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Article abstract

This article gives an overview about the development of the teaching and research activities in industrial archaeology at the Institute for Industrial Archaeology, History of Science and Technology at the University of Technology and Mining Academy Freiberg in Germany in international context. It outlines the international development of the new discipline of industrial archaeology from its beginning until today with a special focus on Germany. It discusses the subject area, objectives and methodology of industrial archaeology as well as its relation to industrial heritage, industrial monument preservation and industrial culture.

Industrial Archaeology at the TU Bergakademie Freiberg in Germany, in International Context

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The Institute for Industrial Archaeology, History of Science and Technology (IWTG) at the Freiberg University of Mining and Technology in Saxony (Germany) exists since 1992, but its prehistory is going back to 1954, when its predecessor, the Institute for History of Mining and Metallurgy (IHMM) has been established in Freiberg as the first academic institute for history of science and technology in Germany (Albrecht 2015). The IHMM developed since the 1960s into the most important academic institution for the documentation and preservation of technical monuments in the communist German Democratic Republic (GDR). In 1972, the IHMM was reorganised under the new denotation Academic Field for Economic History (AFEH), which under the influence of the rise of the new discipline of "industrial archaeology" in Britain reorganised its technical monuments activities in the 1980s under the heading "Industriearchäologie". After the German reunification, the Marxist AFEH was closed for political reasons and in 1992 was re-established as "Institut für Wissenschafts- und Technikgeschichte" (Institute for the history of science and technology). In 2001, together with the implementation of the first German academic study program in industrial archaeology, the term "Industriearchäologie" (industrial archaeology) complemented the name of the institute. Until today, it is the only university institute with the denomination of industrial archaeology and the only academic institution in Germany offering a study program in industrial archaeology.

The following sections of this article will outline the international historical background of the development of industrial archaeology, its subject area, objectives and methodology as well as the contemporary international situation of industrial archaeology in research and programs, with a special focus on the Freiberg study programs in industrial archaeology and industrial culture.

Industrial archaeology: its history in international context

Industrial archaeology is a relatively young discipline. The term "Industrial Archaeology" first appeared in an article in the British journal *The Amateur Historian* in 1955, written by Michael Rix, lecturer in English literature at the University of Birmingham (Rix 1955). Rix thus triggered a movement, initially covering Great Britain and then the whole world, for the documentation and preservation of technical monuments within the framework of monument conservation under the new catchword "Industrial Heritage." It not only revolutionised the early efforts to preserve technical monuments made by engineers and technicians at the beginning of the 20th century, but it also became the birthplace of the new scientific discipline of "industrial archaeology" (Buchanan 2000) and the development of the study of "industrial culture," which was limited to the German-speaking world (Weber 1980).

The documentation hype of technical and industrial monuments under the banner of industrial archaeology, triggered by Rix's publication in 1955 in a journal intended for amateur historians and widely circulated in Great Britain, affected within a few years such diverse groups like students, teachers, hobby researchers, journalists, and professionals from the academic fields of adult education, history of technology, architecture and archaeology. Local and regional associations for industrial archaeology emerged, such

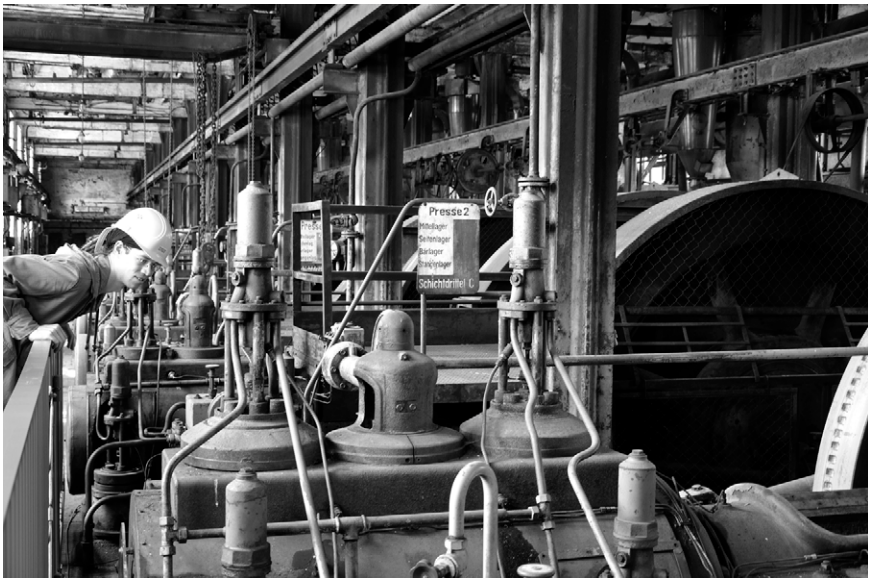

Figure 1. Industrial archaeology student inspecting a historic briquetting plant. © Helmuth Albrecht

as the Bristol Industrial Archaeological Society (1967) or the Sumerset Industrial Archaeological Society (1972), which, in addition to recording and documenting the material legacy of technological and industrial development, held conferences and published their research results in books and journals. In order to stem the flood of new information on technical and industrial monuments, the Council for British Archaeology (CBA) set up an "Industrial Archaeology Research Committee" in Great Britain as early as 1959, which drew up uniform guidelines for documentation. In 1965, in consultation with the British ministries responsible for the registration of monuments, a central registration office, the "National Record of Industrial Monuments" (NRIM), was established at the University of Bath. The professionalism of industrial archaeology in Great Britain was further advanced in the 1960s with the establishment of the first theoretical and practical teaching courses at various universities and the founding of the "Institute for Industrial Archaeology" (1967) in Ironbridge. This institute developed in close cooperation with the University of Birmingham into the centre of industrial archaeological teaching and research in Great Britain. Since 1964, the *Journal of Industrial Archaeology* was published as a national journal, and from 1972 the *Industrial Archaeology Review* was issued for the first time as a peer-review journal by the Association for Industrial Archaeology (AIA), which was founded in the same year. In the meantime, the so-called "Bath Conferences," organized since 1964 on the initiative

Figure 2. Industrial archaeology students on a building survey. © Helmuth Albrecht

of the Bristol Industrial Archaeology Society and the University of Bath, developed into a series of national conferences for industrial archaeology in Great-Britain.

The development of industrial archaeology in Great Britain did not remain without influence on other countries (Trinder 2000). As early as 1971, the Society for Industrial Archaeology (SIA) was founded in North America, which developed into the largest organization of its kind. It was followed in the 1970s by further national foundations e.g. in Japan in 1977 (Japan Industrial Archaeology Society, JIAS), in Belgium in 1978 (Vlaamse Vereniging voor Industriële Archeologie, VVIA), in France in 1979 (Comité d'information et de liaison pour l'archéologie, l'étude et la mise en valeur du patrimoine industriel, CILAC) and in Denmark (Selskabet til Bevaring af Industrimiljøer). By the turn of the millennium, another seven national societies had been added.[1] In 1973 another important step in the internationalization of industrial archaeology was taken with the First International Conference for the Conservation of Industrial Monuments in Ironbridge. From its follow-up conferences in Bochum in 1975 and in Stockholm in 1978, a new worldwide umbrella organization, *The International Committee for the Conservation of the Industrial Heritage* (TICCIH), emerged from the conferences in Sweden 1978 and France in 1981. Since then, international conferences of experts from all over the world from a wide range of disciplines on the subject of Industrial Archaeology and Industrial Heritage are organized every three years under the name "International TICCIH Congress."[2] In 2014, through an agreement with ICOMOS (International Council on Monuments and

1. 1984 Netherlands (Federatie Industrieel Erfgoed Nederland, FIEN) and Belgium (Patrimoine Industriel Wallonie-Bruxelles, PIWB), 1987 West Germany (Deutsche Gesellschaft für Industriekultur, DGfI), 1989 Sweden (Svenska industriminnesföreningen, SIM), 1992 Lithuania (Latvijas Industriala mantojuma fonds, LIMF), 1996 Ireland (Industrial Heritage Association of Ireland, IHAI), Italy (Associazione Italiana per il Patrimonio Archeologico Industriale, APAI) and Portugal (Associação Portuguesa para o Património Industrial, APPI) in 1997, and after 2000, Romania in 2007 (Romanian Association for Industrial Archaeology, AIR) and Germany in 2014 (Georg-Agricola-Gesellschaft für Technikgeschichte und Industriekultur, GAG).
2. These meetings were in the USA (Lowell) in 1984, in Austria (Vienna) in 1987, in Belgium (Brussels) in 1990, in Spain (Madrid/Barcelona) in 1992, in Canada (Ottawa/Montreal) in 1994, and in Greece (Athens/Thessaloniki) in 1997, 2000 in Great Britain (London), 2003 in Russia (Moscow/Ekatherinburg), 2006 in Italy (Rome/Terni), 2009 in Germany (Freiberg), 2012 in Taiwan (Taipei), 2015 in France (Lille) and 2018 in Chile (Santiago). The next international TICCIH conference will be held in Canada (Montreal) in 2021.

Sites), TICCIH was finally officially recognized as an advisor to ICOMOS on all UNESCO World Heritage applications concerning technical or industrial monuments.[3]

Industrial archaeology: subject area, objectives and methodology

The choice of the term "Industrial Archaeology" for the new discipline was controversial from the outset, as it offered room for interpretation with its seemingly contradictory terms of "industry" and "archaeology." For Michael Rix in 1959, industrial archaeology was "the study of early remains produced by the Industrial Revolution" (Hudson 1966: 16). In 1963 and again in 1966, Kenneth Hudson, one of the pioneers of British industrial archaeology, criticized in his book *Industrial Archaeology: An Introduction* the fuzziness of the terms "early remains" and "Industrial Revolution" used by Rix and set his own definition: "Industrial Archaeology ... is the organized, disciplined study of the physical remains of yesterday's industries" (Hudson 1966: 21). In 1967, Hudson also emphasized in the foreword to his *Handbook for Industrial Archaeologists* that industrial archaeology is "of course, no more and no less than a specialized branch of archaeology", but that "on the other hand" the industrial archaeologist must have "a number of particular techniques, difficulties and opportunities of his own" (Hudson 1967: 5). Hudson explicitly dedicated his handbook to the differences between industrial archaeological and conventional archaeological research in terms of subject matter and methodology. He saw the essential difference in the focus of industrial archaeology on the era of industrialization, i.e. the 18th to 20th centuries, and in its main objects on investigation "factories and employed labour", which, in addition to the methods of field research, i.e. the exploration and documentation of "physical remains" on site, required knowledge of historical methods of analyzing written sources in libraries, archives and museums. As examples of such sources of industrial archaeological research, Hudson referred to books, economic archives, letters, memoirs, prints and photographs. He concluded:

> In order to build up a completely satisfying record, one must gather information from all the available fields. Industrial Archaeology is no different from Roman or medieval archaeology in this respect.

3. Memorandum of Understanding between ICOMOS (International Council on Monuments and Sites) and TICCIH (The International Committee for the Conservation of the Industrial Heritage) regarding a Framework for Collaboration on the Conservation of Industrial Heritage, November 10, 2014 (www.ticcih.org.).

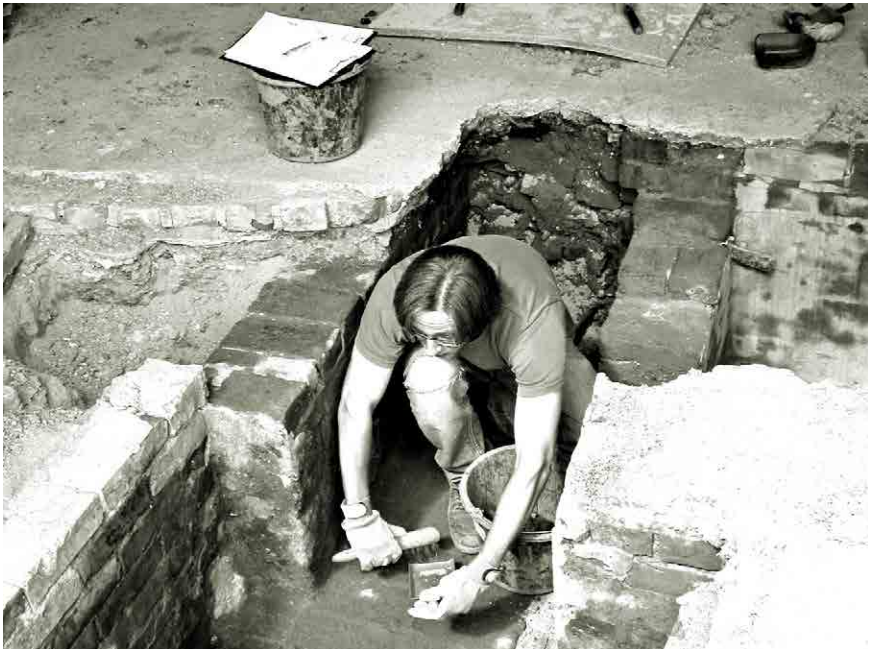

Figure 3. Industrial archaeology student at an excavation project. © Helmuth Albrecht

> It complements the literary sources, so that the resulting facts and conclusions are more reliable than they would have been if we had been compelled to rely on either literature or archaeology alone (Hudson 1967 : 9).

For Hudson, industrial archaeology was based on archaeological methods of field research, but had to be complemented by historical methods of historical science in order to do justice to its subject area of objects of the industrial or factory age. The question of considering historical questions and methods in the field of industrial archaeology inevitably arose at a time when a new "modern" history of technology, more oriented towards social and economic aspects, was emerging. Since the late 1950s, this history of technology had been moving away from the traditional "old" history of technology of engineers and technicians and their fixation on machines and pre-industrial plants, and had focused on the industrial age with its technical, social and economic structures.

A few years later, Angus Buchanan, the editor of the *Journal of Industrial Archaeology*, supplemented this approach in 1972 in his book *Industrial Archaeology in Britain* with the aspect of the conservation of industrial archaeological objects in situ:

> Industrial archaeology is a field of study concerned with investigating, surveying, recording and, in some cases, with preserving industrial monuments. It aims, moreover, at assessing the significance of these monuments in the context of social and technological history. (Buchanan 1972: 20).

In addition to the architectural and technical structures of industrial production, industrial archaeological research has now to focus also on the goods produced and the economic, social and ecological conditions of the industrial production.

Since the late 1980s, the changes in perspective have become increasingly apparent in the international development of industrial archaeology. In 1993, Neil Cossons, the former director of the Industrial Archaeology Institute in Ironbridge and now director of the Science Museum in London, noted in his introduction to the second edition of *The BP Book of Industrial Archaeology*:

> Since the first edition was published in 1975 immense changes have taken place in the industrial landscape and in our attitudes towards it. There has been a virtual extinction of many of those traditional industrial heartlands on coal and steam, iron, steel and textiles – the socalled smokestack industries – and the growth of a service economy often based on leisure and supported by tourism. These have fuelled a boom into industrial archaeology preservation and museums. At the

Figure 4. Industrial archaeology students at archive studies. © Helmuth Albrecht

> same time redundant industrial landscapes are increasingly seen as developable. (Cossons 1993: 7)

Cossons defines industrial archaeology as "a cultural archaeology, the study of the culture in which industry has been dominant and in particular its physical manifestations and the light they shed upon our understanding of industrial society" (Cossons 1993: 10). In 1996, William Jones repeated in the introduction of his *Dictionary of Industrial Archaeology* the official definition of the British AIA for industrial archaeology "as a period study embracing the tangible evidence of technological, economic, and social development from the onset of industrialization to the recent past" (Jones 1996: xi).

Similar to Cossons and Jones, Marilyn Palmer, then a lecturer at the University of Leicester and about to be appointed to a personal professorship in industrial archaeology in 2000, defined in her textbook *Industrial Archaeology: Principles and Practice industrial archaeology* as "the systematic study of structures and artefacts as a means of enlarging our understanding of the industrial past" (Palmer *et al.* 1998: 1). In this context, Palmer emphasizes a number of characteristic features of industrial archaeology:

> The essence of industrial archaeology is the interrelationship between the field evidence … and the evidence from written sources. … The aim of industrial archaeology is not the writing of a piece of economic history but the understanding of a landscape. ... The main purpose of industrial archaeology is the study, not the conservation, of physical evidence … The study of industrial archaeology therefore has a vital role to play in revealing the whole cultural context of the process of industrialization. (Palmer *et al.* 1998: 105, 128 and 163).

Palmer, who as a trained historian had been building up the academic program of study in industrial archaeology at the History and Archaeology Department in Leicester since 1988, also addresses in her book the similarities and differences between archaeology and industrial archaeology. While archaeology, according to Palmer, is mainly concerned with structures below the surface, most of which are destroyed by their exploration in the form of excavations, industrial archaeology is usually concerned with above-ground structures, most of which are preserved when they are documented. Equally, the common archaeological methods of fieldwork, such as site inspection, geophysical exploration or aerial photography are of less importance for industrial archaeology, thanks to the historical sources at its disposal, such as reports, maps, photographs or even films in libraries, archives, authorities and institutions (Palmer *et al.* 1998: 79). Nevertheless, Palmer's textbook explicitly attempts "to place

Figure 5. Industrial archaeology students visiting a historic processing site in the Cornwall mining landscape in Britain. © Helmuth Albrecht

industrial archaeology within the mainstream of archaeology and to set the discipline within a methodological framework" (Palmer *et al.* 1998: xii).

For Palmer, the knowledge of archaeological methods is without doubt one of the foundations of industrial archaeological research and teaching. Neil Cossons pointed out in 2000 that historians and archaeologists would probably prefer the term "historical archaeology," but by this they overlooked the fact that for industrial archaeology, the much more popular framework of "industrial heritage" from the field of monument conservation has now become more important (Cossons 2000: 11). In 2012, the *TICCIH guide to Industrial Heritage Conservation* under the general title "Industrial Heritage Re-tooled" (Douet 2012) confirmed this trend. In his contribution under the title "Industrial Archaeology" in the anthology, Patrick Martin, professor of Anthropology and Archaeology and founding director of the "Graduate Studies in Industrial Archaeology" at Michigan Technological University (MTU) in the USA, writes:

> The term industrial archaeology is still widely used in the UK and the US, but the topic is now more commonly called Industrial Heritage Studies, industriekultur, patrimonio industrial or patrimoine de l'industrie in international context, reflecting the expansion of coverage to include much more than traditional archaeology. Perhaps the greatest proportion

> of attention in the field concentrates on preservation of buildings, landscapes and monuments of the industrial past, along with government policies and private practices that serve these ends (Martin 2012: 40).

At the same time, however, Martin is strongly committed to archaeological research within the framework of industrial archaeology when he writes:

> While historical research takes place in some obscure archive or office, the active process of excavation opens a window to the research enterprise that is compelling for the public as they seek to understand the background of the industrial past. The second benefit offered by excavation, beyond the research dimension, is the simple exposure of the physical evidence for interpretation (Martin 2012: 47).

If one follows the current definition of industrial archaeology proposed by Cossons, Palmer and Martin, it means the systematic (i.e. scientific) study of the material relics (artefacts and structures) of the industrial age and their analysis in the context of the cultural, social and economic development of the industrial society. Due to its special subject area and time horizon, this requires methodological knowledge from both the archaeological and historical sciences. In the case of the preservation of the discovered relics, methods of monument conservation, museum science and cultural management are also required. This becomes clear in the structure of Palmer's industrial archaeology textbook *Industrial Archaeology. Principles and Practice*, which was the basis of the industrial archaeology course at the University of Leicester. After an introductory chapter explaining the concept and objectives of industrial archaeology sections are following on "Landscapes and Townscapes," i.e. the spatial context of industrial archaeology, on "Buildings, Structures and Machinery," i.e. "Field Techniques" as a methodological basis for the registration and documentation of the relics, "Documentary Research" as a methodological basis for the development of additional historical sources for the relics, "Industrial Archaeology in Practice" to illustrate the cultural context of the relics, and "Cultural Resource Management" using the example of the preservation and re-use of industrial heritage (*Industrial Heritage in Great Britain*) (Palmer *et al.* 1998). Similarly structured, but more oriented towards industrial archaeological methods by means of case studies, is Emory L. Kemp's book *Industrial Archaeology: Techniques* (1996), which originates from the teaching and research practice of the Institute for the History of Technology and Industrial Archaeology at the University of West Virginia (USA). Kemp, an engineer and one of the co-founders of SIA as well as the founder of the industrial archaeology institute at the Eberly College of

Arts and Sciences of the University of West Virginia, and his co-authors wrote in their contributions to the anthology not only about historical methods, but first of all about methods of cartography, geo-information systems, photogrammetry, surveying, photography, building surveys and remote sensing.

The German topic: industrial archaeology versus industrial heritage and industrial culture

The topic of industrial archaeology reached Germany in 1973 with the participation of East and West-German heritage experts at the "First International Conference for the Conservation of Industrial Monuments" at Ironbridge in Great Britain. In the Federal Republic of Germany, industrial archaeology was especially promoted by Rainer Slotta at the German Mining Museum in Bochum. In his 1982 publication *Introduction into Industrial Archaeology*, Slotta defined industrial archaeology as a multi-disciplinary science using technical monuments as "as a carrier of information and the result and sum of cultural influences, providing essential information about economy and business, technology, history, art, religion, scientific conditions, ecology, climate and botany, geology and finally about social condition" (Slotta 1982: 1). In the German Democratic Republic, Eberhard Wächtler at the Mining Academy Freiberg introduced the term industrial archaeology in 1977 into the East-German methodology of the documentation and preservation of technical monuments (Wächtler *et al.* 1977). Despite this promotion of industrial archaeology, both German heritage and history of technology communities remained in the general use of the terms "technical monuments" and "technical" or "industrial heritage," in West-Germany in the 1980s supplemented by the new created term of "Industriekultur" (industrial culture), which more and more displaced the term industrial archaeology (Kierdorf *et al.* 2000; Föhl 1994: 23-37). The new concept of industrial culture, understood as the whole culture of the industrial age and the industrial society widened the field of industrial heritage and industrial archaeology to the politic, social, cultural and touristic aspects of technical and industrial monuments up to industrial landscapes. This led in West-Germany since the 1980s to the successful establishment of industrial museums and industrial tourist routes, while the communist East-Germany retained in the seemingly anti-capitalistic use of technical monuments and industrial archaeology (Albrecht 2014). Even after the German reunification, this difference in the east-west heritage traditions led in 1992 to the establishment of a

chair for "History of Technology and Industrial Archaeology" at the TU Bergakademie Freiberg in the eastern part of Germany (Albrecht 2016).

Industrial archaeology in the 21st century

With the beginning of the 21st century, the international situation for academic industrial archaeology changed rapidly. Neither the industrial archaeology courses at the University of Leicester nor the corresponding courses at the University of West Virginia survived the retirement of their founding professors. In Sweden, inspired by her participation in the first international industrial archaeological congress in Ironbridge in 1973, Marie Nisser, an art historian, was committed to the establishment of an academic training in industrial archaeology at the Royal Institute of Technology (KTH) in Stockholm. Marie Nisser, who organised the 3rd International TICCIH Congress in Stockholm in 1978 and was herself TICCIH President from 1984 to 1990, was appointed founding professor of the newly created Chair of Industrial Heritage at KTH in 1992. Together with Scandinavian fellows she organized the "Nordic Courses on Industrial Heritage" between 1995 and 1998 and in their succession from 2000 to 2002 the "Industrial Heritage Platform," which extended the international workshop program of the Nordic Courses to the Baltic States (Nisser 2008). However, her initiative, organized in 2008 within the framework of TICCIH, for the international initialization and professionalizing of academic training in the field of industrial archaeology and industrial heritage management was not successful, partly due to their serious illness and early death in 2011. Her chair at KTH was not re-occupied.

Figure 6. The student organising team of the 14th International TICCIH Congress at Freiberg in 2009. © Helmuth Albrecht

In 1990, at the Technical University of Vienna in Austria, a specialization in industrial archaeology was developed as part of the training of architects under Manfred Wehdorn at the Institute for Art History, Monument Preservation and Industrial Archaeology. The industrial archaeology program at Vienna under the social and economic historian Gerhard Stadler is still existing but offers only a specialization for architects. In France, the historian Louis Bergeron, President of TICCIH from 1990 to 2000, initiated in 2009 a joint master's program for *Techniques, Patrimoine, Territoires de l'Industrie* (TPTI) within the framework of the European Erasmus Mundus program. This interdisciplinary joint Master's program between the Universities of Paris 1 Panthéon Sorbonne in France, the University of Padua in Italy and the University of Evora in Portugal has its focus on the history of technology and technical monuments. The mainly French-speaking program combines teaching and research in fields such as history, anthropology, archaeology, art history, sociology, conservation and museum studies. The cooperation with partner institutions all over the world aims at teaching students in various approaches dealing with the history of technology as well as with industrial and cultural heritage.

The only academically anchored courses of study mainly focused on industrial archaeology that still exist today are at the Michigan Technological University (MTU) and at the TU Bergakademie Freiberg in Germany. MTU's Department for Social Sciences, headed by anthropology professor Melissa F. Baird, offers both a Master's program in Industrial Archaeology and a PhD program in Industrial Heritage and Archaeology[4]. The PhD program offers courses in anthropology, archaeology, architectural history, and environmental history (Michigan Tech). For practical training, both programs work closely with external partners, such as the US National Park Service, as well as companies, government agencies and other institutions. Patrick E. Martin has continued to work at the Department since his retirement as Research Professor of Archaeology in the areas of Industrial Archaeology, Industrial Heritage and Historical Archaeology.

The teaching concept at the Institute for Industrial Archaeology, History of Science and Technology (IWTG) at the TU Bergakademie Freiberg in Germany is based on the definitions of the terms "industrial archaeology" and "industrial culture" (Albrecht 2010). *Industrial archaeology*, as a scientific discipline, deals with the survey, documentation,

4. The topics of the Master's program are courses in the fields of Anthropology, Archaeology, Architectural History, Cultural Resource Management, Economy and Environment, Education/Public Outreach, Environmental History, Heritage, History of Technology, Industrial Communities, Science and Technology Studies.

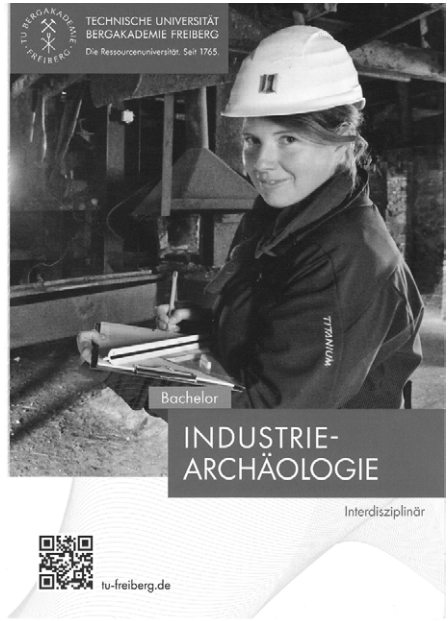

Figure 7. Info-flyer for the Freiberg Bachelor program in industrial archaeology.

Figure 8. Info-flyer for the Freiberg Master program in industrial culture/heritage.

preservation and analysis as well as with the re-use of artefacts (tools, machines, equipment, systems, built structures and landscapes) related to the history of trade and industry and their interpretation within a larger socio-historical context. *Industrial culture* deals with the entire culture of the industrial age. It essentially comprises three perspectives of study: (1) a material perspective with the question of the material/artificial legacy of industrialization in space and time; (2) a social perspective with the question of the working and living conditions in industrial societies; and (3) an artistic-scientific perspective with the question of intellectual engagement with the phenomena of industrialization. The main subject of industrial archaeology is the material perspective of industrial culture, although the other two perspectives should be included in industrial archaeological research as a matter of principle.

The Master's program builds on the bachelor's program, but can also be studied independently on the base of other bachelor's degrees (e.g. in history, museum studies, monument conservation, restoration, archaeology or architecture). The academic degrees offered are a Bachelor of Science (Industrial Archaeology) and a Master of Science (Industrial Culture). With the Bachelor's program, the IWTG is the only institute worldwide that offers an "undergraduate" course in industrial archaeology.

The Bachelor's program for industrial archaeology in Freiberg comprises the following teaching areas and courses (in total 180 credit-points/CP):

Fundamentals of science and engineering (compulsory elective, 42 CP)	
Natural sciences: including mathematics, physics, chemistry, geology, mineralogy	
Historical studies (40 CP)	
History of science, technology, economy and ecology, archaeology, archival studies, theory of sciences	Engineering sciences: including mechanical engineering, materials science, surveying and instrumentation
Theory and methodology of industrial archaeology (75 CP)	
Introduction lecture and seminar, history of industrial sectors, project seminars (field studies), industrial architecture, industrial heritage, industrial monument preservation, geo-information systems, building survey, historical site investigation, scientific colloquium, excursion, internship (12 weeks), bachelor thesis (3 months)	
Other (23 CP)	
Introduction in public law, English as technical language, 2 free optional subjects	

The Master Program for Industrial Culture in Freiberg comprises the following teaching areas and courses (in total 120 credit-points/CP)

Historical studiess (27 CP)
Environmental history, history of science, museology, archaeology
Theory and methodology of industrial archaeology (68 CP)
History of industrial sectors, industrial culture, industrial monument preservation, monument law, building and planning law, cultural management, project seminar (field studies), colloquium, excursion, master thesis (6 months)
Other (25 CP)
3 compulsory elective courses, 2 free elective courses

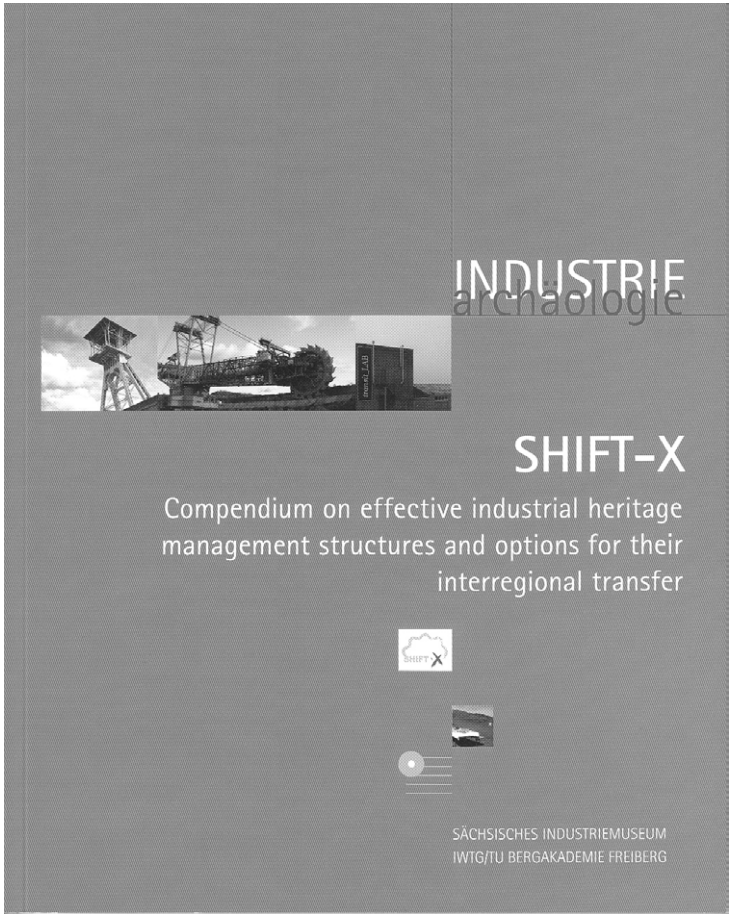

Figure 9. Publication of the results of the European project Shift-X: Compendium on effective industrial heritage management structures and options for their interregional transfer.

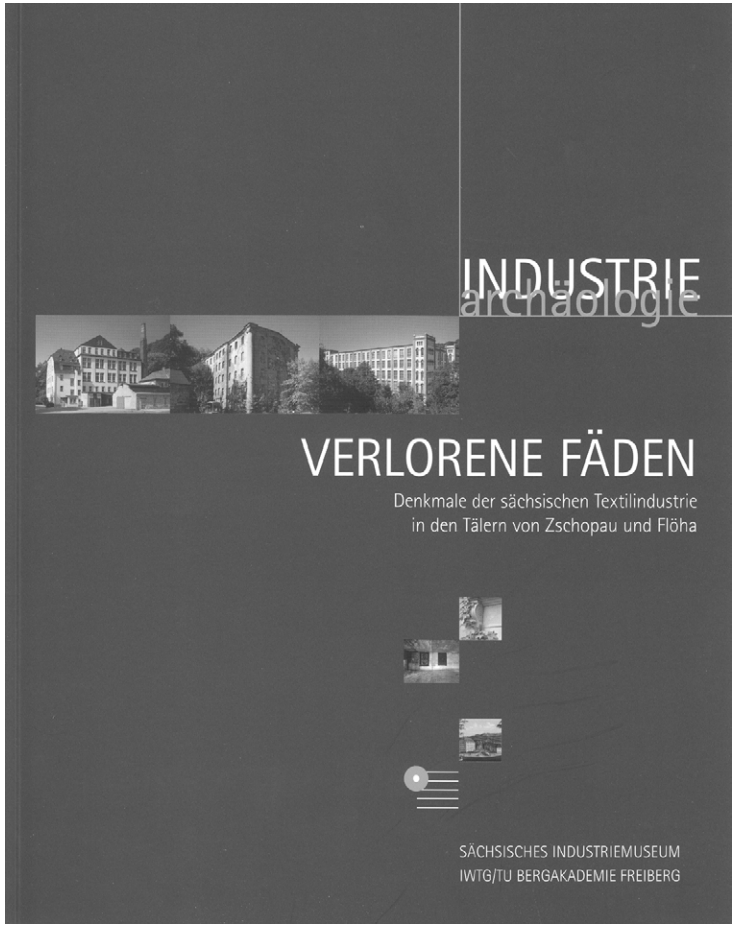

Figure 10. Documentation of the historic spinning mills in the river valleys of Zschopau and Flöha in Saxony/Germany.

With the project seminars (field studies), colloquia, internships and excursions, the study courses offered by the Freiberg industrial archaeology and industrial culture programs are particularly practice-oriented. During the excursions, which last up to 14 days, students get to know industrial archaeological and industrial cultural objects, sites and landscapes as well as museums and projects in Germany and abroad. The internship provides them with an insight into potential professional fields of work and teaches them the requirements of the respective occupational fields, which primarily include heritage authorities and museums, but also private offices and company's active in the field of heritage conservation. During the colloquia of the IWTG, research projects of the IWTG and other institutions as well

as newer methodological approaches of industrial archaeological research and practice are presented and discussed by invited speakers. The most important practical contribution to the course of study is made by the project seminars, in which smaller or larger groups of students work on projects in cooperation with partners from the IWTG such as museums, heritage authorities, local authorities and companies under professional guidance and largely self-organized. The topics range from archive and literature research, building surveys and documentation to the conception and implementation of exhibitions or the development of concepts for the subsequent use of industrial monuments.

By assembling students in the project seminars across all grades, younger students are to learn from the more experienced older students. The project seminars serve to impart experience in the practical application and implementation of the theoretical and practical teaching content taught during the course of studies and to promote the students' ability to work in a team. In the higher semester levels, the project seminars often lead to bachelor and master theses, in individual cases even to new research projects and topics for doctoral theses. In addition, the project seminars, which are usually conducted with project partners, often result in important contacts and perspectives for the professional career of the students after completion of their studies. Research at the IWTG is as broad and interdisciplinary as the range of courses offered. In addition to industrial archaeology and industrial culture, it includes topics in the history of technology, science, economy and the environment as well as historical innovation research.

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