted in Stirling's early sketches.[465] For instance, in one sketch (drawn from memory) he illustrates the site as a depository of old shipyard artefacts.[466] Although this sketch presents an alternative vision to the one eventually applied, a focus on elements providing a connection with the former use can be seen in his design process. This study of the original features of an industrial building is relevant to the preservation of corresponding elements in Volos.

Of greater importance, though, might be an investigation into how Stirling restored the design and materials of the place. Based on the author's recent site visit, the overall aesthetic value of the monumental structure's classical rhythm and elegant simplicity has been preserved.[467] With the exception of the Doric columns on the ground floor, which have been painted orange-pink rather than Hartley's industrial black, the façade remains intact.[468] According to the team's project brief, their main intentions were to: 'only make alterations where necessary…mainly of two categories…those required in making a sequence of galleries…and an entrance hall that is a public meeting space… [and those required] to achieve environmental standards necessary for exhibiting art…on the international gallery circuit.' [469] This

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[464] James Stirling, "Regionalism and Modern Architecture," *The Architects Yearbook* 8 (1957), 65.

[465] CCA James Stirling Fonds

[466] 'The warehouses are evoked in the practice's 1977 scheme for the rejuvenation of Muller Pier in Rotterdam's docks, and the potent image of its post-war dereliction generated the first extrovert sketch solutions for the Liverpool Tate, made in 1982, in which Stirling collaged miscellaneous ships' parts to form an ad hoc 'tug-boat' entrance pavilion on the dockside, feeding 'gangway' escalator connections into the gallery proper. Sadly, this idea was quashed by the conservationist lobby and the question of land ownership.' See David Jenkins, *Clore Gallery Tate Gallery Liverpool, James Stirling, Michael Wilford and Associates* (London: Phaidon Press, 1992), 11; James Stirling and Michael Wilford, "James Stirling / Michael Wilford Fonds / File 68: Tate in the North," in AP140.S2.SS1.D68 (Montréal: Canadian Centre for Architecture CCA 1982-1990). The sketches, drawings and photographs of the Tate Liverpool considered during this research were found at the CCA in File 68 (AP140.S2.SS1.D68) and at the Tate Archives in Boxes TG/65b/08 and TG/8/PH1 unless otherwise noted.

[467] This conversion may have been guided by the building's listed status and the Merseyside Development Corporation's principles. See: Richard Pollard and Nikolaus Pevsner, *Lancashire: Liverpool and the South-West, The Buildings of England* (New Haven and London: Yale University Press, 2006), 113-116, 266-268.

[468] Within the Doric loggia, a bold orange-red sign reads "Tate Gallery" and is framed by panelled walls decorated in blue and orange-red with nautical theme "port hole" windows, see in Fig. 65.

[469] Canadian Centre for Architecture, *Stirling & Wilford Feasibility Report Tate in the North* (Montreal: Canadian Centre for Architecture, 1985). Available at: http://www3.tate.org.uk/research/researchservices/archive/showcase/item.jsp?item=1671.

sensitive repair of the façades, showing the architect's respect for the 'roughness' of the warehouses, might also be suitable in Volos. This method does contrast with practices studied in Volos, that have significantly altered the surviving industrial facades or original materials.

A similar degree of sensitivity is found in the way the interior of the warehouse has been transformed. Alterations to the rectangular interior are subtle, deferring to

Hartley's design and retaining the spatial qualities of the original layout.[470] Hartley's warehouse is a seven-storey structure, including a basement and mezzanine (Fig. 57). The interior spaces are divided by masonry spine and cross walls as well as a steady rhythm of cast-iron columns supporting iron beams (Fig. 58). Following conservation work, some sections of the hull-like plated iron roof have been replaced with profiled steel. The original cast-iron window frames have been reproduced in case aluminium.[471]

Ventilation and lighting have been addressed in a clever way. As David Jenkins reminds us, gallery spaces require a certain temperature and humidity for protection of the art works.[472] In the case of a dockside warehouse, this issue can be quite complex due to their low ceilings and proximity to the sea. According to Jenkins, 'the solution relies on a continuous combined ventilation duct and lighting unit. These multi-purpose units are suspended in the centre of each column bay, where the ceiling height is greatest' (Fig. 59).[473] This example shows how the architectural team worked in a sophisticated way to provide a solution within the limitations of the existing structure. Such tactics could be also adapted for industrial heritage in Volos in order to make existing structures viable spaces for reuse.

From the new brickwork that is indistinguishable from the original, to the simple synthesis of uses in spaces of minimal intervention, Stirling's Tate Liverpool refers explicitly to the location's industrial history and reminds us of its former scale. Finally, conceptual details such as the continuation of dockside arcade paving through the

[470] Jenkins, Clore Gallery Tate Gallery Liverpool, 11.
[471] Jenkins, Clore Gallery Tate Gallery Liverpool, 12.
[472] Jenkins, Clore Gallery Tate Gallery Liverpool, 13-14.
[473] Jenkins, Clore Gallery Tate Gallery Liverpool, 14.

glazed foyer wall and into the main public space allow the visitor to experience the interior prior to entering, extending its invitation through the walls. The relevance of this comparable case study lies in the understanding of its historic and architectural values that led into its successful restoration.

6.3 Industrial heritage as a catalyst for urban regeneration, city of Stoke-on-Trent

Following Tate Liverpool, the reuse of former potteries in Stoke-on-Trent can be considered a distinctive case where industrial heritage has been used to unlock urban regeneration. The city of Stoke-on-Trent, historically the centre of the British ceramic industry, is a real laboratory where several new planning and industrial heritage preservation strategies have been tested.[474] Studying these methods may play a major role in surmounting the problem of preservation in Volos, making it possible to do that in a sustainable manner.

Among the most prominent projects has been the 'Stoke Town and Spode Works Masterplan 'designed by Urbanism Environment and Design Ltd (URBED) following a competition in 2010.[475] The vision of the project team was to develop a mixed-use quarter close to the city centre that would incorporate and promote industrial heritage. Among the main objectives was the creation of a masterplan for the former Spode Works site, which was previously used as a ceramic factory and could effectively contribute towards the regeneration of Stoke Town.[476] The masterplan aimed to retain all buildings of architectural and historic value in the historic Spode Works and transform them into creative spaces and factory shops that would celebrate the distinctive identity of the former industrial site.[477]

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[474] The city of Stoke-on-Trent is formed by a federation of six towns: Hanley (city centre), Burslem, Fenton, Longton, Stoke-upon-Trent, and Tunstall. Each has its own town hall. By the late 1980s, Stoke-on-Trent was severely affected by a general decline in the British manufacturing sector. This led to the closure of numerous factories and potteries as well as the rise of unemployment. See: R.M. Ball, "Economic and industrial diversification: policies, technologies and location," in *The Potteries Region: Continuity and Change in a Staffordshire Conurbation,* ed. A.D.M. Phillips, Ch. 13 (Stroud: Sutton Publishing, 1993); Department of the Environment, Transport and the Regions (DETR), *Indices of Deprivation, Regeneration,* Research Summary, Nr 31, (London: DETR, 2000).

[475] URBED teamed up with internationally acclaimed Landscape Architects Jan Gehls, ARUP, and DTZ to form a consultant team that saw off stiff competition from some of the country's top planners and designers.

[476] Stoke-on-Trent City Council and URBED, *Stoke Town Masterplan*, Final Report, 3rd Draft (October 2011): 2-5. Online Available at: http://webapps.stoke.gov.uk/uploadedfiles/20111031_FINAL%20Stoke%20ReportV7_compressed4.pdf; R.M. Ball, "Re use potential and vacant industrial premises: revisiting the regeneration issue in Stoke-on-Trent," *Journal of Property Research* 19, no.2 (2002): 97-98;

[477] The proposal is based on models like that of the Custard Factory in Birmingham, Camden Lock and Trinity Buoy Wharf in London, and the Northern Quarter in Manchester. This type of development has

A major role in preserving this industrial identity has been played by the conservation and reuse of the bottle kilns, retaining their symbolic relationship with Stoke-on-Trent's history.[478] What makes this case study exceptional is the fact that the original functions of these heritage assets have been restored, providing an appropriate reuse. For instance, the Middleport Pottery, 'a surviving Victorian working pottery, that suffered years of decline, is now thriving thanks to the Prince's Foundation and the United Kingdom Historic Building Preservation Trust'.[479] Following its restoration, the Middleport Pottery continues to manufacture flatware in addition to being a retail destination, a popular visitor attraction, and the location for the BBC's Great Pottery Throwdown. According to the Prince's Foundation, the regeneration project also included a programme of training and educational activities that has successfully promoted traditional British craftsmanship.[480]

Whilst some of the bottle kilns and factories have been reused to accommodate the recovered pottery industry, Longton still has a heritage deficit and a number of abandoned buildings.[481] Therefore, a Stoke-on-Trent Ceramic Heritage Action Zone (HAZ) was created by Historic England in 2017 in an effort to protect valuable features of Longton's heritage, such as the Gladstone Pottery Museum and the Town Hall, as well as the fourty-six remaining bottle kilns in the city of Stoke-on-Trent. According to

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also thrived outside the large cities, good examples being Dean Clough in Halifax and Salts Mill in Shipley near Bradford. See: Stoke-on-Trent City Council and URBED, *Stoke Town Masterplan*: 48-49.

[478] Unfortunately, although there were once up to four thousand pottery industries in the city, only around forty survive today. Surviving examples include the Potteries Museum & Art Gallery, Gladstone Pottery Museum, Etruria Industrial Museum, Ford Green Hall, Moorcroft Heritage Visitor Centre, The Dudson Museum, and World of Wedgwood. See more in: "History and Heritage," Visit Stoke, accessed November 1, 2019, https://www.visitstoke.co.uk/see-and-do/attractions/history-and-heritage; David Proudlove, "The Works, The industrial heritage of the pot works," Stoke on Trent Architecture, accessed November 1, 2019, http://www.thepotteries.org/heritage/the_works.htm.

[479] Funding came from several public and private sources, including English Heritage (£1.2m), the Heritage Lottery Fund (£1.5m), the Regional Growth Fund (£1.7m), and the European Regional Development Fund (£1.2m). When the Prince's Foundation was involved in this project it was known as The Prince's Regeneration Trust. See: "Much-loved pottery brought back from the brink," The Prince's Foundation, accessed November 1, 2019, https://princes-foundation.org/practice/middleport-pottery.

[480] "Much-loved pottery brought back from the brink," The Prince's Foundation, accessed November 1, 2019, https://princes-foundation.org/practice/middleport-pottery.

[481] Longton is the most southerly of the six towns and developed rapidly in the early 1800s due to the expansion of local industries, notably pottery, coal, and iron. It is dominated by the large imposing town hall and railway bridge, which record the history and patronage of the area. Longton has a tightly packed town centre with a high number of listed buildings, many of which are small but very ornate. It also has the largest number of surviving traditional pottery factories in the city. See: "Stoke-on-Trent Ceramic Heritage Action Zone," Historic England, accessed November 1, 2019, https://historicengland.org.uk/services-skills/heritage-action-zones/stoke-on-trent-ceramic/.

Jack Brereton, 'Stoke-on-Trent is a city with a strong cultural identity, founded upon our industrial heritage. Longton has historically been a key part of this, having the largest amount of surviving bottle ovens of any town in the city. In addition, Longton Town Hall and Gladstone Pottery Museum serve as fine examples of the wealth of culture in Longton.'[482] Although the five-year programme for the HAZ has recently been approved, it is too early to assess its impact on Longton. But the growing importance of local heritage can be seen in other ways, influenced by the Heritage Champion.[483]

Engaging the local community and stakeholders in the planning process has been the most effective feature of other interesting projects such as 'Community Maker 'and 'Story of Place 'commissioned in 2017 and 2013 respectively. The aim of the projects was to communicate the city's significance and engage with a wide range of relevant stakeholders (such as communities, businesses, and partner agencies) in order to promote local identity and increase investment attractiveness.[484] The communication process, built around key themes such as energy, ceramics, connectivity, and lifestyle, involved a series of activities including walks, ceramic workshops, interviews, focus groups, and wider community workshops.[485] In this case, community participation is

[482] Promoted by Jack Brereton of 69 The Strand, Longton, Stoke-on-Trent ST3 2NS. See: https://www.jackbrereton.co.uk/news/longton-granted-heritage-action-zone.

[483] 'The Heritage Champion has played an active part in the design of work programmes for heritage assets owned by the council, including the Spode Factory site, Stoke Town Hall, Longton Town Hall, Tunstall Town Hall, the Spitfire at the Potteries Museum and Art Gallery, and Trentham Mausoleum.
Works on Stoke Town Hall, a Grade II listed building, included new roofs, windows, and electrics, as well as the restoration of original features. They have enabled the council to remain in Stoke by ensuring that the building is fit for purpose, as well as providing an opportunity for income generation through external hire of the facilities for events, weddings, and conferences. Costs were met by the City Council's capital programme and Historic England also contributed to the exterior works.' See more in: https://www.local.gov.uk/using-stoke-trents-heritage-unlock-regeneration.

[484] https://historicengland.org.uk/content/heritage-counts/pub/2016/case-study-stoke-on-trent-pdf/

[485] Driven by a group of local stakeholders who have since renamed themselves the 'Place Board', chaired by Professor Trevor McMillan, Vice Chancellor of Keele University. The Place Board is made up of representatives from the business sector, higher educational institutions, cultural bodies, NGOs, and the local community. Emma Bridgewater Pottery, Goodwin International, JCB, Steelite, Cornwell's Chemists, Reels in Motion, Staffordshire Housing, HSBC, JPR Roofing, Keele University, Staffordshire University, the City Centre Partnership, Staffordshire Chambers of Commerce, the New Vic Theatre, local historian Fred Hughes, and the City of Stoke-on-Trent Council are working together to change perceptions of Stoke-on-Trent and raise the city's profile. See more in: https://historicengland.org.uk/content/heritage-counts/pub/2016/case-study-stoke-on-trent-pdf/.

achieved by the development of city centre communication plans that outline the responsibilities of both the community and the council, and channels to use.[486]

This case study therefore confirms the important social role of industrial heritage which can lead to local revival when treated as whole. The effectiveness of the various practices has been discussed in a report by Phil Tomlinson (2015), who concludes that: 'the net result has been that an industry that looked to be on its last legs a few years ago has reinvented itself… there appears to be a renewed vigour that is helping to ensure that there is at least a future for the sector… and that old traditional manufacturing districts are capable of enjoying a renaissance'.[487] In sum, understanding how Stoke-on-Trent City Council transformed industrial heritage, including community engagement practices, recovery of initial uses, and representation of industrial heritage as a whole could also help regenerate the city of Volos and recover its strong performance.

[486] A number of digital engagement techniques have been designed such as e-bulletins, social media platforms and online guides that provide new opportunities for reaching different stakeholders. See more in: "Community Maker - building a cohesive community through an arts and culture project in Stoke-on-Trent," Local Government Association, accessed November 1, 2019, https://www.local.gov.uk/community-maker-building-cohesive-community-through-arts-and-culture-project-stoke-trent; https://www.supportstaffordshire.org.uk/about-us/our-services.

[487] "The revival of the UK's ceramic industry," Positive News, accessed November 1, 2019, https://www.positive.news/lifestyle/arts/revival-uks-ceramic-industry/; "How England's broken ceramics industry put itself back together," The conversation, accessed November 1, 2019, https://theconversation.com/how-englands-broken-ceramics-industry-put-itself-back-together-48196.

6.4 Recovering the lost industrial identity

There are a large number of published studies describing the necessity of incorporating post-industrial landscapes into urban regeneration projects.[488] According to Luis Loures (2008), the industrial landscape should be interpreted and revived as a single 'element' and not as a number of individual buildings.[489] This relatively recent approach to industrial remnants is linked to the development of new frameworks and strategies considering industrial heritage as an integral part of collective identity.[490] Lessons from these approaches are very relevant to the case of Volos considering its vast network of industrial remnants within the city fabric. Therefore, the rehabilitation of Glavanis Ironworks could be part of a more extensive redevelopment approach.

6.4.1 Landscape of memory, Blaenavon Industrial Landscape

One of the original examples of this approach is the Blaenavon Industrial Landscape in South Wales. Before we move on to discuss its redevelopment process, it is first necessary to determine its significance. In 2000, the UNESCO World Heritage Committee recognised the Blaenavon Industrial Landscape as having Outstanding Universal Value due to its social, economic, and technological value.[491] Blaenavon's World Heritage status it based on its 'coal and ore mines, quarries, a primitive railway system, furnaces, workers' homes, and the social infrastructure of their community

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[488] Legner, *Redevelopment through rehabilitation*, (2007); Loures, Luis. "Post-Industrial Landscapes as renaissance locus: the case study research methods," in *Sustainable City V*, ed. Carlos Brebbia, Aspa Gospodini, and Enzo Tiezzi (Southampton: WIT Press, 2008); Luis Loures, and Pat Crawford, "Finding Public Consensus: The Relevance of Public Participation in Post-industrial Landscape Reclamation," proceedings of the 1st WSEAS International Conference on Landscape Architecture, Algarve, Portugal, June 11-13, 2008: 117-122; Luis Loures, Tim Heuer, Dina Horta, Sandra Silva, and Raul Santos, "Reinventing the Post-industrial Landscape: A Multifunctional Cluster Approach as Redevelopment Strategy," proceedings of the 1st WSEAS International Conference on Landscape Architecture, Algarve, Portugal, June 11-13, 2008: 123-129.

[489] Luis Loures, "Industrial Heritage: The past in the future of the city," *WSEAS Transactions on environment and development*, Issue 8, Volume 4 (August 2008): 688.

[490] Dennis Rodwell, *Conservation and Sustainability in Historic Cities* (Oxford, UK: Blackwell Publishing Ltd, 2007); Paola Pressenda and Maria Luisa Sturani, "Open Air Museums and Ecomuseums as Tools for Landscape Management: Some Italian Experiences," in *Ecomuseums: A Sense of Place* (Continuum International Publishing Group, 2011).

[491] According to the WHC Nomination Documentation, Criterion (iii) and Criterion (iv) are the criteria under which inscription is proposed. See: UNESCO, *Nomination of the Blaenavon industrial landscape for inclusion in the World Heritage List* (Paris: UNESCO, 2000). Available online at: https://whc.unesco.org/uploads/nominations/984.pdf.

that bear exceptional testimony of its early industrial community'.[492] For UNESCO, Blaenavon provides 'an extraordinarily comprehensive picture of all the crucial elements of the industrialisation process'.[493] Moreover, as the Blaenavon nomination document (1999) presents, the town exemplifies how 'the evolutionary process of industrialisation came to an end, leaving significant distinguishing features visible in material form and a continuing landscape with significant evidence of its evolution over time.' [494]

Observations of the author during a site visit include retention of some important sites in the area, not only the main attractions of the Blaenavon Ironworks and the Big Pit coal mine, but also a whole landscape encompassing period buildings, scars of mineral mining, allied transport (steam railway and canal), and manufacturing activity.[495] The rapid growth of the area during the nineteenth century also created a network of chapels, schools, workmen's institutes and well preserved workers' housing which are still part of the industrial landscape. According to Calvin Jones and Max Munday, 'a series of projects linked to the conservation and reuse of industrial heritage, designed to increase visitor numbers to Blaenavon, have potentially promoted the social identity. Key projects comprised infrastructure improvements, new construction, conservation, monitoring and repair of relict sites, together with more general improvements to the housing stock, and development of new starter units to complement tourism activity'.[496] Further on this, Jones and Munday address the issue of tourism, arguing that these projects have significantly increased the number of visitors to the region.[497]

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[492] UNESCO, *Nomination of the Blaenavon industrial landscape* (2000).
[493] UNESCO, *Nomination of the Blaenavon industrial landscape* (2000).
[494] The Blaenavon Partnership, *Nomination of the Blaenavon Industrial Landscape for inclusion in the world heritage list. World Heritage Site Management Plan* (Torfaen County Borough Council: 1999), 24.
[495] Blaenavon Ironworks was historically the industry leader in terms of technology, and closely connected with the discovery of the basic oxygen process which revolutionised steel making after the 1870s. See more in: Catherine Thomas, "World Heritage site status – a catalyst for heritage-led sustainable regeneration: Blaenavon Industrial Landscape, United Kingdom," in *World Heritage: Benefits Beyond Borders*, ed. Amareswar Galla (Cambridge: UNESCO and Cambridge University Press, 2012): 309-310; 'Currently Big Pit is part of the National Museums and Galleries of Wales (NMGW) and the main Blaenavon attraction, drawing around 80,000 visitors per annum.' See more in: Calvin Jones and Max Munday, "Blaenavon and United Nations World Heritage Site Status: Is Conservation of Industrial Heritage a Road to Local Economic Development?," *Regional Studies*, 35:6 (2001): 587.
[496] Jones and Munday, "Blaenavon and United Nations World Heritage Site Status," 588.
[497] Jones and Munday, "Blaenavon and United Nations World Heritage Site Status," 588.

The main strength of local redevelopment approaches, however, has been the enhancement and promotion of social significance and local industrial identity through activities and visual representation practices. For instance, heritage walks and volunteering are mechanisms which have helped to ensure that the social benefit of the BILWHS is fully realised.[498] According to UNESCO's key priorities, 'heritage volunteering provides people with opportunities to learn new skills, meet people and strengthen communities, gain experience for future employment, as well as gain confidence and have fun.'[499] Moreover, the Blaenavon World Heritage Centre provides educational activities, learning schemes, and qualification-based training to people of all ages, thereby supporting the future employability of Blaenavon's local community.[500] As a result, it appears that volunteering activities and community participation through heritage have encouraged celebration of local industrial identity, connecting contemporary life with the industrial era.

These connections are constantly enhanced by the active involvement of the town's public services. For example, the Blaenavon Workmen's Hall, built in 1895, still houses a community cinema and concert hall as well as conference and meeting rooms.[501] Choirs, bands, and sports clubs, established in the town since the nineteenth century, reflect local working-class identity. The reuse approach of Blaenavon Industrial Landscape illustrates effectively how the partnership between service systems and communities may result into a greater sense of responsibility and ownership. Understanding how intangible heritage can be retained might therefore benefit the

[498] Heritage walks are among the main activities at the site.
See: http://www.visitblaenavon.co.uk/en/WalkandExplore/TreasureTrails.aspx
[499] Chris Blandford Associates, *Blaenavon Industrial Landscape World Heritage Site Management Plan 2018-2023. Delivering well-being benefits through heritage management and heritage-led regeneration* (London: CBA, 2018), 71.
[500] Following the author's visit to the Blaenavon World Heritage Centre, considerable documentation in written and oral form is being continually gathered and is available at the Centre, including information on individuals' lives and the industrial society of this iron, steel, and coal community.
[501] Blaenavon Workmen's Hall is one of the most impressive buildings in the Blaenavon World Heritage Site. Opened in January 1895, it is a testament to Blaenavon's proud social history. Its creation was funded by the Blaenavon Workmen's Institute, which weekly deducted a halfpenny from its members' wages. For decades the Workmen's Hall was the focal point of the community, providing a library, games, entertainment, and recreational activities. See more in: "Blaenavon Workmen's Hall," Visit Blaenavon, accessed November 1, 2019,
http://www.visitblaenavon.co.uk/en/VisitBlaenavon/ThingsToDo/BlaenavonWorkmensHall.aspx.

local community of Volos and help build up a comprehensive and inclusive attitude towards industrial heritage like that found in Blaenavon.

6.4.2 Commemorative value, commune of Sesto San Giovanni

The promotion of local collective identity can be observed in the former industrial town of Sesto San Giovanni in Italy. Like many other industrial towns, Sesto's story has been marked by the effects of deindustrialisation, including economic change and urban decay. As described by John Foot, during the twentieth century Sesto was the manufacturing centre for steel and heavy machinery, but from the early 1980s recession and high unemployment rates led to social discontent and identity crisis.[502] What makes Sesto unique is its application of identity-specific strategies that may not succeed in gaining World Heritage status, but which have undeniably recovered its strong industrial culture.

Before proceeding to examine these strategies, it is necessary to explain the direct effects of deindustrialisation on the urban environment of Sesto. According to Andrea Muehlebach, by the 1990s one third of Sesto's urban area was abandoned, and most industrial buildings and sites of architectural significance were in an advanced state of decay.[503] Indirect effects included a dramatic decrease in trade and population as well as high unemployment rates.[504] According to Renato Covino, President of AIPAI (Italian Association for Industrial Archaeology Heritage), the town's 'cathedrals of labour', once known for their glorious industrial presence, are now 'reclaimed by nature and wrapped into an unreal silence'.[505] As Foot vividly describes, central streets were no longer crowded by blue-overalled workers.[506] There is still a pressing need for urban

[502] John Foot, *Milan since the Miracle: City, Culture, and Identity* (Oxford: Berg Publishers, 2001), 16.
[503] Andrea Muehlebach, "The body of Solidarity: Heritage, Memory, and Materiality in Post Industrial Italy," *Comparative Studies in Society and History* 59, no. 1 (2017): 97.
[504] The number of workers fell from forty thousand to three thousand in just a decade. See Mühlbach, *The body of Solidarity*, 97.
[505] Renato Covino, "Industrial Patrimony for Local Development and Territorial Enhancement," in *Industrial Patrimony/Patrimoine de l' Industrie*. Proceedings of the Conference in Sesto San Giovanni, Italy, 24-27 Sept. 2010, 85-87.
[506] Foot, *Milan since the Miracle*, 174–75.

and social recovery in Sesto's urban settlement, which used to be full of the sound and smell of industrial life.

This melancholy story generated a number of initiatives, mainly organised by the town council, aiming to preserve its industrial ruins. Among the most significant efforts has been the town's application to become a UNESCO World Heritage Site in 2006 (currently only twenty-one industrial sites are in the list).[507] According to Massimo Negri, Sesto presented itself as an industrial landscape, where not only industrial buildings but also worker's houses, public halls, libraries, and machinery, should be preserved as a whole.[508] As in Blaenavon, this approach of presenting the entire town as a whole may be relevant for the city of Volos. Seeing Volos as a broader industrial landscape could potentially provide a solution to the problem of preservation.

Sesto's candidacy has an original focus on solidarity as the 'heart 'of their civilisation.[509] As Mühlbach states, the proposal is based on 'labour and the productive process'.[510] This demonstrates that industrial buildings could play an important commemorative role for locals. Seeing industrial heritage as a fundamental element of cultural identity increases the need to preserve everything associated with the productive process and the values generated by it. According to the historian Anna Bull, it is essential to interpret Sesto not only as 'an economic and productive system' but also as a reference point 'out of which explicit visions, conceptions, and knowledge - specifically also the values freedom and solidarity - were forged'.[511] Similarly, Sesto's

[507] Mary Griffiths and Kim Barbour, *Making publics - Making places* (Adelaide: University of Adelaide Press, 2016), 86.
[508] Massimo Negri, "Some Notes about the Sesto San Giovanni Application for the Unesco World Heritage List," in *Industrial Patrimony/Patrimoine de l' Industrie*. Proceedings of the Conference in Sesto San Giovanni, Italy, 24-27 Sept. 2010, 85-87. 2011: 18-19.
[509] Solidarity has been a key concept in European industrial movements, characterised both as a 'common struggle' and a deep ethical commitment. See: Noelle Molé, "Hauntings of Solidarity in Post Fordist Italy." *Anthropological Quarterly* 85, no.2 (2012): 371-398; Steinar Stjernø, *Solidarity in Europe: The History of an Idea* (Cambridge: Cambridge University Press, 2005). Furthermore, during the early and mid-twentieth century, the term referred to class solidarity and social justice. See Andrea Mühlbach, "Complexio Oppositorum: Notes on the Left in neoliberal Italy," *Public Culture* 21, no. 3: 495-515; Stjernø, *Solidarity in Europe* (2005).
[510] Mühlbach, *The body of Solidarity*, 98.
[511] Anna Bull, "An end to Collective Identities? Political Culture and Voting Behaviour in Sesto San Giovanni and Erba," *Modern Italy* 1, no.2 (2016): 23-43.

former mayor Giorgio Oldrini states that the town has 'a great capacity for innovation ' but also 'great social cohesion and therefore profound solidarity'.[512]

A number of collaborative projects have been implemented in an effort to strengthen the digital presence and awareness of Sesto's candidacy. Apart from the Sesto San Govanni web portal and the active platform on Facebook, particular attention should be given to 'Sestopedia', which is something like a local Wikipedia or encyclopaedia.[513] Although these projects have been criticised for their focus on the local public (due to language restrictions), they are inventive in the way they try to build a new identity for the city.[514] Sestopedia was launched by the municipality and co-authored by local citizens or former workers who wanted their memories to be heard and shared. This, according to Giovanna Fossa, is the originality of Sesto's place branding: 'authenticity versus image – basically, the content of collective memories and human work, not simply the preservation of the container'.[515]

A number of similar initiatives have tried to build links between the industrial communities of the past and the present. For instance, the '16 no(n)ni per l'UNESCO ' (2012) and the 'l racconti del Villaggio Falck '(2016) projects successfully made Sesto meaningful for younger generations.[516] Through exhibitions of old photographs or publications with memories and pictures, these initiatives made Sesto's industrial landscape live again.[517]

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[512] Giorgio Oldrini made this point in a 2008 speech supporting the town's candidacy. See in: Donald Howard Bell, *Sesto San Giovanni: Workers, Culture, and Politics in an Italian Town, 1880–1922* (New Brunswick, N.J.: Rutgers University Press, 1986).

[513] In the 'Sesto per l'UNESCO' Facebook archive there are many films showing engagement with students and former workers. This archive also gives prominence to images and reports on conserved machinery, archaeological bike tours, and more.

[514] Griffiths and Barbour, *Making publics - Making places*, 87.

[515] Giovanna Fossa, "Milan: Creative industries and the uses of heritage," in *Industrial heritage sites in transformation: Clash of discourses*, ed. Heike Oevermann and Harald Mieg (New York and Abingdon: Routledge, 2015), 77.

[516] '16 no(n)ni per l' UNESCO' means 'Sixteen grandparents for UNESCO' and is a project that won a Lombardy Region grant for culture and social cohesion. Also, 'I racconti del villaggio Falck' means 'The Falck village's tales'. See: Fossa, "Milan: Creative industries and the uses of heritage," 64.

[517] Maria Christina Paganoni, "Introduction-City Branding and New Media: Linguistic, Discursive and Semiotic Aspects," in *City Branding and New Media: Linguistic Perspectives, Discursive Strategies and Multimodality* (Palgrave Pivot, London, 2015).

Finally, in an effort to transform Sesto san Giovanni from a monofunctional to a multifunctional city, further initiatives such as the URBACT programme, the NeT-TOPIC thematic network, and the North Milan Development Agency project have been implemented.[518] All these projects focus on promoting citizen integration and social cohesion while enhancing employability and improving job skills through training and participatory experiences. During the development of the NeT-TOPIC strategic plan, citizens, civic entities, and private stakeholders were involved in evaluating the plan itself.[519] Such participatory experiences and planning partnerships have added to the cultural awareness and professional skills of local government and technical experts.[520] These continuous efforts transforming Sesto into a more attractive place with higher quality of life, employment prospects, social cohesion, and community engagement may be relevant for Volos. Indeed, the city of Volos has not yet been able to recover the solidarity that used to exist during the industrial era. Therefore, the example of Sesto San Giovanni could be extremely beneficial for that.

6.4.3 Industrial museums

Several studies have revealed that open-air museums and ecomuseums can be sustainable organisations aiming to preserve local industrial identity.[521] According to

[518] "Recovering the future: economic conversion in the north Milan suburbs," European Commission, accessed November 1, 2019, https://ec.europa.eu/regional_policy/en/projects/italy/recovering-the-future-economic-conversion-in-the-north-milan-suburbs.

[519] Fernando Barreiro, *About identity and urban regeneration. In Building new urban identities: From monofunctional to multifunctional cities* (Salford: Net-TOPIC, 2009), 15. Available Online: http://urbact.eu/sites/default/files/import/Projects/Net_TOPIC/outputs_media/Position_Paper_-_Seminar_Salford_Definitive__14_10_02.pdf (accessed 6 May 2019).

[520] URBACT II, *Industrial heritage in Sesto San Giovanni: a real asset for urban development. Sesto San Giovanni Local Action Plan.* NeT-TOPIC Thematic Network, page 42. Available online: http://www.sestosg.net/CmsReply/ImageServlet/SESTO%20LAP%20-%20English%20version.pdf (accessed 6 May 2019).

[521] Open-air museums and ecomuseums can be considered a subcategory of industrial museums. Industrial museums in general utilise historic industrial sites aiming to support economic growth, mainly from tourism, and they often display artefacts linked to traditional industrial processes as well as social, industrial, and urban history. See more in: Roeland Paardekooper, *The value of an archaeological open-air museum is in its use. Understanding archaeological open-air museums and their visitors* (Leiden: Sidestone Press, 2012); Mary-Catherine Elizabeth Garden, "The Heritagescape: Exploring the Phenomenon of the Heritage Site," (PhD diss., University of Cambridge, 2004); Sandra Maria Shafernich "Open-air museums in Denmark and Sweden: A critical review," *Museum Management and Curatorship*, 13:1 (1994): 9-37.

Michael Stratton, 'historically, the concept of using museums to save and interpret industrial identity was drawn from the movement to preserve aspects of folk life'.[522] For instance, Ford's Greenfield Village, being a large indoor and outdoor industrial complex in the Detroit suburb of Dearborn, aimed to celebrate the resourcefulness of American innovators such as the Wright brothers, Henry Heinz, Thomas Edison, and Ford himself.[523] Similarly, the Ironbridge Gorge and Beamish Museums in England were among the first attempts to challenge conventional boundaries between museum and environment.[524] Although these early attempts to exhibit industrial culture have successfully differentiated themselves from conventional museums, they have also been heavily criticised due their processes of removal and re-erection.[525] For instance, in his comprehensive essay Bob West questions the practice of museum-making and the authenticity of an outdoor museum such as Ironbridge.[526] Their achievements, however, in transforming popular perceptions of the past and fundamentally altering the environments and economies of the surrounding places, explain why this type of museum might be a potential reuse practice in Volos.[527]

Skansen in Sweden is also chosen as comparative case study preserving historic artefacts in their broader cultural and social environment. As Paul Oliver describes, Skansen is an early example of an open-air museum, opened in 1891 to present the traditional way of life, vernacular buildings, and farmsteads.[528] Artur Hazelius, the founder of Skansen, built the museum in order to save Swedish peasant and folk culture from disappearance. According to Marilena Alivizatou, his initiative was

[522] The concept was initially developed in Scandinavia at the end of the nineteenth century. Then, thanks to John D. Rockefeller at Colonial Williamsburg and Henry Ford at Greenfield Village, the museum concept was imported into the United States during the Interwar Era (1920-1940). See: Stratton, *Industrial Buildings,* 126.
[523] Stratton, *Industrial Buildings*, 126.
[524] Alfrey and Putnam, *The Industrial Heritage*, 33.
[525] Alfrey and Putnam, *The Industrial Heritage*, 28-39.
[526] Bob West, "The making of the English working past: a critical view of the Ironbridge Gorge Museum," in *The Museum Time-Machine, Putting cultures on display*, ed. Robert Lumley (London and New York: Routledge, 1988), 35-61.
[527] We should remember here that Volos already has an industrial museum, the Rooftile and Brickworks Museum N. & S. Tsalapatas. However, as mentioned in Chapter 5, its reuse has not been able to sustainably regenerate the area. There is still a need for alternative actions which could more positively impact the city.
[528] Oliver Paul, "Re-Presenting and Representing the Vernacular: The Open-Air Museum," in *Consuming Tradition, Manufacturing Heritage: Global Norms and Urban Forms in the Age of Tourism*, ed. Nezar Al Sayyad, (London: Routledge, 2001), 191–211.

provoked by the migration of large parts of the rural population of Sweden to industrial zones and urban areas.[529] As she further explains, in Skansen one can find

rebuilt cottages and houses together with associated objects (furniture and tools) as well as a representation of folk celebrations and festivities.[530] It could be argued that this idealisation of the past could also help to recover the local identity of Volos, providing the community with a sense of roots and continuity.

Similar romanticism can also be found in another type of industrial museum, the ecomuseum. The concept of the ecomuseum, originating in France in the 1970s, was based on the holistic preservation of intangible and tangible heritage together, as opposed to traditional museums mainly focusing on objects.[531] In his publication on ecomuseums, Peter Davis analyses this shift from museums as places for individual objects to museums as platforms for the local community to connect with its industrial past.[532] Le Creusot-Montceau (in the region of Bourgogne) was the first ecomuseum aiming to transform abandoned industrial sites into cultural spaces that would celebrate the customs and tradition of the community.[533] Indeed, the continuous engagement of the local community has made this first ecomuseum in France successful.[534] As Alfrey and Putnam describe, Le Creusot-Montceau-Les-Mines has engaged the community 'in the determination and constitution of locally oriented exhibitions, defining them, their histories and culture'.[535]

The community-based museum movement has also been observed elsewhere, for example at the Ecomuseum Bergslagen and the Langban in Sweden, the Springburn Museum in Glasgow, and the Colne Valley Museum in England. Apart from being sustainable participatory projects in industrial heritage, these museums have assisted

[529] Marilena Alivizatou, *Intangible Heritage and the Museum: New Perspectives on Cultural Preservation* (Walnut Creek: Left Coast Press, 2012), 19.
[530] Alivizatou, *Intangible Heritage and the Museum*, 19.
[531] Alfrey and Putnam, *The Industrial Heritage*, 33.
[532] Peter Davis*, Ecomuseums: A Sense of Place*. (London: Leicester University Press, 1999).
[533] Patrick Boylan, "The Intangible Heritage: A Challenge and an Opportunity for Museums and Museum Professional Training," *International Journal of Intangible Heritage* no.1 (2006): 54–65.
[534] Alivizatou, *Intangible Heritage and the Museum*, 19.
[535] Alfrey and Putnam, *The Industrial Heritage*, 33; Scalbert Bellaigue, "Industrial archaeology in industrial anthropology: The ecomuseum of the community of Le Creusot-Montreal-Les-Mines, France," *Industrial Archaeology Review V*, no.3 (1981): 228-236.

in the regeneration of the surrounding areas by increasing tourism.[536] The full evaluation of industrial evidence as part of public life and experiences, as well as the engagement of various audiences, may be necessary for the viable rehabilitation of industrial buildings in Volos.

6.5 Ecological restoration, Ruhr region

In the search for cases that combine the holistic regeneration of an industrial landscape with the social transformation of a distressed region, the Internationalen Bauausstellung (IBA) Emscher Park (programme lasted from 1989 to 1999) is identified as an exceptional example integrating structures of post-industrial decay into a 'landscape of renewal'.[537] It includes an informed symbolic interaction with industrial heritage ruins, the meticulous maintenance of furnishings, and the effective creation of a successful tourist attraction. The approach used here to build a new identity and gradually unify industrial remains could prove to be useful in the design of a reuse strategy for Volos, specifically in helping the author to identify a viable new function for Glavanis Ironworks that might strengthen local and regional identity.

The Emscher region lies in the former industrial centre of Western Germany. Being part of the Ruhr area (Ruhrgebiet), the Emscher Park extends around the Emscher river, which is a tributary of the Rhine, and includes the cities of Duisburg, Oberhausen, Mülheim, Bottrop, Essen, Bochum, Dortmund, and others. From having been a historically agricultural area, the Ruhr has since the beginning of the nineteenth century developed into a centre of mining, iron, and steel production.[538] At its peak in 1956 the mining industry employed nearly half a million people.[539] However, due to

[536] Ivan Karp and Christine Mullen Kreamer, *Museums and Communities: The Politics of Public Culture* (Washington: Smithsonian Institution Press, 1992); Portia James, "Building a Community-Based Identity at Anacostia Museum," in *Heritage, Museums and Galleries: An Introductory Reader*, ed. Gerard Corsane (London: Routledge, 2005): 373–393.
[537] Kerstin Barndt, "Memory Traces of an Abandoned Set of Futures.' Industrial Ruins in the Post-Industrial Landscapes of East and West Germany," in *Ruins of Modernity*, ed. Julia Hell and Andreas Schönle (2008): 272.
[538] Stephan Leppert, "Peter Latz: Landschaftspark Duisburg-Nord, Germania," *Domus*, no. 802 (1998): 32-37.
[539] Leppert, "Peter Latz," 32-37.

the iron and steel crisis and the subsequent decline of these industries from 1958, the Ruhr area experienced significant social, economic, and structural changes.[540]

This deindustrialised landscape, extending across Germany from west to east, has recently become the site of widespread developments in industrial heritage. A hundred and seventeen projects implemented during a ten-year period have contributed not only to an increased recognition of industrial heritage but also to the development of a tourist trail (the Route of Industrial Culture) and the ecological restoration of the Emscher river system.[541] As Karl Ganser (director of the IBA project) proudly articulates, 'the attitude in the Emscher region has changed. After ten years of the IBA Emscher Park, people have the feeling that their region is back on the map. After all, a number of beautiful things have evolved. And people are appreciative of this too, because now they can take their visitors there. Moreover, the media has provided quite positive coverage of what has been done here in the past ten years. People feel better, even though objectively the economic situation remains unchanged'. [542]

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[540] Since the 1970s, the region has experienced a steady decline in its economy, influenced by the replacement of coal by cheaper imports and alternative fuels as well as by crises in the iron and steel industries caused by global restructuring. These events caused the large-scale closure of mines and industries in the region. See: Robert Shaw, "The International Building Exhibition (IBA) Emscher Park, Germany: A Model for Sustainable Restructuring?" *European Planning Studies* 10, no.1 (2002): 77-97. (Retrieved 08 May 2019) Online available at:
http://web.mit.edu/bdr/Public/Chapter%20Five%20references/Shaw_Emscher%20Park.pdf;
The unemployment rate in the 1980s was a staggering 15%, and was still 9.3% in February 2010. See: Judith LaBelle, "Emscher Park, Germany - Expanding the Definition of a 'Park'," *Crossing Boundaries in Park Management:* Proceedings of the 11th Conference on Research and Resource Management in Parks and on Public Lands, ed. David Harmon (Hancock, Michigan: The George Wright Society, 2001). Retrieved on 08 May 2019, from: http://www.georgewright.org/37labell.pdf; Bundesagentur für Arbeit 2010. Arbeitslosenquoten in Janresdurchschitt 2010, Lander und Kreise (Average Unemployment rates in 2010/ Federal States and Regions). Retrieved on 08 May 2019, from:
http://www.pub.arbeitsamt.de/hst/services/statistik/000000/html/start/karten/aloq_kreis_jahr.html;
Gert-Jan Hospers, "Industrial Heritage Tourism and Regional Restructuring in the European Union," *European Planning Studies* 10, no. 3, (2002): 397-404.

[541] These 117 projects in 17 different cities were initiated by the government of North Rhine-Westphalia as part of the Internationale Bauausstellung Emscher Park (IBA Emscher Park or Internationale Architecture Exhibition Emscher Park) program. This program was implemented between 1989 and 1999 and aimed to develop structural changes in the Ruhr region which would integrate new concepts in society, culture, and ecology. See: Technische Universität München: *Learning from Duisburg Nord* (München: Chair for Landscape Architecture and Industrial Landscape, 2009).

[542] Quoted in Schroeder, 'Schröder, Thies. "An Outdated View of Modernism: Interview with Karl Ganser, IBA Emscher Park," in *Bauhaus Dessau: Industrielles Gartenreich. Dessau–Bitterfeld–Wittenberg*, ed. Stiftung Bauhaus Dessau, vol. 2, 80–87 (Berlin: ex pose, 1999): 85.

6.5.1 Symbolic reference to industrial heritage ruins, Duisburg North Landscape Park

A number of publications characterise the Duisburg North Landscape Park as one of the world's most prestigious reuse projects.[543] According to Kerstin Barndt, it is an example of successful reuse because of its 'conscious reference to the tradition and iconography of classical ruins'.[544] Situated on the former site of the Duisburg-Meiderich smelting works, which was shut down in 1985, the site was transformed into a park as part of the IBA project.[545] The design concept of Peter Latz, lead architect for the Duisburg park, was based on a recognition of the value of the site's industrial condition.[546] His approach to rehabilitation of industrial heritage intended 'to integrate, shape, develop and interlink the existing patterns that were formed by its previous industrial use, and to find a new interpretation with a new syntax'.[547] Surviving industrial components have become recreational spaces maintaining their authentic character and are interspersed with vegetation, gardens, walkways, and waterways.[548]

This romanticised landscape is further enriched by photographic exhibitions by Bernd and Hilla Becher on the outer walls of the former power station (Fig. 60). The site creates an all-embracing dialogue between the industrial landscape and the artistic photographs, helping visitors to fully experience industrial culture and industrial

[543] Matt Steinglass, "The Machine in the Garden," *Metropolis* 20, nr. 2 (2000): 126 – 131, 166 – 167; Udo Weilacher, *Syntax of Landscape. The Landscape Architecture by Peter Latz and Partners* (Basel: Birkhäuser, 2008); Lisa Diedrich, "No Politics, No Park: The Duisburg-Nord Model," *Topos: European Landscape Magazine*, no. 26 (1999): 69 – 78; Barndt, "Memory Traces of an Abandoned Set of Futures."
[544] Barndt, "Memory Traces of an Abandoned Set of Futures," 278.
[545] Design and realisation of the project took place between 1990 and 2002. The project team included Latz + Partner, Latz-Riehl, and G. Lipkowsky, with the help of citizens, associations, and employment schemes. See: "Duisburg North Landscape Park," *Anthos*, 31 nr. 3 (1992): 27 – 32; "Metamorphosis of the blast furnace plant Thyssen-Meiderich into a landscape park," Latz and Partner, accessed November 1, 2019,https://www.latzundpartner.de/en/projekte/postindustrielle-landschaften/landschaftspark-duisburg-nord-de/
[546] Weilacher, *Syntax of Landscape*, 106.
[547] Peter Latz, *Rust Red: Landscape Park Duisburg-Nord* (Munich: Hirmer Verlag, 2017), 16-29.
[548] Visitors can see blast furnaces, the Gasometer converted into a diving centre, former bunkers now containing alpine climbing gardens, a large square Piazza Metallica for events and festivals, the Sintergarten and Bunkergartens, large metal pipes passing through walls used as a children's playground, a visitor's centre, a restaurant, and much more. See: Peter Latz, "The Idea of Making Time Visible" *Topos* 33 (2000): 94 - 99.

spaces. This layering of nature and culture softens the roughness of the industrial parts, and there has been some criticism of the reuse activities. As Lisa Diedrich

describes, in the former Gasometer, history is being overshadowed by recreation in its new use as a diving centre.[549] However, as Barndt states, this transition should be acknowledged as an act 'with a degree of ironic self-reflection'.[550] He further uses the example of a climbing hall inside the old furnace complex and refers to the rock climbers who when they 'reach the top of the wall, they encounter a cross to mark the summit as Monte Thyssino, in reference to the Thyssen steel firm that previously owned and operated the furnace complex'.[551]

This combination of recreation and historical awareness is also found in Duisburg's various labyrinthine pathways offering visitors remarkable open views. For instance, when seen from the elevated Blue Footbridge, the terraced garden in Duisburg park frames industrial ruins in a contemplative setting (Fig. 61). The display of these ruins is a surprising detail in the rehabilitated site. The Duisburg Industrial Landscape therefore effectively combines nature and culture, recreation and industrial time, rationale and romanticism. In Dean's words, Duisburg's gardens 'are places of heightened energy. They have the character of a stage. Such a work of art can be a place of intensive self-experience for the visitor'.[552] The reintegration of art (including industrial remnants) into nature might also be considered a healing process for abandoned industrial sites in the city of Volos. Transforming a dead factory into an art gallery or an industrial sculpture could offer extraordinary new place-making perspectives in Volos' multifaceted scenery.

[549] Lisa Diedrich, "No Politics, No Park: The Duisburg-Nord Model," *Topos: European Landscape Magazine*, no. 26 (1999): 69 – 78.
[550] Barndt, "Memory Traces of an Abandoned Set of Futures," 279.
[551] Barndt, "Memory Traces of an Abandoned Set of Futures," 279; The summit of "Monte Thyssino", a mountain that does not appear on any map, owes its name to the German steel magnate August Thyssen. See: Udo Weilacher, "Landscape Park Duisburg Nord, Climbers on Monte Thyssino," in *In Gardens. Profiles of Contemporary European Landscape Architecture* (Basel: Birkhäuser Basel, 2005), 70-74.
[552] Martin Dean, "Places against Oblivion of the Self," in *Dieter Kienast* (Basel: Birkhäuser, 2004): 9.

6.5.2 A powerful tourist attraction, Zollverein Coal Mine Industrial Complex

Apart from the Duisburg Industrial Landscape, there are also a number of other projects worth investigation. One such is the Zollverein Coal Mine Industrial Complex in Essen.[553] Originally designed by the architects Fritz Schupp and Martin Kremer, it is known for its functional Bauhaus aesthetic with cuboid buildings of reinforced concrete and steel trusses.[554] As a UNESCO World Cultural Heritage Site since 2001 and a famous tourist attraction, the Zollverein Complex is known for its architectural merit and technological value.[555] According to Massimo Preite, the Zollverein Coal Mine Industrial Complex (German Zeche Zollverein) is a flagship site with a 'multiplier effect that triggered a chain of other projects involving the re-use of the abandoned industrial heritage'.[556]

'Following the end of the coal and steel era, the former Zollverein Coal Mine and Coking Plant is transformed into a cultural and business location of the future,' says Hans-Peter Noll, Chairman of the Board of Zollverein Foundation.[557] Once the largest colliery in Europe, it is currently home to a number of attractions combining culture, architecture, design, and industrial history. The complex, whose shafts and coking plant are listed monuments, has largely been restored to its original state, making it an outstanding example of preserved authenticity. Indeed, according to UNESCO's description, 'the authenticity of the important group of industrial buildings designed for Zollverein XII by Fritz Schupp has been carefully conserved'.[558] Although its initial functions have been lost, the original building skins and interdependence between buildings and furnishings (part of the original design concept) are still observed at the

[553] The Zollverein Coal Mine Industrial Complex comprises of the Zollverein Cola Mine and the Coking Plan in Essen. See: Delia Boesch, *Press Release Location Development* (Essen: Stiftung Zollverein, 2018), 1.
[554] LaBelle, "Emscher Park, Germany," 18.
[555] It has been inscribed into the UNESCO list of World Heritage Sites since December 14, 2001, and is one of the anchor points of the European Route of Industrial Heritage. See more in: WHC Nomination Documentation. See more in: Carol Berens, *Redeveloping Industrial Sites: A Guide for Architects, Planners, and Developers* (New Jersey: John Wiley & Sons, 2011), 180-190.
[556] Massimo Preite, "Urban regeneration and planning," in I*ndustrial Heritage Re-tooled. The TICCIH guide to Industrial Heritage Conservation,* ed. James Douet (Lancaster: Carnegie Publishing Limited, 2012): 104.
[557] Following the masterplan by Rem Koolhaas, a number of new buildings, conversion, and renovation projects will continue to be developed in the following years. See: Delia Boesch, *Press Release Location Development*, 1.
[558] "Zollverein Coal Mine Industrial Complex in Essen," UNESCO, accessed November 1, 2019, https://whc.unesco.org/en/list/975/.

site. The adaptive reuse of this complex has been sensitive enough to ensure that the monuments remain intact.

An integrative planning approach was followed, with the historic shafts and plants at the core of recognition and reuse. This involved the organisation of new functions and buildings around the preserved complex of buildings and equipment. Although Zollverein XII is a notable case where furnishings have been maintained in situ, a number of scholars criticise its machinery reuse practices. For instance, Benjamin Fragner, when referring to the former boiler house which is now the Red Dot Design Museum (conversion by Norman Foster – Foster & Partners Architects), argues: 'The boiler house's technological equipment seems fixed in the moment when it went out of service and has been transformed into a backdrop for the modern design objects. (Fig. 62, 63) For effect, this gesture hints at questioning the point of exhibiting consumer items.'[559] Furthermore, Kania Hans expresses her disapproval of the removal or alteration of interior furnishings for cultural purposes.[560] She describes massive interventions into the stock of the coal washery, which has been converted into a visitor centre, affecting the overall aesthetic-technical composition of the building.[561]

Despite this criticism, Zollverein's transformation has both socially and economically restructured the area while retaining the ethos of the place. IBA's incremental approach to regeneration, together with public involvement and collaboration with regional government, has transformed the industrial complex into a tourist and cultural destination.[562]

As at Emscher Park, industrial heritage reuse here has had considerable benefits for the preservation of the monuments as well as the improvement of the regional

[559] Fragner, *Adaptive re-use*, 116.
[560] Kania Hans, "Was ist Zollverein?" in *Industrie- und Technikmuseen im Wandel: Perspektiven und Standortbestimmungen*, ed. Hartmut John and Ira Mazzoni, 109–144 (Bielefeld: Transcript - Verlag für Kommunikation, Kultur und soziale Praxis, 2005): 133; Andreas Rossmann, "Geschichtsabriss im Ruhrgebiet," *Frankfurter Allgemeine Zeitung* Nr. 276, November 25, 2004: 37. [Online]. Available at: https://www.faz.net/aktuell/feuilleton/zeche-zollverein-geschichtsabriss-im-ruhrgebiet-1195553.html.
[561] Hans, "Was ist Zollverein?", 133.
[562] Miriam Kelly, *Following function: Creative reuse of industrial sites*, (Winston Churchill Memorial Trust, 2013) 10, 21; Jürgen Kretschmann, "Stakeholder orientated sustainable land management: The Ruhr Area as a role model for urban areas," *International Journal of Mining Science and Technology*, No. 23 (2013): 659-663; Achim Prossek, "Culture through transformation – transformation through culture. Industrial Heritage in Ruhr Region – the example of Zeche Zollverein," *Heritage and Media in Europe*, no. 3 (2006): 239-248.

economy. Like most other tourist destinations, sources of income at both sites include sales of tickets, food, beverages, travel expenses, and accommodation.[563] Benefits in the Ruhr area have also been associated with the reduction of unemployment rates for the local community, and with economic restructuring.[564] Finally, one of the most important socio-cultural benefits has been the strengthening of local identity and pride as well as the recognition and celebration of the local industrial past. Therefore, it could be argued that the effects of industrial heritage rehabilitation in the Ruhr district challenge our perception of the region as a 'landscape of labour, coal and smog'.[565] The industrial past is not necessarily a burden. Architectural quality together with the ecological, social, and economic benefits of the Ruhr's industrial landscape reuse can certainly serve as a role model for sustainable transformation in the urban region of Volos. However, before we move on to this thesis' proposal it is necessary to discuss one final alternative practice where new cultural or creative clusters have contributed to the revitalisation of inner-city centres.

[563] Sonja Copic et al," Transformation of Industrial Heritage: An example of tourism industry development in the Ruhr Area (Germany)," *Geographica Pannonica* 18, no. 2 (2014): 43-50.
[564] Lutz Trettin, Uwe Neumann, and Guido Zakrzewski, "Essen and the Ruhr Area - The European Capital of Culture 2010: Development of tourism and the role of SMEs," ERSA conference papers ersa10p357, European Regional Science Association, 2011. [Online]. Available at: https://ideas.repec.org/p/wiw/wiwrsa/ersa10p357.html.
[565] Barndt, "Memory Traces of an Abandoned Set of Futures," 276.

6.6 Cultural production and creative industries, Toffee Factory

There are a growing number of published studies describing the roles of culture and creativity in the continued regeneration of post-industrial cities.[566] In an effort to recover from the 1970s' economic crisis, former industrial cities pursued urban entrepreneurial policies in order to attract investment, consumers, and talents.[567] In the 1990s the concept of creative industries emerged as a new economic action plan.[568] At a municipal and urban level, there has been considerable cooperation between cultural policy and practice, particularly influenced by the work of Richard Florida.[569] Despite a general struggle for definitional coherence, a comprehensive explanation has been given by the UK Government, Department of Culture, Media and Sport: creative industries are 'those industries which have their origin in individual creativity, skill and talent, and which have a potential for wealth and job creation through the generation and exploitation of intellectual property'.[570] This definition justifies Florida's position on the market oriented perspective of the creative or cultural activities.[571]

These cultural clusters may apply to individual buildings, larger complexes, or whole districts which are in most cases derelict sites of industrial heritage. In these cases,

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[566] For discussion on urban regeneration, see: Evans and Shaw (2004) The contribution of culture to regeneration in UK; Malcolm Miles, "Interruptions: testing the rhetoric of culturally led urban development," *Urban Studies* 42, no.5/6 (2005): 889–911. For discussion on economic development see: Richard Florida, *Cities and the Creative Class* (New York: Routledge, 2005); Allen Scott, *The Cultural Economy of Cities* (London: Sage, 2000). For discussion on social inclusion see: Eleonora Belfiore, "Art as a means of alleviating social exclusion: does it really work? A critique of instrumental cultural policies and social impact studies in the UK," *International Journal of Cultural Policy* 8, no.1 (2002): 91–106. For discussion on post-industrial cities see: Hans Mommaas, "Cultural Clusters and the Post-Industrial City: Towards the Remapping of Urban Cultural Policy," *Urban Studies* 41, no. 3 (March 2004): 507-532; Sabine Doerry, Marit Rosol and Fee Thissen, "The significance of creative industry policy narratives for Zurich's transformation toward a post-industrial city," *Cities* 58 (October 2016): 137-142.

[567] 'Talent' refers to the highly skilled workforce. See: David Harvey, "From managerialism to entrepreneurialism: The transformation in urban governance in late capitalism," *Geografiska Annaler Series* B 71, no.1 (1989): 3–17.

[568] Doerry et al, "The significance of creative industry," 137.

[569] Richard Florida, *The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community and Everyday Life* (New York: Basic Books, 2002); Graeme Evans, "Creative Cities, Creative Spaces and Urban Policy," *Urban Studies* 46, No. 5 (2009): 1003–1040.

[570] Department for Culture, Media and Sport, *Creative Industries Mapping Document*, 3-4; To find more about the debate please see: Terry Flew and Stuart Cunningham, "Creative Industries after the First Decade of Debate," *The Information Society*, no. 26 (2010): 113–123.

[571] Florida (2002) *The Rise of the Creative Class*.

creativity appears to be producing new products, services, and markets.[572] Representing a strategy for urban regeneration, the new uses may range from a mixture of cultural activities such as production, visual arts, music, or media, to a variety of entertainment spaces such as restaurants, bars, or retail spaces. According to Hans Mommaas, the creative clusters are essentially a higher level of collaborative regeneration-through-heritage practice that has also interestingly influenced urban cultural policy making and organisation.[573] In his analysis, however, Mommaas questions whether the original artistic or cultural values of these historic sites are being preserved.[574] Despite such doubts, creative industries are in many cases linked to long-term economic, cultural, and urban change.

Here, the Toffee Factory in the Ouseburn Valley area of Newcastle is chosen as a successful case where a derelict industrial building has been converted into a creative space. It is particularly relevant here for its close relationship with urban transformation – a change that is very much needed in the city of Volos. The dominant service sector replacing industrial activities in Volos has not be able to sustain the economic growth of the region around Glavanis Ironworks. Therefore, the investigation of a similar building (in terms of size and level of decay) in a deprived area that has been intensely impacted by the creative sector is relevant to plans for regeneration in Volos.

The Ouseburn Valley, often considered the birthplace of the industrial revolution in Newcastle, has developed from a post-industrial deprived centre into a vibrant cultural hub and tourist attraction. Originally home to a number of industrial activities (such as glass making, tanning, and flax milling), the valley has in the twentieth century acquired large areas of empty industrial space.[575] Its dilapidation and low rent values

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[572] James Whiting and Kevin Hannam, "Bohemias and the creation of a cosmopolitan tourism destination," In *Tourism and the Creative Industries: Theories, policies and practice,* Ed. Philip Long and Nigel D. Morpeth (Abington: Routledge, 2016), 135.

[573] Mommaas, "Cultural Clusters and the Post-Industrial City," 508.

[574] Mommaas, "Cultural Clusters and the Post-Industrial City," 508-509. To find more about cultural values in creative industries, see: David Looseley, "Cultural policy in the twenty-first century: issues, debates and discourse," *French Cultural Studies* 10, no.1 (1999): 5–20; Sharon Zukin, *Landscapes of Power* (Berkeley, CA: University of California Press, 1991); Sharon Zukin, "Postmodern urban landscapes: mapping culture and power," in *Modernity and Identity*, ed. Scott Lash and Jonathan Friedman, 221–224 (London: Basil Blackwell, 1992); Mark Banks et al, "Risk and Trust in the cultural industries," *Geoforum* 31 (2000), 453-464.

[575] Morgan, *Bygone Lower Ouseburn* (Newcastle upon Tyne: Newcastle City Libraries and Arts, 1995).

eventually attracted artists, contributing to the appearance of the valley's oldest artistic studio, the '36 Lime Street Artists' Cooperative and Studios'.[576] This has gradually led to a concentration of leisure and creative functions in the area, transforming the valley into the largest and most important creative cluster in the wider urban area of Newcastle upon Tyne.[577]

Among the most important rehabilitation projects is the reopening of the old Maynard's Factory as the Toffee Factory (Fig. 64). The severely damaged former sweet factory had stood for decades with no roof and with vegetation growing over the brickwork and was therefore a challenging site. Thanks to a regional development initiative by Newcastle City Council, the historic factory has been successfully converted into start-up units.[578] Confirming the success of the project, Lisa Tolan, Toffee Factory Centre Manager, said: 'We are delighted to see our much-loved building recognised in this way. Huge congratulations and thanks must go to everyone involved in the scheme, which has transformed the formerly derelict Maynard's factory into a thriving hub for the creative industries. In the four months since opening we have let 80% of the offices, confirming just how successful the project is.' Now home to over twenty digital and creative businesses, the factory is a hive of activity.

At this point it should be noted that the local authority, Newcastle City Council, played a vital role in this regeneration.[579] With a formal policy document produced in 2003, 'The Regeneration Strategy for the Lower Ouseburn Valley', the city has demonstrated a commitment to developing the valley as a space for creativity, leisure, and tourism.[580] The local authority's vision, presented in the document, proposed that by

[576] Ouseburn Trust, *A Celebration of 30 Years of Ouseburn Regeneration* (Newcastle upon Tyne: Ouseburn Trust, 2012).
[577] EKOS, *The Creative Sector in Newcastle and Gateshead: Report for Newcastle City Council* (Glasgow: EKOS, 2012).
[578] The development cost £6m financed by the European Union's ERDF Competitiveness Programme 2007-13, regional development agency One North East through Single Programme and Newcastle City Council. Toffee Factory is currently owned by Newcastle City Council. See more in: "Toffee factory scoops top building prize," Toffee Factory Newcastle, accessed November 1, 2019, http://www.toffeefactory.co.uk/toffee-factory-scoops-top-building-prize/01/05/2012/
[579] A number of strategic plans have been produced by the local authority. See: Newcastle City Council (2012), *Ouseburn Regeneration Investment Action Plan*; Newcastle City Council and Gateshead Council (2015), *Planning for the Future: Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne (2010–2015)*.
[580] Newcastle City Council (2003), *Regeneration Strategy for Lower Ouseburn Valley*.

2010 the Ouseburn Valley would be 'a thriving sustainable urban village . . . the best heritage features of the area will have been preserved [and] a wide range of businesses, especially those relating to creative, innovative, multimedia and cultural activities will be prospering. A wide variety of service and leisure offerings will be available for residents, employees and visitors to the area.'[581] This clearly reflects the local authority's interest in supporting culture and the creative industries as forces of urban regeneration. Such a strategic plan does not exist for the city of Volos, which makes Ouseburn Valley a useful source of inspiration.

Concerning its design, the Victorian factory conversion has managed to retain the historic character of the building while also making innovative additions. According to the Xsite architectural team, 'the design retains and enhances the qualities of the existing brick structure while sensitively extending it to provide 2,600sq.m. of office space'.[582] As RIBA critics argue: 'The derelict toffee factory, with trees growing out of its ruined shell, has been reincarnated as a managed work space for the creative industries. (…) It has become a landmark in the regeneration of the Ouseburn Valley and a significant addition to Newcastle's architectural legacy.' [583] The award winning refurbished industrial site, now managed by Creative Space Management, is an example of what can be done with an imaginative approach to reuse. Preserving this 'gritty' historic structure signifies the city's interest in maintaining authenticity.

The strongest feature, however, of this reuse practice has been the regeneration of the post-industrial city and the subsequent strengthening of Newcastle's local economy. As in the case of the Zollverein Coal Mine Industrial Complex, the Toffee Factory has had a multiplier effect triggering a chain of other projects involving creative activities. According to a recent planning document by Newcastle City Council, the whole area of the Ouseburn Valley has now become a creative hub employing

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[581] Newcastle City Council, *Regeneration Strategy for Lower Ouseburn Valley*, 3.

[582] "Toffee Factory - Project Info," Xsite, accessed November 1, 2019, http://www.xsitearchitecture.co.uk/portfolio/toffee-factory/project-page.html

[583] The project won two Royal Institution of Chartered Surveyors (RICS) Awards - Project of the Year and Regeneration. It then won three Royal Institute of British Architects (RIBA) North East Awards - The "RIBA Award" - and was longlisted for the Stirling Prize - Building of the Year Award and Sustainable Building of the Year Award.

around 2,000 workers in around 400 businesses.[584] These are numbers that could only previously be found at the peak of the area's industrial activity.[585] A City Council spokesperson stated that 'the successful redevelopment of the Toffee Factory has enhanced the city's growing international reputation as a centre for cultural and creative industries, helping to grow the knowledge economy and create much needed employment opportunities. It is another important step in the wider regeneration of the Ouseburn Valley which will support small businesses and put us at the forefront of innovation in the design and digital sectors.'[586] Transforming the disused and derelict Ouseburn Valley into a cultural hotspot and a 'trendy place to live' can be identified as a successful reuse result.

6.7 Summary

The aim of this chapter was to provide an analysis of alternative strategies in industrial heritage conservation and reuse. The various factors identified in the investigation of the selected examples, such as the actors involved in the decision-making process, the conservation actions and interventions, and the development of a possible new function, will be used in developing the proposal in Chapter 7. In order to find the most appropriate strategy for industrial heritage reuse, all these factors should be taken into consideration.

[584] James Whiting and Kevin Hannam, "Bohemias and the creation of a cosmopolitan tourism destination Creative practice and consumption in the Ouseburn Valley, Newcastle upon Tyne, UK," in *Tourism and the Creative Industries*, ed. Philip Long and Nigel D. Morpeth (Oxon and New York: Routledge, 2016), 143.
[585] Whiting and Hannam, "Bohemias and the creation of a cosmopolitan tourism destination," 143.
[586] "Toffee factory scoops top building prize," Toffee Factory Newcastle, accessed November 3, 2019, http://www.toffeefactory.co.uk/toffee-factory-scoops-top-building-prize/01/05/2012/

CHAPTER 7 – EVIDENCE-BASED CHOICE OF NEW USE FOR INDUSTRIAL HERITAGE IN VOLOS

Following the historical analysis and assessment of cultural significance of Glavanis Ironworks earlier in this thesis, together with the identification of various challenges and comparative best practices, this section will set out a vision for the future of Volos' industrial heritage. The examination of Glavanis Ironworks provides a foundation for this vision by demonstrating why there is a need for preservation. This chapter provides an approach that can assist in the choice of reuse for industrial heritage sites and tests the proposed approach using the primary case study of Glavanis Ironworks. The recommendations and assistance formulated here are developed from evidence collected during field work and a thorough analysis of the themes raised. The aim is to propose a methodology that will help promote the city through the transformation of its industrial heritage assets.

7.1 Introduction

The purpose of this chapter is to identify criteria for assessing potential new uses for industrial heritage sites and to discuss them based on their application to Glavanis Ironworks. The proposed approach will serve as a tool for evaluating a number of potential uses and selecting the most appropriate. The successful choice will be based on the criteria developed as well as the values identified for Glavanis Ironworks (examined in Chapter 3) and the evaluation aspects identified in the comparative case studies (examined in Chapter 5).

As previously shown, selecting a new use for industrial heritage sites in Volos is a major problem. A lack of structured evaluation leads to the urgent need for a new approach and assistance for choice-making. The new approach is important because it will guide decision-makers towards evidence-based choices that retain the site's historic integrity while meeting the needs of modern occupants. It can assist Volos City Council in protecting and enhancing industrial heritage whilst enabling the public to recognise both the benefits of living in a conservation area and their own responsibilities for its future protection and management.

The case studies so far have yielded crucial information relevant to the construction of an informed approach for Volos. It is now possible to synthesise all the evidence on which the assessment of significance for Glavanis Ironworks has been based, and to summarise the major issues, factors, or processes that have been identified in both the reuse strategies in Volos and in the comparative analysis. In sum, this chapter will provide a new approach to the problem of finding new uses for industrial buildings, the first to evaluate the full significance of these buildings.

7.2 Development of criteria for decision-making

Selecting a new use for Glavanis Ironworks, while preserving and enhancing the value of the heritage site, is a process that must take into consideration a number of crucial criteria in order to identify the best possible option. This section will therefore introduce an evaluation approach that facilitates selection of a new use as well as supporting the efficient and viable transformation of the site.

To help develop a list of assessment criteria, the literature reviewed so far as well as the critical appraisal and comparative case studies have allowed identification of factors contributing to an appropriate use. As demonstrated in the comparative case studies (examined in Chapter 5), such as the Tate Gallery in Liverpool and the Toffee Factory in Newcastle, it is necessary to find a balance between preservation and change. According to the main objectives of Stirling's conversion, the new use should maintain the authenticity of the building and have a minimal impact on its heritage significance.[587] According to ICOMOS, the compatibility of a new use to a heritage structure contributes to the efficiency of an adaptive reuse project.[588] The new use should therefore have minimal impact on the layout, setting, and fabric of the existing structure, as well as retaining the heritage values.

In order to assess the compatibility of a new use, one must comprehensively analyse the asset's values, attributes, and sensitivities, along with the requirements of the new

[587] Stirling, speech quoted in: Ann Lee Morgan and Colin Naylor, *Contemporary Architects*, 230.
[588] ICOMOS, *Cultural Heritage, the UN Sustainable Development Goals, and the New Urban Agenda*, (ICOMOS Concept Note for the United Nations Agenda 2030 and the Third United Nations Conference on Housing and Sustainable Urban Development, HABITAT III, 2015).

use. Following the critical appraisal (examined in Chapter 4), one of the most serious problems in current industrial heritage reuse strategies in Volos is the destruction of the asset's values through inconsiderate interventions. It is therefore essential to identify features contributing to the site's significance, to be aware of the various existing or arising threats/issues, and to analyse the potential impacts a new use might have on these features.

Another significant factor is the question of whether to keep the original use or propose a new, alternative one. Based on the comparative case studies (examined in Chapter 5), the answer to this question depends both on the heritage site itself and on the surrounding environment. Assessment of the condition of the remaining structure or equipment is crucial before making a decision about what can be kept or restored. Furthermore, identifying its spatial characteristics is important for exploiting the property based on contemporary community needs. The location of the site, its accessibility, and its urban context can inform whether the original use could adapt to the contemporary environment and surrounding land uses.

For instance, many formerly abandoned potteries in Stoke-on-Trent were revived with new uses that are very closely related to the original uses. This decision has achieved the enhancement and promotion of local industrial identity and history by making ceramics central to the identity of the town. However, retaining the original use is not always an obvious or easy choice. In the case of Zollverein XII in the Duisburg industrial landscape, original functions were not viable on the competitive world market.[589] Nevertheless, the regeneration approach has been able to combine recreation with historical awareness by acting as link connecting contemporary life with the industrial era. Analysis of such strategies is very relevant to this discussion as it can help identify factors that are vital in deciding whether to keep the original functional identity or develop a new one.

Social and environmental impact should also be taken into account. Considering community values and fulfilling the needs of the population contributes to new

[589] Jürgen Kretschmann, "Stakeholder orientated sustainable land management: The Ruhr Area," *International Journal of Mining Science and Technology* 23 (2013): 661.

functions that create interaction and awareness and enhance community pride.[590] Incorporation of community values is therefore recommended, allowing everyone who has an interest in the industrial building or landscape to actively participate in the decision-making process. As Kate Clark confirms, national agencies usually have a different perspective on formal protection to that of the local community.[591] Insensitive conservation and reuse actions therefore often derive from this gap 'between the values that are taken into account in protecting a site and the values that need to be accommodated in managing it'.[592] [593]

Answering the question of who should be involved in and responsible for choosing a new use for an industrial site is a vital step prior to any conservation action. In the case of Volos there are a number of stakeholders who could contribute to the decision-making process and affect the decision of how Glavanis Ironworks should be rehabilitated. To date, users, owners, residents and industrial heritage groups have rarely participated in the decision-making process. Since there may be unequal power relations and a hierarchy between stakeholder groups, it is vital to involve as many actors as possible, thereby making industrial heritage preservation and reuse a bottom-up participatory approach.[594]

The decision-making process can be made more efficient by involving all relevant stakeholders, such as government, experts, and the community, at the beginning of

[590] Although considering community values seems new to Greek heritage conservation and management practices, this intention was expressed in the 1931 version of the Athens Charter, which states that 'the best guarantee in the matter of the preservation of monuments and works of art, derives from the respect and attachment of the peoples themselves.' See: The Athens Charter for the Restoration of Historic Monuments, VII b.

[591] She justifies this by describing the interesting case of the Getty Conservation Institute values-based Agora Project. She explains that in this case the project team investigated issues related to community value recognition and treatment. See: Clark, *Values-Based Heritage Management*, 68; Marta De La Torre, "Values in Heritage Conservation: A Project of The Getty Conservation Institute," *APT Bulletin: The Journal of Preservation Technology* Vol. 45, No. 2/3, Special Issue on values-based preservation (2014), 19-24.

[592] Clark, *Values-Based Heritage Management*, 68.

[593] This situation is quite common in the formal system of protecting historic buildings in Greece. When determining what to protect, Greek national agencies usually limit their decisions to tangible values. Not including community values severely affects industrial heritage preservation and reuse in Greece.

[594] As Loes Veldpaus states in her research, there may be a number of questions that should be answered when identifying stakeholders, such as: 'Who gets to decide? At which stage of the process will stakeholders be involved? When the community is not involved in the process of defining which resources have significance, why would they feel responsible for protecting it? They may value it, or learn to do so, but what if they don't? What if that same community gets to decide which attributes and values are to be designated as heritage? Will that change what gets designated? And will that change the management approach?' See: Veldpaus, *Historic urban landscapes*, 132.

the process. As demonstrated in the cases of Stoke-on-Trent and Sesto San Giovanni (see Chapter 6), engaging with the community as early as possible when deciding on a new use can have significant social benefits, such as an understanding of the place and its needs, job creation, and social cohesion. During this engagement phase, stakeholders may participate in workshops, consultation events, and training opportunities where they can express their interdisciplinary insights and assist the managing team in making a choice. According to Katrina Alauddin and Kerry London, not classifying the influence (to a direct or an indirect influence) on the decision can bring people together to find a solution for a community problem.[595] In sum, involving each and every stakeholder or participant in the choice-making process can help identify a viable new use that is adapted to current community needs.

The next section will now introduce a new set of criteria well-suited to the selection of a new use for industrial heritage sites, which can significantly increase the efficiency of the evaluation procedure.

7.2.1 The value of semi structured interviews in addressing the research questions

The methods used to gain empirical data on the main case study in Volos, contributing to the creation of the new tool, included interviews and questionnaires alongside the extensive site surveys. This involved key personnel in local government, academia, and historic industrial activity, but also members of the public who could be users of Glavanis Ironworks following the industrial building's conversion.[596] The following paragraphs will discuss in more detail the reasons for including interviews and questionnaires as research tools for this thesis.

Firstly, the interviews allowed the author to engage with participants in much greater depth, and to analyse more accurately their personal views on the research subject.

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[595] Katrina Alauddin and Kerry London, "Design management: Challenges for adaptive re-use," in *36th Annual Conference for Australasian University Building Educators Association*, ed. Rick Best and Craig Langston, Gold Coast, Australia, 28-29 April 2011: 15.

[596] Please see Annex 1 for the list of questions used during the semi-structured interviews (Annex 1.1), the consent form (Annex 1.2), and the Participant Information Sheet (Annex 1.3) given to each interviewee before the interview.

Essentially, the author gathered information directly from the source and recorded responses in an accurate way than second-hand data or informal communication. The technique allowed the collection of large amount of data on human interactions and experiences. It also allowed the author to explore in detail the feelings, reactions, and practices of individuals. By observing and interviewing those who have actually been involved in the decision-making process, as well as those who have personally experienced industrial activity and local transformation, this research puts emphasis on intangible values in local industrial building reuse.

The interviews relating to the main case study were divided into three sets. The first set concerned those engaged directly in the decision-making process for industrial building reuse in Volos as a whole. These people included governmental officers dealing with preservation procedures, law, and guidance, as well as those associated with building conversions and selection of new uses. Thus, these interviews focused on the city 'elites' who were involved in developing industrial building reuse projects and those who have a role in promoting the city's image. The second set of interviewees was composed of former industrial workers who had devoted their lives to engineering, and local researchers who have studied industrial heritage memories and testimonies. These participants helped the author gain an insight into historic industrial processes as well as the living conditions of the local industrial community. Finally, the third set of interviewees included local residents and users of the existing rehabilitated industrial buildings. The author benefited from this interaction with local residents, as it helped her to question the efficacy of policy initiatives on social inclusion and community engagement. Furthermore, discussions with potential users have given the author a greater understanding of local requirements and limitations, as well as how the project could develop after the building is being reused.

Table 4: List of key interviewees	
Dimitris Paliouras	Architect, Director of the 5th Ephorate of Modern Monuments
Gagas Giorgos	Urban Planner, Head Manager of the Municipal Development Company SA
Agriantoni Christina	Historian, Emeritus Professor at the Department of History, Archaeology and Social Anthropology, University of Thessaly
Kostas Adamakis	Architect, Professor at the Department of Architecture, University of Thessaly
Aigli Dimoglou	Historian, Directorate of Archives, Museums & Libraries at the Municipality of Volos
Giannis Koutis	Historian, Principal staff member at the Municipal Center for History and Documentation
Nikos Kouroumalos	Former Worker at Glavanis Ironworks
Nikos Kasandrinos	Former worker at Stamatopoulos Ironworks
Anastasia Kontaxi	Researcher in industrial based testimonies and memories at the University of Thessaly
Dimitris Konstandaras	Historian, researcher studying working class life during industrial revolution

Source: M. Dimitriou 2019

Thus, interviews played a significant role in the collection of empirical evidence and provided an opportunity for the author to pursue and clarify lines of questioning pertinent to the research. Interview techniques also allowed the author to generate large amounts of data quickly across a wide range of subjects from a small number of

people, and in considerable depth. It is this intensive quality that the interview offers as a research method, making it an appropriate tool for answering the research questions. It completes the critical analysis of both the main and the comparative case studies by providing a better understanding of the issues involved, and by complementing the text-based sources.

In sum, interviews with local stakeholders provided vital evidence based on people's practical experience in the field. Their perceptions and opinions helped the author assess the strengths and weaknesses of existing reuse practices and policies, supporting the critical interpretation of the documents.

7.3 A new tool for evaluating alternative new uses for industrial sites

As discussed in the literature review, among the main issues reported by scholars in adaptive reuse practice is the identification of an appropriate new use.[597] Although there has been an increasing interest in incorporating interdisciplinary views when repurposing a historic site, there is no set of criteria established to guide that choice. Following the critical appraisal of existing reuse practices in Volos (examined in Chapter 5), this lack of guidance is identified as the major problem. The novel set of criteria below will fill this gap by covering a wide range of aspects, incorporating conservation principles and elements influenced by the value-based management and HUL approaches. The creation of such a comprehensive set of aspects that can help interdisciplinary teams take evidence-based decisions when repurposing vacant industrial heritage sites is original because to the author's knowledge it has never been attempted in this way before.

The site's significance is placed at the top of this proposed list. Only through an understanding of industrial heritage values can decision-makers assess how these qualities are vulnerable to damage or loss. The assessment of significance is a vital element in both the value-based management and HUL approaches, and a frequent topic of discussion when converting industrial heritage sites (examined in Chapter 2). However, the sub-criteria/values proposed here differ from those of previous investigations. For instance, the assessment of architectural value (examined in Chapter 4), can significantly affect the impact a new use might have on the original features and character, and on whether the new use may enhance or diminish the authenticity of the site. Furthermore, the technological and economic values, which have previously been overlooked in reuse practices in Volos (examined in Chapter 5), have here been placed among the core values when assessing industrial heritage. Involving all relevant values provide a holistic approach to the relevant evidence and stakeholders prior to making a decision.

[597] Hamond and McMahon, Recording and conserving Ireland's Industrial Heritage, 30; Heritage Council Victoria, Adaptive Reuse, 11; Burchell and Listokin (1981) The adaptive reuse handbook; Merciu, Cercleux, and Drăghici, "Conversion of Industrial Heritage as a Vector of Cultural Regeneration," 162-166; Wong (2017) Adaptive reuse: extending the lives of buildings.

An understanding of significance is necessary for an assessment of issues and compatibility criteria focussing on the impact of new functional requirements on the original asset. The investigation of Glavanis Ironworks (examined in Chapter 4) has demonstrated that the selection of a new use should be tailored to resolve relevant issues, such as vulnerable structural attributes or the need for reformed legislative frameworks. According to Corey Andrew Wilson, 'compatibility issues are typically dealt with through the local zoning regulations, but developers use their best judgement in such situations to create a project that is suitable,' a common practice in Volos (discussed in Chapter 5).[598] Transforming the selection of a new use into an evidence-based approach is a significant contribution to local needs and industrial heritage awareness. Finally, the surroundings criterion can help assess each alternative use according to its relationship with uses of buildings in the surrounding area, as well as its potential for creating links with other industrial heritage assets in the city centre.

Table 4 illustrates this set of criteria/sub-criteria that can assist in selecting a new use that preserves the asset or prevents any unnecessary damage to or loss of historic fabric.

[598] Corey Andrew Wilson, "Adaptive reuse of industrial buildings in Toronto, Ontario," 13.

Table 5: Assessment criteria for a viable new use		
Evaluation criteria	**Sub-criteria**	**Evaluation focus**
Significance	Historic value	Consider whether the new use increases understanding of the industrial past and present
	Architectural value	Consider whether the new use conserves the existing fabric, original building material, features that are part of the site's character and authenticity, structural condition, architectural condition, and spatial organisation
	Technological value	Consider whether the new use conserves the existing equipment and promotes the knowledge behind the manufacturing process
	Social value	Consider whether the new use promotes community values, enhances community awareness, participation and cohesion, and retains a sense of place
	Economic value and impact	Measure building value, conversion cost, maintenance cost, sources of finance, target market, and economic benefits such as return on investments and increase in numbers of tourists
Issues	Building condition	Evaluate vulnerability to weather conditions, health and safety issues, and animal activity
	Policies and governmental incentives	Evaluate their ability to protect industrial heritage at risk
	Ownership and management	Consider whether the current or future owner will be able to effectively manage the rehabilitated premises
Compatibility	Suitability of new function to original structure	Evaluate the effect of the new function on the original design, features, and layout. What are the ideal and the realistic outcomes?
	Heritage recognition and public interest	Consider whether the new use preserves collective memories about the original function and historic background

Surroundings	Land use planning or zoning	Consider whether the proposed land use is relevant to the surrounding land uses
	Urban planning or landscaping	Consider links to the city centre and other industrial buildings
	Site and situation	Consider the levels of accessibility to the site
	Environmental impact	Evaluate the potential environmental quality of the surroundings (quality impacted by the new use)

Source: M. Dimitriou 2019

7.4 Identifying project alternatives

Having discussed how to assess a new use, the following section tests the new set of criteria on a series of options that could be applicable to the case of Glavanis Ironworks. These options reflect new uses that have been chosen by Volos City Council to accommodate industrial buildings (examined in Chapter 4) or identified following analysis of comparative best practices (examined in Chapter 5).

7.4.1 First alternative: industrial museum, single use

The first alternative would be to transform Glavanis Ironworks into an industrial museum or open-air museum. This alternative should be taken into consideration as it is a solution that would portray the social and industrial history of the region.[599] According to Frank Atkinson, a significant reason for such a transformation is that it 'could justify a pride in many aspects of the region's past and hence help to improve its future'.[600] Additionally, converting the existing structure into a museum seems to have compatible new use requirements, with limited additions or modifications to the structure or layout required, thereby enhancing collective memory concerning the site.

Bringing an abandoned industrial site to life through its conversion to a cultural use such as that of an industrial museum is very common in Volos. This use has previously been applied to the Tsalapatas Rooftile and Brickworks (examined in Chapter 4, p. 121). Similar rehabilitation practices are also seen in the comparative examples, such as the Tate Liverpool and the Zollverein XII in Duisburg (examined in Chapter 5, p. 135, 157). However, potential weaknesses identified in such conversions in Volos include the inability to enhance community awareness and participation or to retain a sense of place (discussed in Chapter 5). Moreover, according to Louvi, the Tsalapatas Rooftile and Brickworks Museum has been associated with economic challenges including less than ideal investment return, lack of funding, and tight budgets (discussed in Chapter

[599] Christine Stevens, "Beamish - An Open-Air Museum in a changing industrial community," *Acta Ethnographica Hungarica* 55, Nr. 2 (2010): 401-415.
[600] Frank Atkinson, *The Man Who Made Beamish, an autobiography* (Gateshead, UK: Northern Books, 1999), 87.

5).[601] Not being able to enhance the social and economic value of Glavanis Ironworks would considerably affect holistic preservation of the site's significance.

Such reuse would require some basic interventions that would preserve its existing layout and architectural value as well as its relationship with the surrounding environment. In order to accommodate this option, the existing building would require restoration of its load-bearing walls as well as reconstruction of the roofs. The manager's office could be used as the main entrance and ticket hall, the warehouse could be converted into a shop and café, and the remaining rooms could host exhibitions and galleries relating to the industrial processes and historic background. Therefore, converting Glavanis Ironworks into an industrial museum could potentially enhance the historic, architectural, and technological value of the building.

7.4.2 Second alternative: office building, single use

The second alternative would be to transform Glavanis Ironworks into an office space. This option is based on the municipality's proposal to increase civil servants' workspaces by converting Glavanis Ironworks into Public Sector offices (addressed in Chapter 3, p. 101). Although this may seem a convenient solution for the Municipality, it would be compatible neither with the original function nor with collective memory concerning the site. Indeed, this alternative would fail to promote its historic, technological, and social value. Following the examination of existing cases that have been transformed into office buildings (examined in Chapter 5), transforming the site into an office building would potentially erase its industrial past. This new use would not be able to generate income or enhance the local economy, which would have an impact on the site's economic value and surroundings.

In this case, although the existing buildings could be maintained, conversion would significantly alter the existing layout and structural condition of the site, such as in

[601] Aspasia Louvi, "Tsalapatas Museum, a jewel that needs protection," *Taxydromos Press*, July 20, 2008. To find out more about the challenging economic benefits please see: Laura M. Baird and Lesley Greenaway, *Volunteering in Museums: A research Study into Volunteering within Museums,* Edinburgh: Museums, Galleries Scotland, 2009); John Hamshere, "British Industrial Museums – Experiences, problems and perspectives seen from Sheffield," in *The Museums and the Industrial Heritage*, ed. Henrik Harnow, Keld Nielsen & Frank Allan Rasmussen (Odense, Kulturarvsstyrelsen, 2006), 23.

cases of the Papandou Tobacco Warehouse and the former Silk Factory Etmektjoglu (examined in Chapter 5). The scale of interventions, such as in the cases of Matsagos Tobacco Factory and Papastratos warehouse (examined in Chapter 5), would neither promote the authenticity of the site, nor enhance its architectural significance. At Glavanis, the conversion would require not only restoration of the load-bearing walls and reconstruction of the roofs, but also interior additions to the tool making room and the foundry workshop in order to accommodate new use requirements such as meeting and work rooms, storage rooms, file rooms, mail rooms, copier areas, and service units/coffee bars.

7.4.3 Third alternative: creative industries, mixed-use

The third alternative would be to transform Glavanis Ironworks into open-plan workspaces targeted at creative industries.[602] This option, instead of accommodating a single new use, could combine several new uses merging creative solutions, such as commercial and retail spaces, cultural centres, studios and workshops.[603] This alternative would exploit the existing spaces by adding commercial, industrial, and touristic uses. A relevant example of this is the Toffee Factory in the Ouseburn Valley area of Newcastle (discussed in Chapter 6). Additionally, converting the complex into a group of smaller units could potentially mitigate rental loss and lower financial risk.[604]

As in the case of the Toffee Factory in Newcastle (examined in Chapter 5, p. 162), creative solutions balance new uses with conservation. This solution could support a

[602] The Department for Digital, Culture, Media & Sport created one among the earliest definitions of creative industries. See: DCMS, *Creative Industries Mapping Document* (London: Department of Culture, Media and Sports of the United Kingdom, 1998). According to that definition, which is adopted in this thesis, creative industries are 'those activities which have their origin in individual creativity, skill, and talent and which have the potential for wealth and job creation through the generation and exploitation of intellectual property'. Creative industries may include 'advertising, architecture, arts and antique markets, computer and video games, crafts, design, designer fashion, film and video, music, performing arts, publishing, software, and television and radio'. See: Terry Flew, *The Creative Industries Culture and Policy* (London: Sage publication, 2012): 9.

[603] David Geddes, *Creative Industries in Historic Buildings and Environments* (London: Colliers International, 2018), 7-8; Miriam Kelly (2013), *Following function: Creative reuse of industrial sites*.

[604] This could be a highly favourable environment for small businesses and creative industries. One option that could help companies to secure funding would be tax relief and incentives for development. See more in: Geddes, *Creative Industries in Historic Buildings,* 13-14.

long-term vision converting Glavanis Ironworks into start-up units, contributing to the development of the city centre as a thriving hub for digital and creative industries.[605] Moreover, as in the cases of Zollverein Coal Mine Industrial Complex in Essen and the Potteries in Stoke-on-Trent, this option would support the revival of the initial function of Glavanis Ironworks (discussed in Chapter 5, p. 157, 140). The strongest aspect in this case is that the creative reuse would not only allow access to the public but would also create place awareness and attachment when people interact with industrial or creative processes.[606]

In this case, Glavanis Ironworks could act as a catalyst for the development of Volos. Adopting a polycentric model, like that of Stoke-on-Trent (examined in Chapter 5), could transform the city into a network of creative sites.[607] This approach envisions the city centre of Volos as a potential 'creative district' or 'creative quarter'.[608] Glavanis Ironworks could find a place at the heart of the city, benefitting from connections with the university, stations, administrative hubs, and other industrial assets. As in Stoke-on-Trent, activity already exists, with hundreds of residents, students, and visitors passing through the city centre every day.[609]

This third alternative would enable the site to retain its layout and much of its building structure. Recommendations could include transforming part of the site into an engineering workshop or centre providing connections between industry and the Engineering Department at the University of Thessaly, acting as a hub for communicating research and providing a competitive advantage in the industry. Similarly, converting part of the complex into studios, galleries, and shops could link retail uses to the industrial background. The industrial complex could be incorporated into a landscape with shops and walkways drawing people to the site.

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[605] EKOS, *The Creative Sector in Newcastle and Gateshead: Report for Newcastle City Council* (Glasgow: EKOS, 2012).
[606] Frank Heemskerk, Maria van der Hoeven and, Ronald H.A. Plasterk, *Creative Value* (The Hague: Ministry of Economic Affairs and Ministry of Education, Culture and Science, 2009), 33.
[607] Stoke-on-Trent City Council and URBED, *Stoke Town Masterplan (Final Report, 3rd Draft),* (October 2011): 2-5. Available online at: http://webapps.stoke.gov.uk/uploadedfiles/20111031_FINAL%20Stoke%20ReportV7_compressed4.pdf.
[608] To read more about creative districts please see: Whiting and Hannam, "The secret garden," 318–334.
[609] Stoke-on-Trent City Council and URBED, *Stoke Town Masterplan*, 19.

7.4.4 Fourth alternative: residential use, single use

The fourth alternative would be to transform Glavanis Ironworks into residential units. We should consider this alternative as it is compatible with the surrounding land uses and environment. According to Geddes, 'residential conversion can cope with irregular spaces.' [610] However, this use would involve the accommodation of a function that is not compatible with the form of the building. Glavanis Ironworks has a specialised structure making it difficult to adapt to a housing function without destroying the element that warranted its protection. The subdivision of Glavanis Ironworks, which would be necessary in order to create small apartments or houses, would detract from its existing spatial qualities.

This conversion would require restoration of the load-bearing walls, and reconstruction of the roofs, as well as major interior additions. Although the existing façades could be restored, conversion would have to significantly alter the architectural condition and existing fabric of the site, such as in the case of Matsagos Tobacco Factory where its reuse completely transformed the interior of the building. Additionally, residential conversion would require 'more substantial upgrading of fabric to meet sound transmission and thermal performance requirements.'[611] The scale of interventions would potentially damage the authenticity of the place.

[610] David Geddes, *Use of Historic Buildings for Residential Purposes: Scoping report prepared for Historic England* (London: Colliers International, 2015), 14.
[611] Geddes, *Use of Historic Buildings for Residential Purposes,* 14.

Table 6: Identifying and narrowing down alternative uses

Evaluation criteria	Sub-criteria	Alternative 1 Industrial museum	Alternative 2 Offices spaces	Alternative 3 Creative industries	Alternative 4 Residential spaces
Significance	Historic value	✓		✓	
	Architectural value	✓		✓	
	Technological value	✓		✓	
	Social value			✓	
	Economic value and impact			✓	✓
Issues	Building condition	Medium vulnerability	Low vulnerability	Low vulnerability	Low vulnerability
	Policies and governmental incentives	Medium ability	Low ability	Medium ability	Low ability
	Ownership and management		✓	✓	✓
Compatibility	Suitability of new function to original structure	✓	✓	✓	
	Heritage recognition and public interest	✓		✓	
Surroundings	Land use planning or zoning		✓	✓	✓

	Urban planning or landscaping			✓	
	Site and situation			✓	
	Environmental impact	✓		✓	

Source: M. Dimitriou 2019

The above evaluation indicates that the conversion into open-plan workspaces targeted at creative industries is the most compatible option for Glavanis Ironworks (Table 5). Transforming the former industrial asset into a group of uses and structures, instead of a single use, would be a novel strategy for Volos with the potential to revitalise the surrounding neighbourhood as well as the city centre. It is clear from the critical appraisal (examined in Chapter 5) and discussions with local residents that there is an appetite for an ambitious scheme. There is strong support for a creative and visitor-related reuse of the former Glavanis Ironworks. Additionally, partial reuse could provide an opportunity to create sufficient economic value for funding restoration of the rest of the site.

7.5 Summary

This chapter aimed to improve the decision-making process with regards to the selection of the best alternative new use for industrial buildings, while testing the proposed set of criteria on the selected case study of Glavanis Ironworks in Volos. It presented a methodology that helps to address complex issues involved in deciding on the transformation of industrial assets, thereby achieving evidence-based and viable conversions. The set of criteria used in the evaluation process can be further adapted to other industrial heritage projects depending on the site-specific objectives, significance, and needs.

Following the proposed methodology, a number of alternatives have been proposed for the conversion of Glavanis Ironworks, namely: (1) an industrial museum, (2) an office building, (3) a hub for the creative industries, and (4) a residential building. The novel set of assessment criteria has guided selection of the best alternative new use, which in the case of Glavanis Ironworks would be a creative mixed-use structure (third alternative). This has the potential not only to transform the site, but also to initiate regeneration, transforming Volos city centre into a creative quarter and attracting businesses as well as visitors.

CHAPTER 8 – CONCLUSION

8.1 Introduction

The former industrial city of Volos must evolve in order to sustain its existence in a changing world. Deindustrialisation has led to the abandonment of many industrial buildings in the city centre. Although some have been given a new purpose, existing practices have not effectively preserved their character and identity. Among the remaining vacant industrial sites is Glavanis Ironworks, a historic asset at risk, that encapsulates the struggles, failures, and hopes of the bygone industrial era. In order to create an informed solution to the problem of its preservation, the following research questions were asked:

RQ1: What is the significance of the existing industrial heritage in Volos?

RQ2: What are the limitations of current strategies of reuse in Volos?

RQ3: What alternative new use is required to provide an evidence-based solution to the problem of preservation? How can we identify the new use?

In order to answer these questions, this chapter evaluates the observations and key findings made in the core chapters (Chapters 4, 5, 6, and 7), situating the research in its wider context.

8.2 Revisiting the research process

This thesis opened with an account of earlier scholarship in the field of industrial heritage (Chapter 2), conservation and management theories, and adaptive reuse of historic industrial buildings (Chapter 3). While this account reflects on a number of important scholarly contributions, it highlights those that have influenced the author's methodology, including the works of Marilyn Palmer and Peter Neaverson, Jukka Jokilehto, Bernard G. Feilden, Judith Alfrey and Tim Putnam, and the latest publications by Michael Stratton, all of which are discussed in detail. The literature

review is devoted to key elements of industrial heritage preservation, understanding restoration and reuse as part of the conservation process. The role of assessing the significance of industrial heritage is also discussed in Chapter 2. Value typologies such as that of the Heritage Lottery Fund (2004) and ICOMOS New Zealand (2010) transformed heritage evaluation, endowing it with values and principles investigated in the following chapters.

Chapter 4 and the story of Glavanis Ironworks reflects core themes in industrial heritage conservation and reuse, intending to address RQ1. An initial assessment of the site's significance has allowed an examination of the complex interplay between different factors assisting in the evolution of industrial heritage. When considering values attached to industrial heritage, recognising the reasons for preservation is essential, not only for the community but also for heritage professionals and policy makers. The latter need to develop new conservation practices and preservation legislation. As we have seen in Chapter 5, current legislation is not entirely sufficient for industrial heritage protection. Therefore, a value assessment of Glavanis Ironworks is needed to inform new economic and social phenomena connected to local industrial heritage.

Assessment of significance is especially crucial in Greece, where industrial heritage is often underappreciated. Industrial remains can be seen from multiple perspectives, including their architectural, social, and economic contexts. All these factors ought to be appreciated by anyone involved in developing these sites, for example heritage professionals, developers, officers, and the local community, in order to achieve their holistic preservation. The selected comprehensive evaluation system for Glavanis Ironworks focuses on the full involvement of all possible parties, prioritising engagement of the local community in conservation decisions and a participatory approach to heritage management.

Having identified the remains that could potentially be reused, the values that need to be enhanced, and the various aspects that may affect the conservation of Glavanis Ironworks, this research moves on to address RQ2 (Chapter 5). Examining current practices of reuse in Volos, it has become apparent that policies and recommendations for industrial buildings indicating how they should be conserved and managed are

fragmented. The investigation demonstrates (by evaluating whether current practices have been able to restore authenticity, recover lost identity, stimulate the local economy, and regenerate the urban environment) that the process of conservation for industrial buildings in Volos has not been transparent and has not involved professional guidance during the physical process of repair. A key finding has been the need for improved decision-making, as the selection of new uses has so far catered to the priorities of local government without involving the local community in the process. These practices have made industrial buildings vulnerable to interventions altering their original image and have discouraged community understanding and appreciation. Listing, conservation, and reuse processes for industrial buildings in Volos have overlooked many aspects of the buildings' significance.

Chapter 6 showed that reusing industrial buildings around the world contributes to the regeneration and revitalisation of urban communities. For instance, in the case of Stoke-on-Trent, adaptation of former industrial buildings has led to the transformation of formerly derelict industrial districts into cultural and creative hubs. As Ball highlights, adaptive reuse can help prevent demolition and reduce heritage disuse by introducing new functions that can rehabilitate and revive targeted areas of the city.[612] Similarly, in the case of the Toffee Factory in Newcastle, the selection of a viable new use has contributed to the regeneration of the post-industrial city and the subsequent strengthening of Newcastle's local economy.[613] In sum, Chapter 6 and the discussion of aspects assisting viable reuse practices contributed to the identification of a novel set of criteria (for addressing RQ3).

Finally, following the historical analysis and assessment of cultural significance of Glavanis Ironworks, together with the identification of various challenges and comparative best practices, Chapter 7 sets out a vision for the future of Volos' industrial heritage. This chapter brings together all the threads of the research by identifying a novel set of criteria for assessing potential new uses for industrial heritage sites and testing them based on their application to Glavanis Ironworks. Being a vital part of the research, Chapter 7 intends to address RQ3.

[612] Ball, "Re use potential and vacant industrial premises", 98-99.
[613] Newcastle City Council (2015), *Planning for the Future*.

8.2.1 Research limitations encountered

In the course of conducting this study, the following limitations were encountered.

Firstly, this research has assessed the significance of a single case study. The researcher chose Glavanis Ironworks and the wider city of Volos as the main case study in order to identify associated values and demonstrate the negative state of current industrial heritage conservation and reuse. A single main case study may seem inadequate for a thorough understanding of the problem. However, the methodology for holistic assessment of industrial heritage significance and the identification of weaknesses of existing reuse practices can be applied to other industrial cities in Greece, especially those with similar urban and industrial characteristics.

Semi-structured interviews of individual stakeholders were among the methods of data collection. The researcher conducted interviews with local policy makers and officers, academics in the field, professional experts in industrial heritage management, and former industrial workers, as well as a small number of local residents. However, the author was unable to interview members of the Glavanis family. Interviews with either former business owners or family members would significantly contribute to the understanding of the different phases of the site's development. Secondary data such as archival plans and archival data by Eleni Kormazou (Kazazis' nephew) were used to fill this gap.

8.3 Contribution to knowledge

The author chose to assess the significance of Glavanis Ironworks because it is among the earliest surviving examples of industrial heritage in Volos, and is a historic asset at risk and in need of rescue. This case study has provided an opportunity to identify values and address issues faced not only by Glavanis Ironworks, but also by other heritage sites all over Greece. Original line drawings, sketches, and annotated photographs are included in the author's on-site surveys and descriptions that help reveal unknown aspects of the significance of Glavanis Ironworks. Additionally, previously unknown archival sources make this study a useful resource for future

researchers, providing reference for interested national policy makers and professionals who work with industrial heritage sites.

Following the in-depth investigation of the primary case study, the shortcomings of industrial heritage protection in Volos are presented in Chapter 5. Given the considerable number of reused industrial buildings in Volos, it was a challenge to evaluate the effectiveness of current strategies. The author overcame this difficulty through evidence-based critical appraisal, which sheds new light on some key areas. A good example is the recent conversion of the former Matsagos Tobacco Factory into educational facilities for the Department of Economics (examined in Chapter 5). A careful examination of this restoration initiative revealed that some of the worst architectural damage to industrial heritage has been caused by faulty restoration, compromising the authenticity of these historic assets (examined in Section 4.4.1). Additionally, the author seems to be the first to draw attention to the ill-informed selection of new uses as a significant contribution to the problem of preservation in Volos. The standard practice of transforming redundant industrial buildings into cultural or municipal institutions without any background evaluation has not yet proven to be a spur to the development of local economy, culture, quality of life, or tourism.

This Ph.D. thesis provides a new approach to choosing viable new uses for redundant industrial buildings. The final chapters synthesise information drawn from observations on the limitations of current strategies of reuse and a discussion of comparative successful rehabilitation projects. On the basis of this observation and discussion, the author designs a novel system for evaluating the needs of and selecting a new use for Glavanis Ironworks. Approaching industrial heritage through an interdisciplinary prism, this original methodology tackles the complex architectural, urban, social, and economic challenges for industrial heritage protection in Volos.

In sum, this research contributes to the study of industrial heritage in Greece and will potentially be of great value to archaeologists, industrial historians, architects, and urban planners interested in the preservation of industrial heritage elsewhere as well as in Greece. One of its main strengths lies in the author's intimate knowledge of the main case study, reflected in the thoroughness of site surveys and archival research.

8.4 Summary

Revisiting the remains of Glavanis Ironworks has shed new light on the significance of this remarkable industrial building. Our improved understanding of the values, sensitivities, and opportunities associated with the site paves the way for evidence-based selection of a new use that will holistically transform the site. Exploring the physical evidence and commemorative impact of Glavanis Ironworks holds the key for understanding vital aspects of its development. The 20th century modification and expansion of the site provide evidence for the architectural culture and industrial identity that reshaped the centre of Volos during its industrialisation. Therefore, its reuse will potentially provide Glavanis Ironworks with a major role in the redevelopment of industrial architecture and the city of Volos.

In conclusion, this study provides not only a vision for Glavanis Ironworks and the city of Volos but also assistance for choice-making when reusing industrial heritage sites in Greece and elsewhere. It offers a knowledge base to inform government, policy makers, developers, practitioners, academic researchers, and the local community, who can now change the fate of industrial heritage reuse. Most importantly, the proposed set of criteria provide a method for selecting a successful new use that can preserve industrial tangible and intangible evidence as well as revitalising the urban fabric.

BIBLIOGRAPHY

Adamakis, Kostas. *The industrial buildings of Volos.* Athens: Piraeus Bank Group Cultural Foundation, 2009. [in Greek]

Adamakis, Kostas." The exploitation of industrial heritage as a lever for the region's development." *En Volo on Industrial Heritage in Magnesia*, no. 23 (Oct-Dec 2006): 44. [in Greek]

Agaliotou, Charalampia." Reutilization of industrial buildings and sites in Greece can act as a lever for the development of special interest/alternative tourism." *Procedia – Social and Behavioural Sciences,* no. 175 (2015): 291-298.

Agelidis, M. Spatial planning and sustainable development. Athens: Ed. Symmetria, 2000 [in Greek].

Agriantoni, Christina." Industry and city." *En Volo*, no. 23 (2006): 12-15. [in Greek]

Agriantoni, Christina. *The beginning of industrialization in Greece in the 19th century*. Athens: Commercial Bank of Greece, 1986. [in Greek]

Agriantoni, Christina." Rethinking Greece: Christina Agriantoni on Greece's industrial development and its future prospects." Interview by Ioulia Livaditi and Nikolas Nenedakis. *Greek News Agenda*, General Secretariat for Media and Communication, March 19, 2018. [Online]. Available at: http://www.greeknewsagenda.gr/index.php/interviews/rethinking-greece/6667-agriantoni.

Aitchison, Mathew. *Industrial Architecture Past and Present*. New York: Routledge, 2016.

Alauddin, Katrina and, London Kerry. 'Design management: Challenges for adaptive re-use', in Rick Best and Craig Langston (ed.) *36th Annual Conference for Australasian University Building Educators Association*, Gold Coast, Australia, 28-29 April 2011, pp. 347-363.

Alfrey, Judith, and Putnam Tim. *The Industrial Heritage: Managing Resources and Uses.* London: Routledge, 1992.

Alina, Hyz and, Karamanis Kostas. "Creative Industries in Greece. An Empirical Analysis from the Region of Epirus." London: Palgrade Pivot, 2016.

Alivizatou, Marilena. *Intangible Heritage and the Museum: New Perspectives on Cultural Preservation*. Walnut Creek: Left Coast Press, 2012.

All-Party Parliamentary Groups (APPG) - UK Parliament. *All-Party Parliamentary Group on Industrial Heritage: Report on the Challenges Facing the Industrial Heritage Sector*. London: APPG, 2018. Available at: https://industrial-archaeology.org/appg-launch-industrial-heritage-report/.

Anastasopoulos, Georgios. *History of Greek Industry: 1840-1940.* Athens: Greek publishing company, 1946. [in Greek]

Antoniadou, Sophia, Poulios Ioannis, Vavouranakis Giorgos, and Raouzaiou Pavlina. *Culture and Perspective at Times of Crisis*. Athens: Oxbow Books, 2018.

Araoz, Gustavo." Conservation Philosophy and its Development: Changing Understandings of Authenticity and Significance." *Heritage & Society* 6, Nr. 2, (2013): 144-154. DOI:10.1179/2159032X13Z.00000000010.

Arathimou, Spiridoula." Historic archival data of industrial businesses in Volos". *En Volo on Industrial Heritage in Magnesia*, no. 23 (Oct-Dec 2006): 66-67. [in Greek]

Aravantinos, A. (2007): Urban Planning: For the sustainable development of urban space. Athens: Ed. Symmetria [in Greek].

Arge, Kirsten. "Adaptable office buildings: theory and practice." *Journal of Facilities* 23(3/4), (February 2005): 119-127.

Association of Greek Industries. *The Greek Industry till 1945*. Athens: Association of Greek Industries, 1945.

Atkinson, Jeanette. *Education, Values and Ethics in International Heritage: Learning to Respect*. Surrey: Ashgate Publishing Limited, 2014.

Atkinson, Frank. The Man Who Made Beamish, an autobiography. Gateshead, UK: Northern Books, 1999.

Auclair, Elizabeth, and Fairclough, Graham. "Living between past and future: An introduction to heritage and cultural sustainability." In *Theory and Practice in Heritage and Sustainability,* edited by Elizabeth Auclair and Graham Fairclough, 1–22. New York: Routledge, 2015.

Avrami, Erica." Heritage, values, and sustainability." In *Conservation: Principles, dilemmas, and uncomfortable truths,* edited by Alison Richmond & Alison Bracker, 177–183. London: Butterworth-Heinemann, 2009.

Avrami, Erica." Sustainability and the built environment: Forging a role for heritage conservation." *Conservation Perspectives* 26, no. 1 (2011): 4–9.

Avrami, Erica." Making Historic Preservation Sustainable." *Journal of the American Planning Association* 82, no.2 (2016): 104-112. DOI: 10.1080/01944363.2015.1126196

Avrami, Erica, Mason Randall, and De La Torre Marta. *Values and Heritage Conservation: Research Report.* Los Angeles: The Getty Conservation Institute, 2000. doi:10.1179/2159032X13Z.00000000011.

Baird, Laura M. and, Greenaway Lesley. *Volunteering in Museums: A research Study into Volunteering within Museums*. Edinburgh: Museums, Galleries Scotland, 2009.

Ball, R. M." Re use potential and vacant industrial premises: revisiting the regeneration issue in Stoke-on-Trent." *Journal of Property Research* 19, no.2 (2002): 93-110.

Ball, R.M." Economic and industrial diversification: policies, technologies and location." In *The Potteries Region: Continuity and Change in a Staffordshire Conurbation*, edited by A.D.M. Phillips, chapter 13. Stroud: Sutton Publishing, 1993.

Baltsi, Dimitra. *Heavy Industry in Greece*. Athens: Kedros, 1977. [in Greek]

Bandarin, Francesco, and van Oers Ron. *Reconnecting the City: The Historic Urban Landscape Approach and the Future of Urban Heritage.* Oxford: Wiley-Blackwell Publishers, 2015.

Bandarin, Francesco, and Ron Van Oers. *The Historic Urban Landscape: Managing Heritage in an Urban Century.* Oxford: John Wiley & Sons, 2012.

Banks, Mark, Lovatt Andy, O'Connor Justin, and Raffo Carlo. "Risk and Trust in the cultural industries." *Geoforum* 31 (2000): 453-464.

Barndt, Kerstin." Memory Traces of an Abandoned Set of Futures. Industrial Ruins in the Post-Industrial Landscapes of East and West Germany." In *Ruins of Modernity*, edited by Julia Hell and Andreas Schönle, 270-293. Durham [N.C.]: Duke University Press, 2008.

Barreiro, Fernando." About identity and urban regeneration." Paper presented at the *Building new urban identities: From monofunctional to multifunctional cities Thematic Seminar, Net TOPIC*, Salford, October 21-22, 2009. Online: http://urbact.eu/sites/default/files/import/Projects/Net_TOPIC/outputs_media/Position_Paper_-_Seminar_Salford_Definitive__14_10_02.pdf (accessed 6 May 2019).

Barthel-Bouchier, Diane. *Cultural heritage and the challenge of sustainability.* Walnut Creek: Left Coast Press, 2012.

Belavilas, Nikos. "Industrial Heritage in Attica: Facts about the current situation." In *Strategies towards the promotion of industrial heritage issues*, edited by Universities of NTUA, AUTH, DUTH, UTH, UPATRAS and TICCIH Greece, 1-7. Athens: National Technical University of Athens, 2011. [in Greek]

Belavilas, Nikos." Documentation of industrial heritage." *En Volo on Industrial Heritage in Magnesia*, no. 23, (Oct-Dec 2006): 74-79. [in Greek]

Belfiore, Eleonora." Art as a means of alleviating social exclusion: does it really work? A critique of instrumental cultural policies and social impact studies in the UK." *International Journal of Cultural Policy* 8, no.1 (2002): 91–106.

Bell, Howard Donald. *Sesto San Giovanni: Workers, Culture, and Politics in an Italian Town, 1880–1922*. New Brunswick: Rutgers University Press, 1986.

Bellaigue, M. Scalbert. "Industrial archaeology in industrial anthropology: The ecomuseum of the community of Le Creusot-Montreal-Les-Mines, France." *Industrial Archaeology Review V*, no.3 (1981): 228-236.

Berens, Carol. *Redeveloping industrial sites: a guide for architects, planners, and developers.* Hoboken, N.J.: John Wiley & Sons, 2011.

Bergeron, Louis." The heritage of the industrial society." In *Industrial Heritage Re-tooled,* edited by James Douet, 31-37. Lancaster: Carnegie Publishing Ltd, 2012.

Bessas, Christos." The birth of the city and its productive physiognomy." *Volos, our city: Feature on yesterday and today* (special issue), no. 18, (December 1990): 5-26. [In Greek]

Bianchini, Franco and Parkinson Michael. *Cultural Policy and Urban Regeneration: The West European Experience*. Manchester: Manchester University Press, 1993.

Biddulph, Mike." Liverpool 2008: Liverpool's Vision and the decade of cranes." In Urban Design and the British Urban Renaissance edited by John Punter (London: Routledge, 2010), 100-114.

Blandford Chris Associates. *Blaenavon Industrial Landscape World Heritage Site Management Plan 2018-2023. Delivering well-being benefits through heritage management and heritage-led regeneration*. London: CBA, 2018.

Blokland, Talja." Bricks, Mortar, Memories: Neighbourhood and Networks in collective acts of remembering." *International Journal of Urban and regional research* 25, no.2 (2001): 268-283.

Boccardi, G." From mitigation to adaptation: A new heritage paradigm for the anthropocene." In *Perceptions of sustainability in heritage studies* edited by Marie-Theres Albert, 87–98. Boston: De Gruyter, 2015.

Boeckh, August, and George Cornewall Lewis. *The public economy of Athens: to which is added, A dissertation on the silver mines of Laurion*. 2nd ed., rev. London: J.W. Parker, 1842.

Boesch, Delia. *Press Release Location Development*. Essen: Stiftung Zollverein, 2018.

Bordage, Fazette and Grombeer Phillippe. "Trans Europe Halles," In *Factories of the imagination* edited by Trans Europe Halles (Birkhauser: Basel, 2002): 4.5-4.5.

Bouras, Charalambos. *Notes of the course Restoration of the Monuments I*. (Athens: NTUA, 1983. [in Greek]

Boyer, M. Christine. "Sustainability and Buildings: Sustainable Solutions to Decay and Infestation in Timber." *Proceedings of the 4th Annual US/ICOMOS International Symposium: Managing change: Sustainable approaches to the conservation of the built environment,* edited by J. M. Teutonico & F. Matero, 65–77. Los Angeles, CA: The Getty Conservation Institute, 2003.

Boylan, Patrick." The Intangible Heritage: A Challenge and an Opportunity for Museums and Museum Professional Training." *International Journal of Intangible Heritage* no.1 (2006): 54–65.

Bowitz Einar, and Ibenholt Karin. "Economic impacts of cultural heritage – Research and perspectives." *Journal of Cultural Heritage* 10, no.1 (2009): 1-8. [Online]. Available at: https://doi.org/10.1016/j.culher.2008.09.002.

Brereton, Christopher. *The Repair of Historic Buildings. Advice on principles and methods*. English Heritage, 1995.

Browne, Lydia Ann. "Regenerate: Reusing a landmark building to economically bolster urban revitalization." Master thesis, University of Cincinnati, 2006.

Buchanan, Angus Robert. *Industrial Archaeology in Britain.* Harmondsworth: Penguin, 1972). ISBN 0-14-021413-5

Bull, Anna." An end to Collective Identities? Political Culture and Voting Behaviour in Sesto San Giovanni and Erba." *Modern Italy* 1, no.2 (2016): 23-43, DOI: 10.1080/13532949608454767.

Bullen, Peter. "Adaptive reuse and sustainability of commercial buildings." *Facilities* 25, no.1-2 (2007): 20-31.

Burchell, Robert, and Listokin David. *The adaptive reuse handbook: Procedures to inventory, control, manage, and reemploy surplus municipal properties*. New Brunswick, NJ: Rutgers University, Center for Urban Policy Research, 1981.

Burtenshaw, Paul." Mind the Gap: Cultural and Economic Values in Archaeology." *Journal of Public Archaeology* 13, no. 1-3 (2014): 48-58.

Byrne, Denis. "Chartering Heritage in Asia's Postmodern World." Getty Conservation Institute Newsletter, 2004.

Campbell, Jan. "Is your building a candidate for adaptive reuse?." *Journal of Property Management* Vol. 61, Issue 1. (Jan.-Feb. 1996): 26+. *Gale Academic Onefile*, Accessed 5 Nov. 2019.

Campo, Daniel and, Brent D. Ryan. "The entertainment zone: Unplanned nightlife and the revitalisation of the American downtown." *Journal of Urban Design* 13, no. 3 (2008): 291–315.

Canadian Centre for Architecture. *Stirling & Wilford Feasibility Report Tate in the North*. Montreal: Canadian Centre for Architecture, 1985. [Online]. Available at: http://www3.tate.org.uk/research/researchservices/archive/showcase/item.jsp?item=1671.

Carver, Martin." On Archaeological Value." *Antiquity* no.70 (1996): 45–56.

Casella Eleanor, and Symonds James. *Industrial Archaeology: Future Directions*. Global Contributions to Historical Archaeology, Springer Nature, 2005.

Castello, Lineu. City & Time and Places: Bridging the Concept of Place to Urban Conservation Planning. City & Time 2, no.1 (2006): 5. [Online]. Available at: http://www.ct.ceci-br.org

Charitos, Charalambos. "Volos: the course of the new town (1840-1955)." In *Volos and its district through history* edited by George Kypriotelis and Costas Liapis, 267-328. Volos: Thessalian Research Society, 2004.

Chatterton, Paul and, Hollands Robert. “Theorising urban playscapes: Producing, regulating and consuming youthful nightlife city spaces.” Urban Studies 39, no. 1 (2001): 95–116.

Chen, Jie, Judd, Bruce. and Hawken, Scott. “Adaptive reuse of industrial heritage for cultural purposes in Beijing, Shanghai and Chongqing.” *Structural Survey* 34, no. 4/5 (2016):331-350.

Christidis, Theodoros. *The European Economic Community and the subsequent Greek economic problems*. Athens: Commercial and Industrial Chamber of Athens, 1973. [in Greek]

City of New York Department of Design and Construction. *High performance building guidelines*. USA, City of New York: NYCDDC, 1999.

Cizler, Jasna.“ Urban regeneration effects on industrial heritage and local community – Case study: Leeds, UK.” *Sociologija sela*, no.50 (2012): 223-236.

Clark, C. M.“ Trouble at T' Mill: industrial archaeology in the 1980s.” *Antiquity* 61, no.232 (1987): 169-179. doi:10.1017/S0003598X00051978

Clark, Kate. "Values-Based Heritage Management and the Heritage Lottery Fund in the UK." *APT Bulletin: The Journal of Preservation Technology* 45, no. 2/3 (2014): 65-71. [Online]. Available at: http://www.jstor.org/stable/23799529.

Clark, Kate. *Informed conservation*. London: English Heritage, 2001.

Clark, Kate. Conservation Plans in Action: Proceedings of the Oxford Conference, London: English Heritage, 1999.

Cleere, Henry. “The impact of world heritage listing.” In *ICOMOS 17th General Assembly*, 2011-11-27 / 2011-12-02 (2012) Paris, France.

Cleere, Henry. “Cultural landscapes as World Heritage,” *Conservation and Management of Archaeological Sites* (1995): 63-68.

Conejos, S., Langston, C., and Smith, J. "Adapt STAR model: A climate-friendly strategy to promote built environment sustainability." *Habitat International* no.37 (2013): 95-103. doi:10.1016/j.habitatint.2011.12.003

Copic, Sonja, Đorđević Jasmina, Lukic Tin, Stojanović Vladimir, Đukičin, Smiljana, Besermenji Snezana, Stamenkovic Igor and Tumaric Aleksandar et all. "Transformation of Industrial Heritage: An example of tourism industry development in the Ruhr Area (Germany)." *Geographica Pannonica* 18, no. 2 (2014): 43-50.

Correia, Mariana Rita Alberto Rosado. "Conservation Intervention in Earthen Heritage: Assessment and Significance of Failure, Criteria, Conservation Theory and Strategies." PhD diss., Oxford Brookes University, 2009.

Cossons, Neil. *BP book of industrial archaeology*. Newton Abbot: David and Charles, 1975.

Cossons, Neil." New Directions in Industrial Archaeology." In *Contributions to Global Historical Archaeology. Industrial Archaeology. Future Directions*, edited by Eleanor Conlin Casella and James Symonds, ix-x. New York: Springer, 2005.

Cossons, Neil, Cramer Johannes, Ringbeck Birgitta, and Watson Mark. "Discussing Industrial Heritage Conservation and Planning." In Industrial Heritage Sites in Transformation: Clash of Discourses, edited by Heike Oevermann and Harald Mieg, 199–216. New York: Routledge, 2015.

Covino, Renato." Industrial Patrimony for Local Development and Territorial Enhancement." Paper presented at the Industrial Patrimony/Patrimoine de l 'Industrie Conference. Sesto San Giovanni, Italy, 24-27 September, 2010.

Curry, Margaret, Hunter John, and Ralston Ian. "Archaeological resource management in the UK: An Introduction." *International Journal of Cultural Property*. Alan Sutton Publishing, Institute of Field Archaeologists, Bath, 1993. 4, Nr. 1, (January 1995): 179-181.

Damianidis, Kostas. *Hellenic traditional naval architecture*. Athens: Cultural and Technological Foundation of ETVA, 1996. [in Greek]

Darvill, Timothy." Value Systems in Archaeology." In *Managing Archaeology,* edited by M. Cooper, A. Firth, J. Carman and D. Wheatley, 40-45. London: Routledge, 1995.

Davis, Peter. *Eco-museums: A Sense of Place*. London: Leicester University Press, 1999.

Davison, Nigel, Gibb Alistair, Austin Simon, Goodier Chris, and Wagner, P. "The multispace adaptable building concept and its extension into mass customisation." Proceedings of the Joint CIB, IASS International Conference on *Adaptability in Design and Construction*, Eindhoven University of Technology, 3rd-5th July 2006, pp 12.7-12.13.

Dean, Martin R." Places against Oblivion of the Self." In *Dieter Kienast*, 6–9. Basel: Birkhäuser, 2004.

Department of the Environment and Heritage (DEH). *Adaptive reuse: Preserving our past, building our future.* ACT: Department of Environment and Heritage, Commonwealth of Australia, 2004.

De la Torre Marta. *Heritage values in site management: four case studies*. Los Angeles: Getty Publications, 2005.

De La Torre, Marta." Values in Heritage Conservation: A Project of The Getty Conservation Institute." *APT Bulletin: The Journal of Preservation Technology* 45, No. 2/3, Special Issue on values-based preservation (2014): 19-24.

De la Torre, Marta, G. H. MacLean Margaret, Mason Randall, and Myers David. *Heritage Values in Site Management. Four Case Studies*. Los Angeles: The Getty Conservation Institute, 2005.

De la Torre, Marta, and Mason Randall. *Assessing the Values of Cultural Heritage. Research Report.* Los Angeles: The Getty Conservation Institute (J. Paul Getty Trust), 2002. [Online]. Available at: https://www.getty.edu/conservation/publications_resources/pdf_publications/pdf/assessing.pdf.

De la Torre, Marta. "Values and site management: New case studies." *Getty Conservation Institute Newsletter* 16, no.2 (2001). [Online]. Available at: www.getty.edu/conservation/publications/newsletters/16_2/news_in_cons2.html.

Demiri, Konstantina. *The Greek textile factories: historic and typological investigation*. Athens: Piraeus Bank Cultural Foundation, 1991. [in Greek]

Demiri, Konstantina." A typological Investigation of Mill Buildings in Greece." PhD diss, University of Edinburgh, 1986.

Demiri, Konstantina. "The evolution of the architecture of industrial buildings in Greece since the end of the 19th century till today." *Arhitektonika Themata* no. 25 (1991): 57.

Department for Culture, Media and Sport. Principles of Selection for Listing Buildings. London: UK Government, 2018. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757054/Revised_Principles_of_Selection_2018.pdf

Department for Digital, Culture, Media & Sport. *Creative Industries Mapping Document*. London: Department of Culture, Media and Sports of the United Kingdom, 1998.

Department of the Environment, Transport and the Regions (DETR). *Indices of Deprivation, Regeneration*, Research Summary, Nr 31. London: DETR, 2000.

Dervenis, Dimitris." The reuse and exploitation of industrial buildings in the city centre by the Municipality of Volos." Paper presented at the 3rd Special Thematic European Conference on the Protection and Use of Cultural Heritage, Municipality of Volos, April 2007. [in Greek]

De Roux, Emmanuel, and Fessay Georges. *Patrimoine Industriel*. Paris: Nouvelles éditions Scala, 2007.

De Sousa, Christopher." Brownfield redevelopment in Toronto: an examination of past trends and future prospects." *Land Use Policy* 19, no. 4 (2002): 297-309.

Diedrich, Lisa.“ No Politics, No Park: The Duisburg-Nord Model.” In *Topos: European Landscape Magazine*, no. 26 (1999): 69 – 78.

Dimoglou, Aigli. *The industry in the prefecture of Magnesia. From the 19th to the 21st century*. Athens: Kerkira Press, 2005. [in Greek]

Dimoglou, Aigli, and Kollias Pavlos. *Industrial Buildings in Volos: Past, present and future.* Volos: Volos Municipal Enterprise for Urban Studies, Construction and Development-DEMEKAV, 1997. [in Greek]

Dimoglou, Aigli, and Giannis Koutis. *Volos: then and now* (Volos: Olkos, 2007). [in Greek]

Dimopoulos, Stavros.“ Loan to buy the Glavanis industrial site?”, *Thessalia Newspaper*, July 28, 2009.

Doerry, Sabine, Rosol Marit, and Thissen Fee. “The significance of creative industry policy narratives for Zurich's transformation toward a post-industrial city.” *Cities* No. 58 (October 2016): 137-142.

Donaghey, S. (2001). “What is Aught, but as 'tis Valued? An analysis of strategies for the assessment of cultural heritage significance in New Zealand.” *International Journal of Heritage Studies* 7, No. 4, 365-380. DOI: 10.1080/13581650120105561

Douglas, James. *Building Adaptation*. Oxford: Butterworth-Heinemann, 2002.

Douet, James. *Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation*. Lancaster: Carnegie Publishing Limited, 2012. ISBN 978-1-85936-218-1

Drake, Graham. “This place gives me space: place and creativity in the creative industries.” Geoforum 34 no. 4 (2003): 511-524.

Drury, Jolyon. *Factories: Planning, Design and Modernization.* London: The Architectural Press, 1981.

Earl, John. *Building Conservation Philosophy*. Dorset: Donhead, 2003.

Edensor, Tim. *Industrial Ruins: Spaces, Aesthetics and Materiality*. Oxford: Berg Publishers, 2005.

EKOS. *The Creative Sector in Newcastle and Gateshead: Report for Newcastle City Council*. Glasgow: EKOS, 2012.

Emerick, Keith. *Conserving and Managing Ancient Monuments: Heritage, Democracy, and Inclusion*. Woodbridge: Boydell Press, 2014.

Engelhardt, Richard. "The Management of World Heritage Cities: Evolving Concepts, New Strategies." *RC: Revista De Cultura = Review of Culture* (2002): 26-40.

English Heritage. *People and Places: A Response to Government and the Value of Culture*. English Heritage, 2004.

Evans, Graeme." Creative Cities, Creative Spaces and Urban Policy." *Urban Studies* 46, No. 5 (2009): 1003–1040.

Evans, Graeme, and Shaw Phyllida. *The Contribution of Culture to Regeneration in the UK: A Review of Evidence*. London: DCMS, 2004. [Online]. Available at: http://www.scholars-on-bilbao.info/fichas/EvansShaw2004.pdf.

Falconer, Keith." Sustainable Reuse of Historic Industrial Sites." In *Understanding Historic Building Conservation*, edited by Michael Forsyth, 74-87. Oxford: Blackwell Publishing Ltd, 2007.

Falk, Nicholas." New uses for Old industrial buildings." In *Industrial Buildings: Conservation and Regeneration*, edited by Michael Stratton, 97-108. London: E & FN Spon Press, 2000.

Fealy, Joseph. "Adaptive reuse for multi-use facilities in an urban context: making the city home again." Master thesis, University of Cincinnati, 2006.

Feilden, Bernard M. *Conservation of historic buildings*. Technical Studies in the Arts, Archaeology and Architecture series. London: Butterworth Scientific, 1982.

Feilden, Bernard M., and Jokilehto Jukka. *Management Guidelines for World Cultural Heritage Sites*. 2nd Edition. International Centre for the Study of the Preservation and Restoration of Cultural Property. Rome: ICCROM, 1998.

Review: Conservation of Historic Buildings by Bernard G. Feilden. Reviewer: James Marston Fitch, Journal of the Society of Architectural Historians Vol. 42 No. 2, May, 1983 (p. 197) DOI: 10.2307/989840

Flew, Terry, and Cunningham Stuart. "Creative Industries after the First Decade of Debate." *The Information Society*, No. 26 (2010): 113–123.

Flew, Terry. *The Creative Industries Culture and Policy*. London: Sage publication, 2012.

Fournier, Donald F., and Karen Zimnicki. *Integrating sustainable design principles into the adaptive reuse of historical properties*. Washington DC: U.S. Army Corps of Engineers, 2004.

Frew, Craig. "Pointing with Lime," accessed September 6, 2019. https://www.buildingconservation.com/articles/pointing/lime-pointing.htm;

Merciu Florentina-Cristina, Merciu George-Laurenţiu, Cercleux Andreea-Loreta, Drăghici Cristian Constantin. "Conversion of Industrial Heritage as a Vector of Cultural Regeneration." *Procedia - Social and Behavioural Sciences* No. 122 (2014): 162-166. [Online]. Available at: http://dx.doi.org/10.1016/j.sbspro.2014.01.1320.

Foot, John. *Milan since the Miracle: City, Culture, and Identity*. Oxford: Berg Publishers, 2001.

Florida, Richard. *Cities and the Creative Class*. New York: Routledge, 2005.

Florida, Richard. *The Rise of the Creative Class: And How it´s Transforming Work, Leisure, Community and Everyday Life*. New York: Basic Books, 2002.

Fossa, Giovanna." Milan: Creative industries and the uses of heritage." In *Industrial heritage sites in transformation: Clash of discourses*, edited by Heike Oevermann and Harald Mieg. New York and Abingdon: Routledge, 2015.

Fragner, Benjamin. "Adaptive re-use." In *Industrial heritage re-tooled. The TICCIH guide to industrial heritage conservation,* edited by James Douet, 110–117. Lancaster: Carnegie Publishing Ltd., 2012.

Fredheim, Harald, and Khalaf, Manal. "The significance of values: heritage value typologies re-examined." *International Journal of Heritage Studies* 22, No.6 (2016): 466-481. DOI: 10.1080/13527258.2016.1171247.

Frey, Patrice. *Making the case: Historic preservation as sustainable development* (Draft White Paper, Sustainable Preservation Retreat). Washington, DC: National Trust for Historic Preservation, 2007.

Freris, Andrew. *The Greek Economy in the Twentieth Century*. New York: St. Martin's Press, 1986.

Fuying, Liu, Qi Zhao, Yulan Yang. "An approach to assess the value of industrial heritage based on Dempster–Shafer theory." *Journal of Cultural Heritage* No. 32 (2018): 210-220. [Online]. Available at: https://doi.org/10.1016/j.culher.2018.01.011

Garden, Mary-Catherine Elizabeth. "The Heritagescape: Exploring the Phenomenon of the Heritage Site." PhD diss., University of Cambridge, 2004.

Geddes, David. *Creative Industries in Historic Buildings and Environments.* London: Colliers International, 2018.

Geddes, David. *Use of Historic Buildings for Residential Purposes: Scoping report prepared for Historic England.* London: Colliers International, 2015.

Ghenoiu, Erik." Post Industrial Spaces of production: The New Brooklyn Economy and the Deutsche Werkbund." In *The Architecture of Industry. Changing Paradigms in Industrial Building and Planning*, edited by Mathew Aitchison, 9-39. Farnham, Surrey, England; Burlington, VT, USA: Ashgate, 2014.

GHK. *The ex-post evaluation of the URBAN Community Initiative 1994 - 1999, Final Report to European Commission, DG Regio*. Brussels and London: GHK, 2003.

Gianitsis, Tasos. *The Greek industry. Crisis and Development*. Athens: Gutenberg, 1985. [in Greek]

Giedion, Sigfried. *Space, Time and Architecture: The Growth of a New Tradition*. Cambridge, Harvard University Press, 1962.

Giedion, Sigfried. *1888-1968. Mechanization takes command: a contribution to anonymous history.* New York: Oxford University Press, 1948. [Online]. Available at: http://hdl.handle.net/2027/heb.01139.0001.001.

Girouard, Mark. *Big Jim: The Life and Work of James Stirling.* London: Chatto & Windus, 1998.

Glendinning, Miles. *The Conservation Movement: A History of Architectural Conservation: Antiquity to Modernity*. Abingdon, Oxon; New York: Routledge, 2013.

Glendinning, Miles." The Conservation Movement: A History of Architectural Preservation: Antiquity to Modernity." Review by Bob Kindred. *Journal of Architectural Conservation* 19, No. 2, 179-180, 2013. DOI:10.1080/13556207.2013.839351

Goldstein, Erik." Great Britain and Greater Greece 1917–1920." *The Historical Journal* 32, No. 2 (1989): 339-356. doi:10.1017/S0018246X00012188

Gomez, Maria V. "Reflective images: The case of urban regeneration in Glasgow and Bilbao." *International Journal of Urban and Regional Research* 22, no.1 (1998): 106–121.

Gorse, Christopher A., and David Highfield. *Refurbishment and upgrading of buildings*. Spon Press, 2009.

Gospodini, Aspasia. "Urban morphology and place identity in European cities: built heritage and innovative design." *Journal of Urban Design* 9, No. 2 (2004): 225-248. DOI:10.1080/1357480042000227834

Gospodini, Aspasia. "Portraying, classifying and understanding the emerging landscapes of the post-industrial city." *Cities. The International Journal of Urban Policy and Planning* 23, no. 5 (2006): 311–330.

Gospodini, Aspasia." The structure of space as a mechanism for organizing central functions in the city, the case of the Volos." In *The development of Greek cities: interdisciplinary approaches to urban analysis and policy,* edited by Dimitris

Oikonomou and Giorgos Petrakos, 371-396. Volos: University Press of Thessaly, 2012. [in Greek]

Goulielmos. *Europe, EEC, Greece.* Athens: 1978.

Graham, Brian." Heritage as knowledge: capital or culture?" *Urban Studies* 39, No. 5-6 (2002): 1003-1017.

Graham, Peter. "Design for adaptability – An introduction to the principles and basic strategies." In *BDP environment design guide*, Gen. 66 (February 2005): 1-9.

Grammenos, F., and Russell, Phil. "Building adaptability: a view from the future." Paper presented at the International Conference on *Buildings and Environment*, June 1997.

Griffiths, Mary, and Barbour Kim. *Making publics - Making places*. Adelaide: University of Adelaide Press, 2016.

Groth, Jacqueline and Corijn Eric. "Reclaiming Urbanity: Indeterminate Spaces, Informal Actors and Urban Agenda Setting." Urban Studies 42, no. 3 (2005): 503-526.

Grove, Eric. "Ports, Land and air." *Industrial Archaeology Review* 35, No. 1, (2013): 40–44.

Hall, Colin Michael, and McArthur Simon. *Integrated heritage management: Principles and practice*. London: Stationery Office, 1998.

Hall, Peter. "Towards a general urban theory." In *Cities in competition.* Edited by Brocthie J.M., Batty M.E. & Blakely E. (Longman, Melbourne, 1995): 3–31.

Hamond, Fred." Conservation and Industrial Archaeology." In *The Heritage of Ireland*, edited by Neil Buttimer, Colin Rynne and Helen Guerin, 358-74. Cork: Collins Press 2000.

Hamond, Fred, and McMahon Mary. *Recording and Conserving Ireland's Industrial Heritage: An introductory Guide*. Dublin: Ed. The Heritage Council of Ireland Series, 2002.

Hamshere, John. 'British Industrial Museums – Experiences, problems and perspectives seen from Sheffield. 'In *The Museums and the Industrial Heritage*, (ed.) Henrik Harnow, Keld Nielsen & Frank Allan Rasmussen. Odense, Kulturarvsstyrelsen, 2006.

Hans, Kania. "Was ist Zollverein?" In *Industrie- und Technikmuseen im Wandel: Perspektiven und Standortbestimmungen,* edited by Hartmut John and Ira Mazzoni, 109–144. Bielefeld: Transcript - Verlag für Kommunikation, Kultur und soziale Praxis 2005.

Hardesty, Donald, and Little Barbara. *Assessing site significance: A Guide for Archaeologists and Historians.* Plymouth: Altamira, 2009.

Harmon, David, Mcmanamon, Francis, & Pitcaithley, Dwight. *The Antiquities Act: A century of American archaeology, historic preservation, and nature*. Tucson, Arizona, USA: University of Arizona Press, 2006.

Harvey, David." From managerialism to entrepreneurialism: The transformation in urban governance in late capitalism." *Geografiska Annaler Series B* 71, no.1 (1989): 3–17.

Hassid, Iosif. *Greek Industry and EEC. Impact Assessment and Integration study*. Athens: Institute of Economic and Industrial Research, 1980. [in Greek]

Hassid, Iosif. *Greece and EEC. A comparative study of industrial structure*. Athens: Institute of Economic and Industrial Research, 1977. [in Greek]

Hastaoglou, Vilma. Industrial Heritage between land and sea. En Volo, Issues 23 (2006): 16-19 [in Greek].

Hastaoglou, Vilma. *Volos. The Portrait of a City from the 19th Century until Today* Volos: Municipal Centre for Historical Research and Documentation, 2007. [in Greek]

Hastaoglou, Vilma. *Volos: Portrait of the city in the 19th and 20th century*. Volos: Municipal Centre of History and Documentation of Volos, 2002. [in Greek]

Hastaoglou, Vilma." Volos from the 19th to the 20th century: the rise of the industrial city." In *Volos. In quest of the city's social identity*, edited by Thomas Maloutas, 89-117. Thessaloniki: Paratiritis, 1995. [in Greek]

Hastaoglou, Vilma." The re-use of historic buildings that is a matter of concern." *En Volo*, no. 32 (January-March 2009): 34-39. [in Greek]

Hastaoglou, Vilma. "The physiognomy and features of Volos," *En Volo*, no. 22 (July - September 2006): 93. [in Greek]

Hatziiossif, Christos. *The old moon. The industry in the Greek Economy 1830-1940*. Athens: Themelio press, 1993. [in Greek]

Hayden, Dollores. *The Power of Place: Urban Landscapes as Public History*. Cambridge: MIT Press, 1995.

Heath, Tim. "Adaptive reuse of offices of residential use." *Cities* 18, Nr. 3, (2001): 173-184.

Heemskerk, Frank, van der Hoeven, Maria and, Plasterk Ronald H.A. *Creative Value.* The Hague: Ministry of Economic Affairs and Ministry of Education, Culture and Science, 2009.

Hellenic Ministry of culture, Ephorate for modern monuments Central Macedonia. "Appropriate interventions for the safeguarding of monuments and historical buildings." Proceedings of the 2nd national congress, 1st volume, Thessaloniki: Ed. Technical chamber of Greece, Department of Central Macedonia, 2004. [in Greek]

Hennebury, Deirdre." An Investigation of the Architectural, Urban, and Exhibit Designs of the Tate Museums." PhD diss., University of Michigan, 2014.

Heritage Council Victoria. *Adaptive reuse of industrial heritage: Opportunities and Challenges*. Melbourne: Heritage Council Victoria, 2013.

Heritage Collections Council. *Significance: A Guide to Assessing the Significance of Cultural Heritage Objects and Collections*. Canberra: Commonwealth of Australia, 2001.

Heritage Lottery Fund. *Conservation plan guidance*. London, 2012.

Heritage Lottery Fund. *Conservation Plans for Historic Places*. London, 1998.

Her Majesty's Stationery Office (HMSO). *Town and country planning* (Use Classes) order 1987. London: HMSO, 1987.

Highfield, David. The construction of new buildings behind historic facades (London: E & FN Spon, 1991).

Hirschon Renée. *Heirs of the Greek Catastrophe: The Social Life of Asia Minor Refugees in Piraeus*. Clarendon, Oxford, 1989.

Hirschon, Renée. *Crossing the Aegean: an appraisal of the 1923 population exchange between Greece and Turkey*. Oxford: Berghahn Books, 2003.

Historic England. *Conservation Principles, Policies and Guidance*. London, 2015.

Historic England. *Industrial Buildings, Listing Selection Guide*. London, 2017. [Online]. Available at: https://historicengland.org.uk/listing/.

Holborow, Will. "Cutting down on carbon from the public sector estate." *Conservation Bulletin, Adapting to Climate Change*, Issue 57 (Spring 2008): 26-29**.**

Holland, Mark." The need for sustainability in city planning and preservation." *APT Bulletin* 40, No. 1 (2012): 3–6.

Holtorf, Cornelius, and Schadla-Hall Tim. "Age as artefact: On archaeological authenticity." *European Journal of Archaeology* 2, No. 2 (1999): 229–47.

Horvath, Tamas. "Necessity of modernization of modern buildings." Paper presented to *Building a BetterWorld: CIBWorld* Congress, May 2010, The Lowry, Salford Quays, United Kingdom.

Hospers, Gert-Jan." Industrial Heritage Tourism and Regional Restructuring in the European Union." *European Planning Studies* 10, no. 3, (2002): 397-404.

Houliarakis, Michael. *Geographic, Administrative and Demographic Evolution of Greece, 1821-1971*. Vol. A: Part 1, Vol. A: Part II, and Vol. B. Athens: National Centre of Social Research, 1974. [in Greek]

Hudson, Kenneth. *Industrial Archaeology: An Introduction*. London: John Baker Publishers, 1966.

Hudson, Kenneth. *World Industrial Archaeology*. Cambridge: Cambridge University Press, 1979.

Hughes, Philip. SPAB Information Sheet 4, The Need for Old Buildings to Breathe, SPAB. London: 1986.

Hutton, Thomas A. "Spatiality, built form, and creative industry development in the inner city." Environment and Planning 38, no. 10 (2006): 1819-1841.

ICOMOS Australia. The Australia ICOMOS Charter for Places of Cultural Significance, (the Burra Charter). Burwood: ICOMOS Australia, 2013.

ICOMOS Australia. The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter). Canberra: ICOMOS Australia, 1999.

ICOMOS. *International Charter for the conservation and restoration of monuments and sites. The Venice Charter 1964*. Venice: 2nd International Congress of Architects and Technicians of Historic Monuments, 1965.

ICOMOS. *The Declaration of Amsterdam 1975*. Amsterdam: Congress on the European Architectural Heritage, 1975.

ICOMOS. *Convention for the protection of cultural property in the event of Armed conflict,* 1994. [Online], Available at: http://www.icomos.org/hague/

ICOMOS. ICOMOS evaluation of the nomination of New Lanark for Inclusion on the World Heritage List. Paris: ICOMOS, 2001.

Ifko, Sonja." Comprehensive Management of Industrial Heritage Sites as a basis for sustainable regeneration." *Procedia Engineering* No. 161 (2016): 2040-2045.

James, Portia." Building a Community-Based Identity at Anacostia Museum." In *Heritage, Museums and Galleries: An Introductory Reader*, edited by Gerard Corsane, 373–393. London: Routledge, 2005.

Jenkins, David. *Clore Gallery Tate Gallery Liverpool, James Stirling, Michael Wilford and Associates*. London: Phaidon Press, 1992.

Jokilehto, Jukka." Authenticity in restoration principles and practices." *Association for preservation technology bulletin XVII* (1985), 5-11.

Jokilehto, Jukka. *History of Architectural Conservation*. London: Architectural Press, 2002.

Jones Calvin and Munday Max. "Blaenavon and United Nations World Heritage Site Status: Is Conservation of Industrial Heritage a Road to Local Economic Development?." Regional Studies, 35:6, (2001): 585-590.

Jones, Edgar. *Industrial Architecture in Britain: 1750-1939.* London: B.T. Batsford LTD, 1985.

Jonsen-Verbeke, Myriam." Industrial heritage: a nexus for sustainable tourism development." *Tourism Geographies* 1, no.1 (1999):70-85.

Kabouroglou, Pantoleon. History of Piraeus from 1833-1882: general situation, commerce, shipping, industry. Athens: Karavias, 1985. [in Greek]

Kallogirou, Nikos. *Modern Greek Architecture no 5. Preservable: Building Rehabilitation – Reuse*. Athens: Malliaris Paideia, 2003.

Kalogri, Panagiota, Fotini Margariti, and Vasias Tsokopoulos. "The industrial archaeology in Greek space: a first approach." *Archaiologia* no. 18 (1986): 9. [in Greek]

Karachalis, Nicholas, and Kyriazopoulos, Evagelos. *The re-use of post-industrial space and waterfront development: The case of the Stone Loft*. Piraeus: Maritime Tradition Museum, 2019.

Karavasili, Marina. *Management of industrial heritage in Greece. Twenty years ΄ experience and modern perspectives in configurating cultural resources*. Athens: University of Athens, 2005. [in Greek]. [Online]. Available at: https://www.greekarchitects.gr/site_parts/doc_files/69.13.06.pdf.

Karavasili, Marina. *The interpretation of industrial Heritage in Greece: Recent trends and new perspectives*. Athens: University of Athens, 2005. [in Greek]

Kareklidis, Giorgos." A 120-year-old story. Progress and expansion." Proti Newspaper, 24 March, 2017. [in Greek]

Kareklidis, Giorgos, and Koutseris Elias. "Mills, ironworks and tobacco shops have boosted the local economy." *The Industry of Volos, Yesterday and Today* (special edition), 29-32. Volos: Magnesia Newspaper, 2015. [in Greek]

Karp, Ivan, and Mullen Kreamer Christine. *Museums and Communities: The Politics of Public Culture.* Washington: Smithsonian Institution Press, 1992.

Karydis, Nikolaos." Conservation of Historic Buildings along the Eroding Coastline of Northern Jutland." *Danish Journal of Archaeology* No. 3 (2014): 82-85.

Katsigianni, Ioanna, and Kondili-Lagari Antonia. *Industrial Buildings in Ermoupoli.* Athens: Cultural Institute of Technology ETVA, 2000. [in Greek]

Kazazis, Michalis. "Delivering Binders in Greece." *The Harvester World* 4, No. 12, edited by the International Harvester Company (Chicago, December 1913): 24-25.

Keane, Michael. "The capital complex: Beijing's new creative clusters." In: *Creative Economies, Creative Cities,* edited by Kong, L. & O'Connor, J., *pp.*77-98. London: Springer, 2009a.

Keene, John." The links between historic preservation and sustainability: An urbanist's perspective." In *Managing change: Sustainable approaches to the conservation of the built environment*, edited by J. M. Teutonico & F. Matero, 11–19. Los Angeles, CA: The Getty Conservation Institute, 2003.

Kelly, Miriam. *Following function: Creative reuse of industrial sites*. Winston Churchill Memorial Trust, 2013.

Kemp, Jonathan. Practical Ethics. In *Conservation: Principles, Dilemmas and Uncomfortable Truths,* edited by A. Richmond and A. Bracker, 60–72. Oxford: Butterworth-Heinemann, 2009.

Kerstetter, Deborah, Confer John, and Bricker, Kelly. (1998) "Industrial heritage attractions: types and tourists." *Journal of Travel & Tourism Marketing* 7, No.2 (1998): 91-104.

Kerr, James. *Conservation plan: a guide to the preparation of conservation plans for places of European cultural significance (5th edition).* Sydney: National Trust of Australia (NSW), 2000.

Kiroff, Lydia. "Nexus between creative industries and the built environment: Creative placemaking in inner Auckland." Frontiers of Architectural Research no.9 (2020): 119-137.

Kizis, Giannis. *Pilioritiki Oikodomia: The Architecture of houses in Pelion from 17th to 19th century*. Athens: ETVA Cultural Technological Foundation of the Hellenic Bank of Industrial Development, 2007.

Knapp, Bernard." Social Approaches to the Archaeology and Anthropology of Mining." In *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, edited by Bernard Knapp, Vincent Pigott and Eugenia Herbert, 1-23. London: Routledge, 1998.

Koliou, Nitsa. *The Industry of Volos. Short references to the past and to the present*. Volos: Grafi Press, 1993. [in Greek]

Koliou, Nitsa. *The industry of Volos*. Volos: Municipality of Volos, Municipal Center for Historical Research and Documentation, 1994. [in Greek]

Kormazou, Eleni. *Michalakis Kazazis (1850-1938)*. Volos: Hores, 1995. [In Greek]

Kostof, Spiro. *A History of Architecture: Settings and Rituals.* New York: Oxford University Press, 1985.

Kourtit, Karima, Nijkamp Peter, Franklin Rachel S., and Rodríguez-Pose Andrés. "A blueprint for strategic urban research: the urban piazza." *Town Planning Review* 85, nr. 1 (2014): 97–126.

Kretschmann, Jürgen.“ Stakeholder orientated sustainable land management: The Ruhr Area as a role model for urban areas.” *International Journal of Mining Science and Technology*, No. 23 (2013): 659-663.

Labadi, Sophia. Evaluating the Socio-Economic Impacts of Selected Regenerated Heritage Sites in Europe. European Cultural Foundation, 2011. [Online]. Available at: http://www.encatc.org/pages/fileadmin/user_upload/Forum/Sophia_Labadi_2008CPRA_Publication.pdf.

Labadi, Sophia. UNESCO, cultural heritage, and outstanding universal value: value-based analyses of the World Heritage and Intangible Cultural Heritage Conventions. Plymouth: Ed. AltaMira Press, 2013.

Labadi, Sophia.“ Industrial Archaeology as Historical Archaeology and Cultural Anthropology.” *Papers from the Institute of Archaeology*, No. 12 (2001): 77-85. [Online]. Available at: http://dx.doi.org/10.5334/pia.162.

Labadi, Sophia.“ Representations of the Nation and Cultural Diversity in Discourses on World Heritage.” *Journal of Social Archaeology*, No. 7 (2007): 147-170. [Online]. Available at: http://dx.doi.org/10.1177/1469605307077466.

Labadi, Sophia, and Logan William. “Approaches to urban heritage, development and sustainability.” In *Urban Heritage, Development and Sustainability. International Frameworks, National and Local Governance,* edited by Sophia Labadi and William Logan, 1-20. London and New York: Routledge, 2016.

LaBelle, Judith.“ Emscher Park, Germany - Expanding the Definition of a ‘Park’.” Crossing Boundaries in Park Management: Proceedings of the 11th Conference on Research and Resource Management in Parks and on Public Lands, edited by David Harmon. Hancock, Michigan: The George Wright Society, 2001.

Lafrenz Samuels, Kathryn.“ Value and significance in archaeology.” *Archaeological Dialogues* 15, No.1 (2008): 71–91.

Lampsidis, Giorgos. The Refugees of 1922: Their contribution to the country's development. Thessaloniki: Kuriakidis Press, 1989. [in Greek]

Landorf, Chris.“ A Framework for sustainable heritage management: A Study of UK industrial heritage sites.” *International Journal of Heritage Studies* 15, No. 6 (2009): 494-510.

Landry, Charles. *The Creative City: A Toolkit for Urban Innovators*. London: Earthscan Publications, 2000.

Langston, Craig, Wong, Francis, Hui, Eddie, and Shen, Li-Yin. “Strategic assessment of building adaptive reuse opportunities in Hong Kong.” *Building and Environment* 43, Nr. 10, (2008): 1709-1718.

Latz, Peter. *Rust Red: Landscape Park Duisburg-Nord*. Munich: Hirmer Verlag, 2017.

Latz, Peter. "The Idea of Making Time Visible." *Topos* 33 (2000): 94 - 99.

Lazaretou, Sophia. "The smart economy: cultural and creative industries in Greece. Can they be a way out of the crisis? (in Greek)," *Working Papers* no. 175, Bank of Greece (2014).

Lazaridis, Pantelis.“ University of Thessaly. A prehistoric memorandum,” *En Volo*, no. 29 (April – June 2008): 84.

Le Corbusier. *The Athens Charter*. New York: Grossman Publishers, 1973.

Legner, Mattias. *Redevelopment through rehabilitation. The role of historic preservation in revitalizing deindustrialized cities: Lessons from the United States and Sweden*. Norrköping: Linköping University, 2007.

Legner, Mattias. *Historic Rehabilitation of Industrial Sites: Cases from North American and Swedish Cities*. Linkoping University: Linkoping, 2009.

Lemaire, Raymond, and Stovel Herb. *Nara Document on Authenticity*. Nara, Japan, 1994.

Leone, Mark P. Review of *World Industrial Archaeology*, by Kenneth Hudson. *American Anthropologist* 83, No. 1 (1981): 247. DOI: 10.1525/aa.1981.83.1.02a00720.

Leontidou, Lila. The Mediterranean city in transition: social change and urban development. Ed. Cambridge University Press, 1990.

Leppert, Stephan." Peter Latz: Landschaftspark Duisburg-Nord, Germania." *Domus*, no. 802 (1998): 32-37.

Liapis, Kostas. "The Turkish occupation in Thessalo-Magnesia and the role of the Castle of Volos." In *Volos and its district through History,* 185-224. Volos: Thessalian research Society, 2004.

Linkon, Sherry Lee, and Russo John. *Steel-town U.S.A: Work and memory in Youngstown*. Lawrence: University of Kansas, 2002.

Lipe, William.' Value and Meaning in Cultural Resources', in *Approaches to the Archaeological Heritage. A Comparative Study of World Cultural Resource Management Systems*, edited by Henry Cleere, 1–11. Cambridge: Cambridge University Press, 1984.

Listokin, David. (1997). "Growth management and historic preservation: Best practices for synthesis." *The Urban Lawyer* 29, no.2 (1997): 199–213.

Looseley, David." Cultural policy in the twenty-first century: issues, debates and discourse." *French Cultural Studies* 10, no.1 (1999): 5–20.

Loures, Luis." Industrial Heritage: The past in the future of the city." *WSEAS transactions on environment and development* 8, vol. 4 (August 2008): 687 – 696.

Loures, Luis." Post-Industrial Landscapes as renaissance locus: the case study research methods." In *Sustainable City V*, edited by Carlos Brebbia, Aspa Gospodini, and Enzo Tiezzi. Southampton: WIT Press, 2008.

Loures, Luis, and Crawford, Pat. "Finding Public Consensus: The Relevance of Public Participation in Post-industrial Landscape Reclamation." Proceedings of the 1st WSEAS International Conference on Landscape Architecture, Algarve, Portugal, June 11-13, 2008: 117-122.

Loures, Luis, Heuer Tim, Horta Dina, Silva Sandra, and Santos Raul. "Reinventing the Post-industrial Landscape: A Multifunctional Cluster Approach as Redevelopment

Strategy." Proceedings of the 1st WSEAS International Conference on Landscape Architecture, Algarve, Portugal, June 11-13, 2008: 123-129.

Lyberaki, Antigoni. *Flexible specialization: crisis and restructuring the small industry*. Athens: Gutenberg, 1991. [in Greek]

Lynch, Kevin. *The image of the city*. Cambridge: MIT Press, 1960.

Mah, Alice. *Industrial Ruination, Community and Place: Landscapes and Legacies of Urban Decline*. Toronto: University of Toronto Press, 2012.

Maheras Giorgos." Industrial archeology." *Arheologia* no. 18 (1986). [in Greek]

Makris, Kitsos. *Folk Art of Pelion*. Athens: Melissa Press, 1976. [in Greek]

Maloutas, Thomas. *The cities. Social and Economic Atlas of Greece*. Athens-Volos: Ed. National Centre for Social Research & University of Thessaly Press, 2000 [in Greek].

Manos, Panagiotis. "A survey of the factories in Volos: the social contribution of industries and the amazing progress of the Glavanis Ironworks in Volos." *Thessalia Newspaper*, May 9, 1934.

Marquis-Kyle, Peter and Walker Meredith. *The illustrated Burra Charter: making good decisions about the care of important places*. Sydney: Australia ICOMOS with the assistance of the Australian Heritage Commission, 1992.

Mason, Randall." Assessing Values in Conservation Planning: Methodological Issues and Choices." In *Assessing the Values of Cultural Heritage*, edited by Marta de la Torre, Research Report, 5–30. Los Angeles, CA: The Getty Conservation Institute, 2002.

Mason, Randall." Be Interested and Beware: Joining Economic Valuation and Heritage Conservation." *International Journal of Heritage Studies*, 14:4, 303-318 (2008). DOI: 10.1080/13527250802155810

Mavromati, Olga. Industrial Archives of the Municipal Centre of History and Documentation of Volos. En Volo, Issue 23. (2006): 58-63 [in Greek].

McKercher, Bob, and Du Cros Hilary. *Cultural Tourism: The Partnership between Tourism and Cultural Heritage Management*. New York: Routledge, 2002.

Mengusoglu, N., Boyacioglu, E. "Reuse of industrial built heritage for residential purposes in Manchester." *METU journal of the faculty of Architecture* 2013/1 (30:1), (2013): 117-138.

Mergos, George, and Mouratidou Tzoulia. "Old buildings, new uses. The economics of preservation of an old industrial building." In *Cultural Heritage and Sustainable development. Economic Benefits, Social Opportunities and Policy Challenges*, edited by George Mergos and Nikolas Patsavos, 357-366. Chania: Technical University of Crete, 2017.

Mihajlov, Vladimir." Industrial heritage renewal – social motives and effects." *Sociologija i prostor*, 184, no.2 (2009): 139-164. Ref in: ICOMOS Slovenia, Protection and Reuse of Industrial Heritage: Dilemmas, Problems, Examples.

Miles, Malcolm." Interruptions: testing the rhetoric of culturally led urban development." *Urban Studies* 42, no.5/6 (2005): 889–911.

Millar, Sue." Stakeholders and community participation." In *Managing World Heritage Sites*, edited by Anna Leask and Alan Fyall, 37–54. Oxford: Butterworth-Heinemann, 2006.

Millard, Rossie." Thoroughly Modern Tate." Arts & Culture. London: BBC World News, 2000.

Minchinton, Walter." World industrial archaeology: A survey." *World Archaeology* 15, no.2 (1983): 125-136. DOI: 10.1080/00438243.1983.9979892.

Ministry of Culture. *Conservation-Restoration-Protection of Monuments*. Technical Periodical Edition, Volume II. Athens, 1987. [in Greek].

Mısırlısoy, Damla, and Günçe, Kağan. "Adaptive reuse strategies for heritage buildings: A holistic approach." *Sustainable Cities and Society* 26 (2016): 91-98. Available at: http://dx.doi.org/10.1016/j.scs.2016.05.017.

Molé, Noelle.“ Hauntings of Solidarity in Post Fordist Italy.” *Anthropological Quarterly* 85, no.2 (2012): 371-398.

Mommaas, Hans.“ Cultural Clusters and the Post-Industrial City: Towards the Remapping of Urban Cultural Policy.” *Urban Studies* 41, no. 3 (March 2004): 507-532.

Moore, Mark, and Gaylen Williams Moore. “Creating Public Value through State Arts Agencies,” 2005. [Online]. Available at: https://www.wallacefoundation.org/knowledge-center/pages/creating-public-value-through-state-arts-agencies.aspx

Morgan, A. *Bygone Lower Ouseburn*. Newcastle upon Tyne: Newcastle City Libraries and Arts, 1995.

Morgan, Ann Lee and Naylor Colin. *Contemporary Architects, Contemporary Arts Series.* London: St. James Press, 1987.

Mossig, Ivo. “The networks producing television programmes in the Cologne media cluster: new firm foundation, flexible specialization and efficient decision-making structures.” European Planning Studies 12 no. 2 (2004): 155–171.

Mühlebach, Andrea.“ The body of Solidarity: Heritage, Memory, and Materiality in Post Industrial Italy.” *Comparative Studies in Society and History* 59, no. 1 (2017): 96-126.

Mühlebach, Andrea.“ Complexio Oppositorum: Notes on the Left in neoliberal Italy.” *Public Culture* 21, no. 3 (2009): 495-515.

Murtagh, William. *Keeping time: The history and theory of preservation in America*. New York, Chichester: John Wiley & Sons, 1997.

Mouzelis, Nikos. *Modern Greece: facets of underdevelopment*. London: Macmillan, 1978

Nakib, Faiza. “Toward an Adaptable Architecture: Guidelines to Integrate Adaptability in the Building.” Paper presented at the *Building a Better World: CIB World* Congress, May 2010, The Lowry, Salford Quays, United Kingdom.

National Technical University of Athens (NTUA). *Historic Industrial Machinery I Greece.* Athens: Odysseas 1998. [in Greek]

Negri, Massimo." Some Notes about the Sesto San Giovanni Application for the Unesco World Heritage List." In *Industrial Patrimony/Patrimoine de l 'Industrie*. Proceedings of the Conference in Sesto San Giovanni, Italy, 24-27 Sept. 2010, 85-87.

Newcastle City Council. *Regeneration Strategy for Lower Ouseburn Valley*. Newcastle upon Tyne: Newcastle City Council, 2003.

Newcastle City Council and Gateshead Council*. Planning for the Future: Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne (2010–2015)*. Newcastle upon Tyne: Newcastle City Council, 2015.

New South Wales (NSW) Department of Planning, and Royal Australian Institute of Architects. *New uses for heritage places: Guidelines for the adaptation of historic buildings and sites.* Sydney: Joint Publication by the Heritage Council of New South Wales and the Royal Australian Institute of Architects, 2008.

Nigel, Walter. "From Values to Narrative: A New Foundation for the Conservation of Historic Buildings." *International Journal of Heritage Studies* 20, No. 6 (2014): 634–50. doi:10.1080/13527258.2013.828649.

Nomikos, Michael. *Restoration – rehabilitation of monuments and historical buildings in Northern Greece*, Volumes A and B. Athens: Ergon IV, 2001. [in Greek]

Nugent, Robin. The Re-use of Industrial Buildings. [Online]: http://www.buildingconservation.com/articles/indusbldgs/indusbldgs.htm

Nurse, Alex." City Centre regeneration to drive economic competitiveness? The case study of Liverpool one." *LHI Journal of Land, Housing and Urban Affairs* 8 (2017): 91-102.

Oers, Ron Van." Towards new international guidelines for the conservation of historic urban landscapes (HUL)." *City & Time* 3, Nr. 3, (2007). [Online]. Available at: http://www.ceci-br.org/novo/revista/docs2008/CT-2008-113.pdf [Accessed 16 August 2019].

Oevermann, Heike, and Mieg Harald. *Industrial heritage sites in transformation: clash of discourses*. New York: Routledge, 2015.

Oikonomou, Dimitris and Petrakos Giorgos. *The development of the Greek cities. Interdisciplinary approaches to urban analysis and policy*. Volos: Ed. University of Thessaly Press, 2012 [in Greek].

Oikonomou, Dimitris, and Ilias Beriatos. "Urban Planning System of Volos: Geographic position and influence on the urban network." In *Volos. In quest of the city's social identity*, edited by Thomas Maloutas, 237-260. Thessaloniki: Paratiritis, 1995.

Oltheten, Elisabeth and Pinteris, George and Sougiannis, Theodore. "Greece in the European Union: Policy Lessons from Two Decades of Membership." *Quarterly Review of Economics and Finance*, No. 43 (2003): 774-806. [Online]. Available at: https://ssrn.com/abstract=475742

Orbasli, Aylin. *Architectural Conservation: Principles and Practice*. Oxford: Blackwell Science, 2008.

Orbasli, Aylin. *Re-using existing buildings towards sustainable regeneration*, 2009. [Online]. Available at: http://www.aylinorbasli.com/Resources/Reuse%20and%20sustainability%20Orbasli.pdf.

Orbasli, Aylin. *Tourists in Historic Towns. Urban Conservation and Heritage Management.* New York: Ed. E & FN Spon, Taylor & Francis Group, 2000.

Osbourne, Derek and Greeno Roger. *Mitchell's Introduction to building*. 5th edition. London: Taylor and Francis, 2013.

Ouseburn Trust. *A Celebration of 30 Years of Ouseburn Regeneration*. Newcastle upon Tyne: Ouseburn Trust, 2012.

Oxford Dictionaries. 2019. Definition of authentic – Oxford Dictionaries Online (World English). Available at: http://oxforddictionaries.com/

Paardekooper, Roeland. *The value of an archaeological open-air museum is in its use. Understanding archaeological open-air museums and their visitors.* Leiden: Sidestone Press, 2012.

Paganoni, Maria Christina." Introduction — City Branding and New Media: Linguistic, Discursive and Semiotic Aspects." In: *City Branding and New Media: Linguistic Perspectives, Discursive Strategies and Multimodality*. Palgrave Pivot, London, 2015.

Pallis, Alexandros." The Greek Census." *The Geographical Journal* 73: no 6 (1929): 543-548.

Paliouras, Dimitris." The architectural Development of Volos." In *Volos and its district through History,* edited by Petros Kypriotelis and Costas Liapis, 359-361. Volos: Thessalian Research Society, 2004.

Paliouras, Dimitris." Network of cultural spaces and modern cultural heritage museums in Mount Pelion." *En Volo,* no. 9 (Spring 2003): 82-87.

Palmer, Marilyn. "Industrial archaeology: a thematic or a period discipline." Antiquity, no. 64 (1990): 275–85.

Palmer, Marilyn. "Understanding the Workplace: A Research Framework for Industrial Archaeology in Britain." In *Industrial Archaeology Review* 27, issue 1 (2005): 9-17.

Palmer, Marilyn, and Neaverson, Peter. *Industrial Archaeology. Principles and Practice*. London: Routledge, 1998.

Palmer, Marilyn, and Neaverson, Peter. *Managing the Industrial Heritage*: *its identification, recording and management: proceedings of a seminar held at Leicester University in July 1994*. Leicester: School of Archaeological Studies, University of Leicester, 1995.

Palmer, Marilyn, and Neaverson, Peter. *Industry in the Landscape, 1700–1900.* London: Routledge, 1994.

Pampanin, Stefano. "Towards the 'Ultimate Earthquake-Proof' Building: Development of an Integrated Low-Damage System." In *Perspectives on European Earthquake*

Engineering and Seismology, edited by Ansal A., *Geotechnical, Geological and Earthquake Engineering*, vol 39. Springer (2015): 321-358.

Papageorgiou, Eirini, Togia Aggeliki and Fainidou Eleftheria. "Restoration study of the Fixed Industrial Complex in Thessaloniki." In proceedings of *The end of the giants: Industrial heritage and transformations of cities* Conference, Volos, 2007, 405-416. Volos: TICCIH-Greece, Municipality of Volos, University of Thessaly, the Piraeus Group Cultural Foundation.

Papaefthimiou, Xenofon. *Industrial Buildings of Western Greece.* Patras: CETD-WG, 2007.

Paratiritis." Our Factory: Glavanis Ironworks and its huge progress. Impressions after a visit to the factory." *Thessalia Newspaper*, October 31, 1936.

Parent, Michel. "Comparative Study of Nominations and Criteria for World Cultural Heritage". Third session of the World Heritage Committee in Cairo and Luxor, 22-26 October 1979. Paris, 1979. [Online]. Available at: http://whc.unesco.org/archive/1979/cc-79-conf003-11e.pdf

Park, Sharon. "Sustainable design and historic preservation." *CRM*, nr. 2 (1998): 13-16.

Parker, Charlie, and Garnell Catherine. "Regeneration and retail in Liverpool: A new approach." *Journal of Retail & Leisure Property* 5, Nr. 4 (October 2006): 292–304.

Parthenopoulos, Konstantinos, Kabouri Evagelia, Dousi Maria, Parthenopoulou Nikoleta. *Preservable Buildings and Elements in Human Environment - Traditional Settlements and Residential sites - Historic Centres and Cities*. Thessaloniki: Technical Chamber of Greece, Department of Central Macedonia, 2009. [in Greek]

Paul, Oliver." Re-Presenting and Representing the Vernacular: The Open-Air Museum." In *Consuming Tradition, Manufacturing Heritage: Global Norms and Urban Forms in the Age of Tourism* edited by Nezar AlSayyad, 191–211. London: Routledge, 2001.

Pearce, Susan. *Archaeological Curatorship*. Leicester: Leicester University Press, 1990.

Pearson, Michael, and Sullivan Sharon. *Looking After Heritage Places: The Basics of Heritage Planning for Managers, Landowners and Administrators*. Melbourne: Melbourne University Press, 1995.

Peponis, John." The Spatial Culture of Factories." *Human Relations* 38, no. 4 (Apr. 1985): 357-390.

Peponis, John." The architecture of the factory. A key concern or a peripheral issue?" *Architectural Issues* no 25 (1991): 69-73.

Petrakos, George. *Developmental study for the prefecture of Magnesia*. Volos: Department of Spatial Planning and Regional Development; Department of Mechanical Engineering, University of Thessaly, 1995.

Picton, James. *Memorials of Liverpool, Historical and Topographical, Including a History of the Dock Estate*. London: Longmans, 1873.

Pitcher, Greg." Liverpool keeps UNESCO title but stays on heritage-at-risk register," *Architectural Journal*, June 8, 2018. [Online]. Available at: https://www.architectsjournal.co.uk/news/liverpool-keeps-unesco-title-but-stays-on-heritage-at-risk-register/10031863.article.

Pollard, Richard, and Pevsner Nikolaus. *Lancashire: Liverpool and the South-West, The Buildings of England*. New Haven and London: Yale University Press, 2006.

Polyzos, Giannis, Panagiotopoulos Vasilis, Agriantoni Christina and Belavilas Nikos. *Historical industrial equipment in Greece*. Athens: Odysseas, 1998. [in Greek]

Poulios, Ioannis. *The Past in the Present. A living Heritage Approach – Meteora, Greece.* London: Ubiquity Press Ltd, 2014.

Poulios, Ioannis." Discussing Strategy in Heritage Conservation: Living Heritage Approach as an Example of Strategic Innovation." *Journal of Cultural Heritage Management and Sustainable Development* 4, no.1 (2014): 16–34. doi:10.1108/JCHMSD-10-2012-0048.

Poulios, Ioannis.“ Moving Beyond a Values-Based Approach to Heritage Conservation.” *Conservation and Management of Archaeological Sites* 12, no.2 (2010): 170–85. DOI: 10.1179/175355210X12792909186539.

Power, Dominic and Scott Allen. *Cultural Industries and the Production of Culture*. New York: Routledge, 2004.

Prassa, Anita.“ The industrial miracle and its decline.” [Special issue] *Eleftherotupia Historica: Volos, the urban miracle*, no. 66 (2001): 10-16. [In Greek]

Prassa, Annita.“ The industrial Development of Magnesia. A Historical Retrospective. Towards deindustrialization.” Seminar Proceedings Argo, 131-144. Volos: General State Archives, Archive of Magnesia, 1998. [in Greek]

Prassa, Annita.“ Volos: Industrial Development and deindustrialization. A brief review.” In: *The Industry of Volos, Yesterday and Today*, special edition, 4-16. *Magnesia Newspaper*. [in Greek]

Preite, Massimo.“ Urban regeneration and planning.” In: *Industrial Heritage Re-tooled. The TICCIH guide to Industrial Heritage Conservation,* edited by James Douet, 101-109. New York: Routledge, 2012.

Pressenda, Paola and Sturani Luisa Maria. “Open Air Museums and Eco museums as Tools for Landscape Management: Some Italian Experiences.” In: *Ecomuseums: A Sense of Place*, 2007.

Pressouyre, Leon. *The World Heritage Convention, Twenty Years Later*. Paris, UNESCO, 1996.

Prossek, Achim.“ Culture through transformation – transformation through culture. Industrial Heritage in Ruhr Region – the example of Zeche Zollverein.” *Heritage and Media in Europe*, no. 3 (2006): 239-248.

Prowler, Don. *Whole building design guide*. U.S.A: National Institute of Building Sciences, 2008.

Psalidopoulos, Mixalis. *Texts for the Greek industry in the 19th century*. Athens: Cultural Technological Foundation of the Hellenic Bank of Industrial Development (ETVA), 1994. [in Greek]

Pye, Elizabeth. *Caring for the Past: Issues in conservation for archaeology and museums*. London: James and James, 2001.

Raistrick, Arthur. *Industrial archaeology: an historical survey*. London: Eyre Methuen, 1972.

Randall, Mason. "Conference reports. Economics and Heritage Conservation: Concepts, Values, and Agendas for Research, Getty Conservation Institute, Los Angeles." *International Journal of Cultural Property*, Vol 8, No. 2 (1999): 550-562.

Randall, Mason. "Be Interested and Beware: Joining Economic Valuation and Heritage Conservation." *International Journal of Heritage Studies*, Vol. 14 No. 4 (2008): 303-318.

Rautenberg, Michel. "Industrial heritage, regeneration of cities and public policies in the 1990s: elements of a French/British comparison." *International Journal of Heritage Studies*, 18:5 (2012): 513-525.

Richards, Jonathan. *Facadism.* London and New York: Routledge, 1994.

Richards, Maude James, and De Maré, Samuel Eric. *The Functional Tradition in Early Industrial Buildings*. London: Architectural Press, 1958.

Richmond, Alison, and Bracker Alison. *Conservation: Principles, Dilemmas, and Uncomfortable Truths*. Oxford: Butterworth-Heinemann in association with the V&A Museum: 2009.

Riegl, Alois. "The Modern Cult of Monuments: Its Essence and Its Development." In *Historical and Philosophical Issues in the Conservation of Cultural Heritage* edited by Nicholas Stanley-Price, Kirby Talley and Alessandra Mellucco Vaccaro, 69–83. Los Angeles: The Getty Conservation Institute, 1903/1996.

Riemann, Gottfried. "The 1826 Journey and Its Place in Schinkel's Career." In: *The English Journey: Journal of a Visit to France and Britain in 1826*, edited by David

Bindman and Gottfried Riemann, 1-11. New York & London: Yale University Press, 1993.

Ritchie-Noakes, Nancy, and Hartley Jesse. *Dock Engineer to the Port of Liverpool 1824-60*. Liverpool: National Museums and Galleries on Merseyside, 1980.

Rix, Michael. *Industrial archaeology*. London: Historical Association, 1967.

Roders, Anna Pereira. "How can urbanization be sustainable? A reflection on the role of city resources in global sustainable development." *BDC. Bollettino Del Centro Calza Bini* 13, Nr. 1 (2014): 79 - 90.

Rodwell, Dennis. *Conservation and sustainability in historic cities*. Oxford: Ed. Blackwell Publishing Ltd, 2007.

Rodwell, Dennis." Sustainability and the Holistic Approach to the Conservation of Historic Cities." *Journal of Architectural Conservation* 9, Nr. 1, (2003): 58-73.

Roido, Mitoula, Theodoropoulou Eleni, and Karali Barbara. "Sustainable development in the city of Volos through reuse of industrial buildings." *sustainable development, culture and traditions Journal*, No. 2 (2013): 154-167.

Rossi, Aldo, and Peter Eisenman. *The architecture of the city*. Cambridge, Mass.: MIT Press, 1982.

Rossmann, Andreas. "Geschichtsabriss im Ruhrgebiet." *Frankfurter Allgemeine Zeitung* Nr. 276, November 25, 2004: 37. [Online]. Available at: https://www.faz.net/aktuell/feuilleton/zeche-zollverein-geschichtsabriss-im-ruhrgebiet-1195553.html.

Rudlin, David, and Falk Nicholas; URBED-The urban and economic development group. *Building the 21st century home. The sustainable urban neighbourhood*. Oxford: Architectural Press, 1999.

Rumpel, Petr, Slach Ondrej and, Koutsky Jaroslav. "Researching creative industries in the Czech Republic: a case study from the city of Ostrava." *Regions Magazine* no. 277 (2010a): 8–19.

Russell, Roslyn, and Winkworth Kylie. *Significance 2.0: A Guide to Assessing the Significance of Collections*. Collections Council of Australia, Commonwealth of Australia, 2010. [Online]. Available at: http://arts.gov.au/sites/default/files/resources-publications/significance-2.0/pdfs/significance-2.0.pdf/

Russell, Peter and Moffatt Steven. "Assessing buildings for adaptability: IEA Annex 31energy-related environmental impact of buildings." International Initiative for a Sustainable Built Environment (iiSBE), 2001. Online, available at: http://annex31.wiwi.uni-karlsruhe.de/pdf (accessed November 2019).

Schröder, Thies." An Outdated View of Modernism: Interview with Karl Ganser, IBA Emscher Park." In *Bauhaus Dessau: Industrielles Gartenreich. Dessau–Bitterfeld–Wittenberg*, edited by Stiftung Bauhaus Dessau, vol. 2, 80–87. Berlin: Ex Pose, 1999.

Scott, Allen J. *Social Economy of the Metropolis: Cognitive-Cultural Capitalism and the Global Resurgence of Cities*. Oxford: Oxford University Press, 2008.

Scott, Allen J. *The Cultural Economy of Cities*. London: Sage, 2000.

Searing, Helen. *Art Spaces: The Architecture of Four Tates*. London: Tate Publishing, 2004.

Sennett, Richard. *The corrosion of character: the personal consequences of work in the new capitalism*. New York: W.W. Norton, 1998.

Shafernich, Sandra Maria. "Open-air museums in Denmark and Sweden: A critical review." *Museum Management and Curatorship*, 13:1 (1994): 9-37.

Shaw, Robert." The International Building Exhibition (IBA) Emscher Park, Germany: A Model for Sustainable Restructuring?" *European Planning Studies* 10, no.1 (2002): 77-97. [Online]. Available at: http://web.mit.edu/bdr/Public/Chapter%20Five%20references/Shaw_Emscher%20Park.pdf.

Siddiqi, Khalid and Thomas Kim. "Benchmarking adaptive reuse: a case study of Georgia." *Environmental Technology and Management*, 6, Nr. 3/4, (2006): 346-361.

Sifounakis, Nikos. *Industrial buildings in Lesvos. Olive factories – Soap factories. 19th and beginning of 20th century*. Lesvos: Prefecture of Lesvos, 1986. [in Greek]

Sifounakis, Nikos. *Vranas Olive Press Museum, Parados, Gera, Lesvos.* Athens: Archipelagos Society, 2013. [in Greek]

Sifounakis, Nikos." From abandonment to rescue, reuse and recovery of identity of industrial units." In Bulletin of the Greek Department of the International Commission for the Conservation of Industrial Heritage, edited by Eleni Beneki, 99–101. Athens: TICCIH Greece, 2010. [in Greek]

Slotta, Rainer. *Einführung in die Industriearchäologie*. Darmstadt: Wissenschaftliche Buchgesellschaft, 1982.

Skartsis, Labros. *Greek Vehicle & Machine Manufacturers 1800 to present: A Pictorial History.* Athens: Marathon, 2012. [in Greek]

Smith, Laurajane. *Archaeological Theory and the Politics of Cultural Heritage*. Abingdon: Routledge, 2004.

Stanley-Price, Nicholas, Kirby Talley Jr. M. and, Mellucco Vaccaro Alessandra. *Historical and Philosophical Issues in the Conservation of Cultural Heritage.* Los Angeles, CA: The Getty Conservation Institute.

Stefanou Joseph. *The physiognomy of Greek city*. Athens: Laboratory of Urban Design N.T.U.A., 2002. [in Greek]

Steinglass, Matt." The Machine in the Garden." *Metropolis* 20, no. 2 (October 2000): 126-131, 166-167.

Stevens, Christine. "Beamish - An Open-Air Museum in a changing industrial community." *Acta Ethnographica Hungarica* 55, Nr. 2 (2010): 401-415.

Stjernø, Steinar. *Solidarity in Europe: The History of an Idea*. Cambridge: Cambridge University Press, 2005.

Stephenson, Janet." The Cultural Values Model: An Integrated Approach to Values in Landscapes." *Landscape and Urban Planning* 84, no. 2 (2008): 127–139.

Stirling, James. "Regionalism and Modern Architecture." *The Architects Yearbook* 8 (1957): 62.

Stirling, James, and Wilford Michael. "James Stirling / Michael Wilford Fonds / File 68: Tate in the North," in *AP140.S2.SS1.D68.* Montréal: Canadian Centre for Architecture, 1982-1990.

Stoke-on-Trent City Council and URBED. *Stoke Town Masterplan*, Final Report, 3rd Draft (October 2011): 2-5. Online Available at: http://webapps.stoke.gov.uk/uploadedfiles/20111031_FINAL%20Stoke%20ReportV7_compressed4.pdf;

Stratton, Michael. *Industrial Buildings: Conservation and Regeneration*. London: E & FN Spon Press, 2000.

Stratton, Michael, and Trinder Barrie. *Twentieth Century Industrial Archaeology*. London: E & FN Spon Press, 2000.

Stylianou, Rea. *Greek Vernacular Architecture: Mount Pelion*. Athens: Melissa Press, 1992. [in Greek]

Sugden Evan, "The Adaptive Reuse of Industrial Heritage Buildings: A Multiple-Case Studies Approach." Master thesis, University of Waterloo, 2017.

Tachos Anastasios. "Crisis when designating a building as listed or not: Parallel procedures of General Building Regulation and Law 1469 / 1950." In *Environment and Law* 3 (2016): 440.

Tamias, Georgios. "Museum of pre-war metalwork. At the Silk Factory Etmektjoglu in Nea Ionia." *En Volo*, no.9 (Spring 2003): 94 – 95. [in Greek]

Taylor, Mary N. "Intangible Heritage Protection and the Cultivation of a Universal Chain of Equivalency." *Nationalism and Ethnic Politics* 22, no.1, (2016): 27-49

Technische Universität München: *Learning from Duisburg Nord*. München: Chair for Landscape Architecture and Industrial Landscape, 2009.

The Blaenavon Partnership. *Nomination of the Blaenavon Industrial Landscape for inclusion in the world heritage list. World Heritage Site Management Plan.* Torfaen County Borough Council: 1999.

Theologidou, P. "Towards the Eco-Museum of Pagasitikos Gulf." *En Volo*, Issues 23, (2006): 26-37 [in Greek].

The Piraeus Bank Group Cultural Foundation (PIOP)." The Rooftile and Brickworks Museum N. & S. Tsalapatas. Business Plan." [Online]. Available at: https://www.slideshare.net/FutureleadersGR/project-29381513. [in Greek]

Thessalia Newspaper. "Strong opposition to municipal borrowing of 4,6 million euros towards the ownership of the Glavanis Industrial site." Thessalia Newspaper, July 30, 2009. [in Greek]

Thomas, Catherine. "World Heritage site status – a catalyst for heritage-led sustainable regeneration: Blaenavon Industrial Landscape, United Kingdom." In *World Heritage: Benefits Beyond Borders*. Edited by Amareswar Galla (Cambridge: UNESCO and Cambridge University Press, 2012): 306-316.

Throsby, David. *Economics and Culture*. Cambridge: Cambridge University Press, 2001.

TICCIH, and ICOMOS. *The Nizhny Tagil Charter for the Industrial Heritage*. July 2003.

TICCIH. *Industrial heritage: the hidden face of European identity*. INTERREG IVB North-West Europe Programme Newsletter, 2004.

TICCIH - Greek department. *The end of the giants. Industrial heritage and urban transformations*. Volos: TICCIH, 2007. [in Greek]

Tobazis, Alexandros." Architecture of Industrial Buildings in Greece." *Arhitektonika Themata* no. 25 (1991): 88. [in Greek]

Towle, Alex. *The Challenges Associated with the Regeneration of Industrial Heritage*. London: PAYE Conservation, 2016.

Trettin, Lutz, Neumann Uwe, and Zakrzewski Guido. "Essen and the Ruhr Area - The European Capital of Culture 2010: Development of tourism and the role of SMEs."

ERSA conference papers ersa10p357, European Regional Science Association, 2011. [Online]. Available at: https://ideas.repec.org/p/wiw/wiwrsa/ersa10p357.html

Triantafillopoulos, Nikolaos. *Restoration and reuse of listed buildings. Institutional and economic dimensions*. Athens: Hellenic Company of Environment and Culture - Architectural Heritage Council, 2015. [in Greek]

Triantou, Eleni. *Volos through the fog of the time.* Volos: Grafi, 1994. [in Greek]

Trinder, Barrie. *The Making of the Industrial Landscape*. London: Dent, 1982.

Tsagarakis Konstantinos," The rebirth of the giants. Reuse and exploitation of industrial heritage. Case study of Piraeus Street." PhD diss., Harokopio University, 2010. [in Greek]

Tsolis, Stathis." Processes of Industrialisation: A Comparative Study of Greek and British Industrial Revolution." (2006).

Tsotsoros, Stathis. *The Making of the industrial capital in Greece, 1898-1939.* Athens: National Bank of Greece Cultural Foundation, 1993. [in Greek]

Tzafleris, Nikos." The role of the Greek military industrial production during the Greek-Italian war (1940-1941)." Paper presented at the Economic and Social History International Conference, Rethymno, 2008, 160-161. School of Philosophy Press, University of Crete. [in Greek]

Tzafleris, Nikos. "The deindustrialization in Volos: claiming the urban space between the historical machine workshops and the locals." Paper presented at the 5th Panhellenic Scientific Meeting TICCIH, Volos, 22-25 November 2007, 447-576. Centre for History and Documentation, City of Volos. [in Greek]

Twigger-Ross, Clare, Bonaiuto Marino and Breakwell Glynis. "Identity theories and environmental Psychology." In: Psychological theories for environmental issues, edited by Bonnes, Mirilia, Terence Lee, and Marino Bonaiuto. Aldershot: Ashgate Publishings, 2003.

United Nations Environment Programme (UNEP). *Buildings and Climate Change Status, challenges and opportunities.* UNEP Publications, 2007.

UNESCO. *Caring for your heritage building: Building owner's information*. In association with the Indonesian Fund-in-Trust and the Republic of Indonesia Ministry of Education and Culture, 2015. [Online]. Available at: http://unesdoc.unesco.org/images/0024/002432/243218e.pdf

UNESCO. Recommendation on the Historic Urban Landscape. Paris: UNESCO, 2011. [Online]. Available at: http://portal.unesco.org/en/ev.php-URL_ID=48857&URL_DO=DO_TOPIC&URL_SECTION=201.html [Accessed at 16 August 2019].

UNESCO. *Asia conserved; lessons learned from the UNESCO Asia-Pacific heritage awards for culture heritage conservation (2000–2004)*. Bangkok: Lord Wilson Heritage Trust and UNESCO, 2007. [Online]. Available at: http://unesdoc.unesco.org/images/0015/001557/155754e.pdf

UNESCO. *Hoi An protocols for best conservation practice in Asia: Professional guidelines for assuring and preserving the authenticity of heritage sites in the context of the cultures of Asia*. Bangkok: UNESCO, 2009.

URBACT II. *Industrial heritage in Sesto San Giovanni: a real asset for urban development. Sesto San Giovanni Local Action Plan*. NeT-TOPIC Thematic Network. [Online]. Available at: http://www.sestosg.net/CmsReply/ImageServlet/SESTO%20LAP%20-%20English%20version.pdf

Vacharopoulou, Kalliopi." Conservation of Classical Monuments: A Study of Anastylosis with Case Studies from Greece and Turkey." PhD diss., Institute of Archaeology, University College London, 2013.

Vakili-Ardebili, Ali. "Complexity of value creation in sustainable building design (SBD)." *Journal of Green Building* 2, Nr. 4, (2007): 171-181.

Vallance, Suzanne, Perkins Harvey, and Dixon, Jennifer. "What is social sustainability? A clarification of concepts." *Geoforum* 42, no.3 (2011): 342–348.

Veldpaus, Loes. Historic urban landscapes: framing the integration of urban and heritage planning in multi-level governance. Eindhoven: Technische Universiteit Eindhoven, 2015.

Watson, Mark." Adaptive re-use and embodied energy." In *Industrial Heritage Re-tooled. The TICCIH guide to Industrial Heritage Conservation,* edited by James Douet, 136-141. New York: Routledge, 2012.

Weilacher, Udo. *Syntax of Landscape. The Landscape Architecture by Peter Latz and Partners*. Basel: Birkhäuser, 2008. ISBN 978-3-7643-7615-4.

Weilacher, Udo. *In Gardens. Profiles of Contemporary European Landscape Architecture*. Basel: Birkhäuser, 2005.

West, Bob." The making of the English working past: a critical view of the Ironbridge Gorge Museum." In *The Museum Time-Machine, Putting cultures on display*, edited by Robert Lumley. London and New York: Routledge, 1988.

Whiting, James, and Hannam Kevin. "Bohemias and the creation of a cosmopolitan tourism destination." In *Tourism and the Creative Industries: Theories, policies and practice,* edited by Philip Long and Nigel D. Morpeth. Abington: Routledge, 2016.

Whiting, James, and Hannam Kevin. "The secret garden: Artists, bohemia and gentrification in the Ouseburn Valley, Newcastle upon Tyne, UK," *European Urban and Regional Studies,* Vol. 24, Nr. 3 (2017): 318–334.

Wilkinson, Sara, Remoy, Hilde and Langston Craig. *Sustainable Building Adaptation: Innovations in Decision-making*. Chichester: John Wiley & Sons, 2014.

Wilson, Corey Andrew. "Adaptive reuse of industrial buildings in Toronto, Ontario." Master thesis, Queen's University, 2010.

Wilson, Alex and Ward Andrea. *Design for adaptation: living in a climate changing world*, 2009. [Online], Available: http://www.buildinggreen.com/auth/article.cfm/2009/8/28/Designfor-addaptationliving (viewed November 10 2019).

Wong, Liliane. *Adaptive reuse: extending the lives of buildings*. Basel: Birkhäuser, 2017.

Worthing, Derek, and Stephen Bond. *Managing Built Heritage. The Role of Cultural Significance*. Oxford: Blackwell Publishing Ltd, 2008.

Wright, Jade. "Tate Liverpool unveils Sir Peter Blake's new Dazzle café." Liverpool Echo, August 17, 2015.

Xie, Philip." Developing industrial heritage tourism: A case study of the proposed Jeep Museum in Toledo, Ohio." *Tourism Management* 27, No. 6 (2006): 1321–1330.

Yanfang, Xu, and Yinling Cao. "Cultural Industrialization: A Value Realizing Path for Industrial Heritage." *Cross-cultural Communication* 8, No. 6 (2012): 104-107 DOI:10.3968/j.ccc.1923670020120806.Z1230.

Yiannoudes, Socrates, Patsavos Nikolaos, and Tsesmetzis Vasilis. "Aspra Spitia 2015: intentions and transformations. Constantinos A. Doxiadis' industrial settlement and its development." Paper presented at *International Conference on Changing Cities II: Spatial, Design, Landscape & Socio-economic Dimensions*, Porto Heli, Greece, June 22-26, 2015: 1007-1018.

Yudelson, Jerry. *Greening existing buildings*. USA: McGraw Hill Companies, 2010.

Zapheiris, Vassos, and Stefanos Nomikos. *Windmill in the Cyclades*. Athens: Dodoni, 1993. [in Greek]

Zeiler, W., Quanjel, E., Velden, J., & Wortel, W. (2010). "Flexible design process innovation: Integral building design method." Paper presented at the *Building a Better World: CIB World* Congress 2010. United Kingdom: The Lowry, Salford Quays.

Zouboulakis, Michalis." The impact that the University of Thessaly has in Volos." Thessalia Newspaper, February 3, 2019. [Online]. Available at: https://e-thessalia.gr/i-epidrasi-toy-panepistimioy-thessalias-ston-volo-2018/?fbclid=IwAR1rP2hfca7ZtSuJzhM55e35Iu_-tYIFtvCtKDWDaif8-lBWrXMNDKyKeg8.

Zukin, Sharon. *Landscapes of Power*. Berkeley, CA: University of California Press, 1991.

Zukin, Sharon." Postmodern urban landscapes: mapping culture and power." In *Modernity and Identity*, edited by Scott Lash and Jonathan Friedman, 221–224. London: Basil Blackwell, 1992.

APPENDICES

1. Semi-structured interviews

1.1 – Interview questions form

Semi-structured interview questionnaire

Participant: Professional role and years of work within the organization*: Educational background*: Place of interview: Date of interview: *This information may help to relate answers to professional/educational background of interviewee, increasing the validity and reliability of the analysis.

Questions (national level)

I. The recognition of industrial heritage

1. What are, for you, the main procedures for declaring the various forms of industrial heritage (e.g. tangible, intangible, natural)?

2. What are, for you, the main procedures for identifying endangered industrial heritage?

II. The legal and policy framework for the protection of industrial heritage

1. What issues arise with regard to existing measures (i.e. legislation, policies, plans, and/or programmes) that provide general or specific protection for various types of industrial heritage, within:

a) The land management, zoning or planning acts; property and environmental laws
b) Laws, policies, and programmes related to tourism and the entertainment industry

2. What are the main challenges in ensuring industrial heritage at all stages of development planning, implementation and assessment processes?

III. The access to industrial heritage

1. Which steps have been made in the educational sector to promote appreciation for the industrial heritage of all cultural groups in your country and to ensure access to such cultural heritage by all;

2. What technological developments have been made that can promote and support access to industrial heritage;

3. What are the achievements and challenges in implementing collaborative programmes on access to industrial heritage at the local, regional and national levels?

Questions (local level)

1. Do you think industrial heritage in your local area is well understood? What could help understanding in your local area?

2. How important do you think the protection of historic industrial heritage is?

3. Which are the ways that industrial heritage is cared for in your local area? How satisfied are you?

4. Who of the following do you think has a role in caring for industrial heritage? Should Local and Central government be included here? What are the reasons for your answer?

- General public (e.g. as volunteers)
- Owners of heritage places (e.g. historic buildings, archaeology on people's land)
- Community Groups (e.g. historical societies)
- Businesses (e.g. as part of new developments)
- Other…..

5. Have you visited a place of industrial heritage value, museum, heritage trail or taken part in any other type of heritage related activity in the last six months? If yes, what type(s) of heritage activities have you participated in? What would help you enjoy Volos's industrial heritage more?

7. Which three initiatives should the Council prioritise for industrial heritage over the coming year? (First/ Second/ Third)

1. Further research to find out more about the region's industrial heritage resources;
2. Set up a one-stop-shop for all of Volos's information on industrial heritage;
3. Give industrial places more protection in Volos Council Plans (e.g. scheduling more historic sites, structures, places and areas; archaeological sites; and, sites of significance);
4. Involve local people, community groups in the identification of places of industrial heritage value;
5. Stronger policy and regulations to improve industrial heritage management;
6. Improve public access to industrial heritage, interpretation/signage and publicity of local history;
7. Increased education, guidance and good practice about industrial heritage, its research and management;
8. Better financial incentives for private owners and developers to conserve industrial heritage;
9. Turn industrial heritage into a source of income (e.g. through conservation-led regeneration, cultural quarters, heritage-based tourism, jobs and training in the heritage sector).

Do you have any other innovative or creative suggestions on how we can understand value, care for and celebrate our industrial heritage?

8. Do you have any other suggestions on how we can understand, value, care for and celebrate our industrial heritage?

1.2 – Participant's consent form

Title of project: *Transformation of Industrial Heritage: The Case of Volos, Greece. Preserving the value of industrial heritage in historic towns through conservation, regeneration and reuse.*

Name of investigator: Maria Dimitriou

Participant Identification Number for this project:

I confirm I have read and understood the information about the project as provided in the Participant information sheet dated 18 September 2017.

I confirm that I have had the opportunity to ask questions and the researcher has answered any questions about the study to my satisfaction.

I understand that my participation is voluntary and that I am free to withdraw at any time, without having to give a reason and without any consequences.

I understand that any information recorded in the investigation will NOT remain confidential and that the information that identifies me will be made publicly available.

I consent to use od the data in research, publications, sharing and archiving as explained in the Participant information Sheet.

I consent to audio interviews being recorded as part of the project.
[delete if not being used] Yes/No

I agree to take part in the above research project.

Name of participant	Date	Signature

Researcher	Date	Signature

1.3 – Participant's information sheet

Date: DD/MM/YY

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEE

Research project title: *Transformation of Industrial Heritage: The Case of Volos, Greece. Preserving the value of industrial heritage in historic towns through conservation, regeneration and reuse.*

Introduction

I am a PhD student at the University of Kent, conducting research in the field of Industrial Heritage Conservation and Management. I would like to invite you to take part in my PhD research study. The study obtained approval from the Research Ethics Advisory Group of the University of Kent, that assures that all research carried out by staff or students of the University is conducted to the highest level of ethical standards and in accordance with current legislation and policy requirements.

However, before you decide whether to take part, you need to understand why the research is being undertaken and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information. Take time to decide whether or not to take part.

What is the purpose of the study?

The current research focuses on reuse of industrial heritage, using a value-based approach to the preservation of industrial structures, and the regeneration of the urban environment and previously overlooked industrial identity. Industrial heritage is a significant part of the urban built environment of the selected main case study, the city of Volos. Over the last forty years, following post-industrial European trends, industrial heritage has been considered a flexible resource that can adapt and redefine itself. Although many industrial buildings have been repurposed, the ill-considered

new uses have not been able to preserve industrial heritage values while regenerating the city centre. Moreover, there are still a significant number of emblematic industrial properties in the city centre that remain vacant or underused. This main problem of selecting new uses and the delay in rehabilitating these abandoned sites threatens to erase an entire chapter of the city's history.

Why have I been invited to participate?

You have been invited because you are a conservation expert or a local industrial heritage management stakeholder involved in the study or rehabilitation of industrial heritage. Interviews with professionals will help the author understand better any particular issue that could not emerge during the analysis of documents, making the study more complete. Moreover, you may express your opinion, based on your practical experience in the field, especially on what are the limits and strengths of existing preservation and reuse practices, policies and tools and suggest ways for their improvement.

Do I have to take part?

Taking part to in the research is entirely voluntary and it is up to you to decide. I will describe the study and go through the information sheet, which I will give to you. I will then ask you to sign a consent form (please find it attached) to show you agreed to take part. You are free to withdraw at any time, without giving a reason.

What will happen to me if I take part?

We will arrange a time to meet, which is convenient for you, for a single interview with myself. It may be done in your office or in any other place that is suitable for you. There will be a single interview where I will ask you some questions about industrial heritage reuse strategies and tools. The interview is expected to last no longer than one hour and is a one-off event. The interview may be audio recorded if you give consent. This will help the researcher not to miss important aspects of the interview and to facilitate the analysis of collected data. I will fully inform you of the release of my PhD dissertation and of any other publication related to this study. I will provide you with copies, upon request.

Will your participation in the project remain confidential?

Your personal data will be anonymised. However, the information that you give me during the interview will not be anonymised. The information you give will be used for research purpose only.

What are the possible disadvantages and risks of taking part?

The risks associated with this research are minimal. The only potential risk is that you may express opinions in contrast with that of your working institution that may comprise your profession in some way. To minimize this risk, we will carry out interviews in a setting that can guarantee an adequate level of privacy. Moreover, interviews may be conducted during your working hours, interrupting your working schedule. To minimize this inconvenience, we will plan the interview in advance according to your time and place preferences.

What are the possible benefits of taking part?

You can be an active participant in a study that aims to improve the industrial heritage preservation and reuse practices of your historic city. You may have a fundamental role expressing your own opinion, based on your practical experience, especially on what you think are the limits and strengths of existing policies and suggesting ways for their improvement. The study will take care of your views and proposals. Research findings may be used by you and your institution to reflect and potentially revise the existing policies of your country/city.

At the end of the study, I will fully inform you of the release of the PhD dissertation and any other publication concerning this research, and I will provide you with copies, upon request. Moreover, I will be available to discuss the research findings with you at the end of the study.

Not sure about participating? Or Do I have to take part?

I really appreciate if you could take part at this study. However, if you do not wish to take part you do not have to give a reason and you will not be contacted again. Similarly, if you do agree to participate you are free to withdraw at any time during the project if you change our mind.

If you would like to participate in the research, please answer positively to this e-mail.

Thank you for your interest and support. I am available for any questions and please do not hesitate to contact me for any further information you may need.

For more information, you can also contact Dr Nikolaos Karydis, Senior lecturer in Kent School of Architecture and Planning, at the University of Kent, and main supervisor of this research, at the following address: e-mail address

I look forward to hearing from you soon.

Kind regards,
Maria Dimitriou

PhD candidate in Architecture and Planning
University of Kent
Canterbury, Kent, CT2 7NF (UK)
E-mail: e-mail address
Phone: phone number

2. International and Regional Charters

UNESCO

Convention for the Protection of Cultural Property in the Event of Armed Conflict, 1954

http://portal.unesco.org/culture/en/ev.php-URL_ID=8450&URL_DO=DO_TOPIC&URL_SECTION=201.html

Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, 1970

http://portal.unesco.org/en/ev.php-URL_ID=13039&URL_DO=DO_TOPIC&URL_SECTION=201.htmlm

Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972

http://www.unesco.org/whc/nwhc/pages/doc/dc_f2.htm

World Heritage Convention Operational Guidelines

http://whc.unesco.org/archive/opguide05-en.pdf

Recommendation Concerning the Protection, at National Level, of the Cultural and Natural Heritage, Paris 1972

http://www.unesco.org/culture/laws/national/html_eng/page1.shtml

Recommendation Concerning the Safeguarding and Contemporary Role of Historic Areas, Nairobi 1976

http://www.unesco.org/culture/laws/historic/html_eng/page1.shtml

Convention on the Protection of the Underwater Cultural Heritage, 2001

http://www.unesco.org/culture/laws/underwater/html_eng/convention.shtml

Universal Declaration on Cultural Diversity, 2001

http://unesdoc.unesco.org/images/0012/001271/127160m.pdf

Convention for the Safeguarding of the Intangible Cultural Heritage, 2003

http://unesdoc.unesco.org/images/0013/001325/132540e.pdf

Convention on the Protection and Promotion of the Diversity of Cultural Expressions, 2005

http://unesdoc.unesco.org/images/0014/001429/142919e.pdf

ICOMOS

The Venice Charter, 1964

http://www.icomos.org/venice_charter.html.

The Florence Charter, 1982 (Historic gardens and landscapes)

http://www.international.icomos.org/charters/gardens_e.htm

Charter on the Conservation of Historic Towns and Urban Areas, 1987 (Washington Charter)

http://www.international.icomos.org/charters/towns_e.htm

Charter for the Protection and Management of the Archaeological Heritage, 1990

http://www.international.icomos.org/charters/arch_e.htm

ICOMOS Guidelines for Education and Training, 1993

http://www.icomos.org/guidelines_for_education.html

Charter for the Protection and Management of the Underwater Cultural Heritage, 1996

http://www.international.icomos.org/charters/underwater_e.htm

Principles for the Preservation of Historic Timber Structures, 1999

http://www.international.icomos.org/charters/wood_e.htm

International Charter on Cultural Tourism, 1999

http://www.international.icomos.org/charters/tourism_e.htm

Convention for the Safeguarding of the Intangible Cultural Heritage, 2003

http://unesdoc.unesco.org/images/0013/001325/132540e.pdf

Convention on the Protection and Promotion of the Diversity of Cultural Expressions, 2005

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http://www.international.icomos.org/charters/underwater_e.htm

Principles for the Preservation of Historic Timber Structures, 1999

http://www.international.icomos.org/charters/wood_e.htm

International Charter on Cultural Tourism, 1999

http://www.international.icomos.org/charters/tourism_e.htm

Australia ICOMOS Burra Charter, 1999

http://www.icomos.org/australia/burra.html

ICOMOS Charter for the Conservation of Places of Cultural Heritage Value, 1992

http://www.icomos.org/docs/nz_92charter.html