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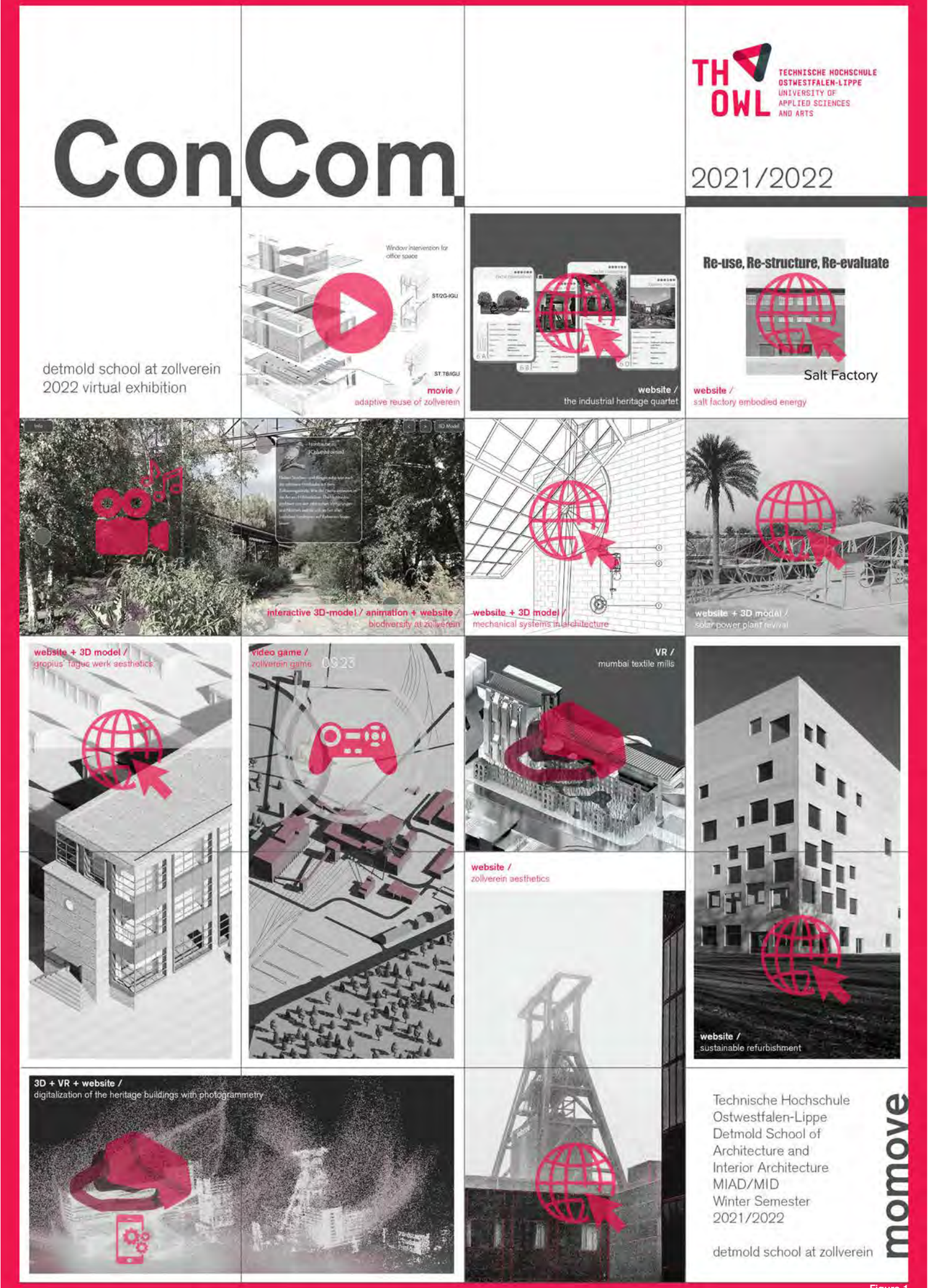

Figure 1

CONCOM AND MOMOVE. APPROACHES TO INDUSTRIAL HERITAGE

UTA POTTGIESSER & ANICA DRAGUTINOVIC

Abstract

The Conference and Communication (ConCom) course at the Detmold School of Architecture and Interior Architecture (TH OWL) introduces students in the master's program to scientific work and pursues the goal of establishing a correlation between teaching and research. In particular, it is about conveying current knowledge and new findings in the form of the so-called non-written output (NWO) or non-traditional research output (NTRO). ConCom tests innovative teaching and learning formats at the intersection of scholarly research and outreach in the field of the built environment, with a particular focus on cultural heritage, digital technology, and their societal impact. This has enabled the 40 students from many nations to conduct cross-cultural and cross-sectoral research in interdisciplinary and international teams. This diverse and low-threshold form of explorative dissemination increases the visibility of research findings and promotes their inclusive communication.

In the academic year 2021/22, the ConCom course took up the topic of the 19th DOCOMOMO Germany Conference "Modern Movement. Industrial Heritage thought ahead" organised in collaboration with Zollverein UNESCO World Heritage Site in Essen. The students were asked to research, document and interpret the topic of industrial heritage based on scientific articles, reports and publications (e.g. related to history, typologies, distribution, design, aesthetics and construction, spaces, transformation and reuse). Building on a literature review in the pre-semester, students choose specific topics related to modern industrial heritage and developed their theme in the context of the scientific conference. Complementing the contributions in the conference, ConCom served as a platform for students to explore Modern Movement's (MoMo) achievements around the world, but also to explore digital tools and their applicability for communicating research results (Fig. 1). On display are websites, apps, films as well as applications of 360 degree images, augmented and virtual reality and as such they are aiming to contribute to the DOCOMOMO Virtual Exhibition – MoMove (MoMove 2021).

Categorisation and Conservation of Industrial Heritage

The non-profit organization DOCOMOMO International is dedicated to the documentation and conservation of buildings, sites and neighborhoods of the Modern Movement (DOCOMOMO International, 2021). Its currently 78 national or regional chapters are located on the five continents and they have developed individual formats and activities taylored to their specific needs. It focuses on investigation of all kind of buildings, sites and landscapes - still research and documentation of modern industrial heritage seems underrepresented in DOCOMOMO's portfolios. Reasons for this include that first industrial heritage dates back to the early years of industrialisation from 1750 until WWII in 1914. Those were the first sites in Europe to be closed down and abandoned since the 1960s, also giving birth to the discipline of industrial archaeology (Chatzi-Rodopolou, 2020). At that time large scale demolition was common practice and first recognistion of buildings and sites as industrial heritage only started from 1980s onwards, establishing conservation and reuse projects.

Figure 1:
Collage of student works in the ConCon course Industrial Heritage and media used. Illustration by the authors.
Figure 2:
Damage Assessment of a window at Zollverein Cokery building. Illustration by Soumia El Mourabit, Shashi Karmaker and Rutvi Varia.
Figure 3:
Window handle in modernist building in Coimbra, 2021. Photo by Uta Pottgiesser.

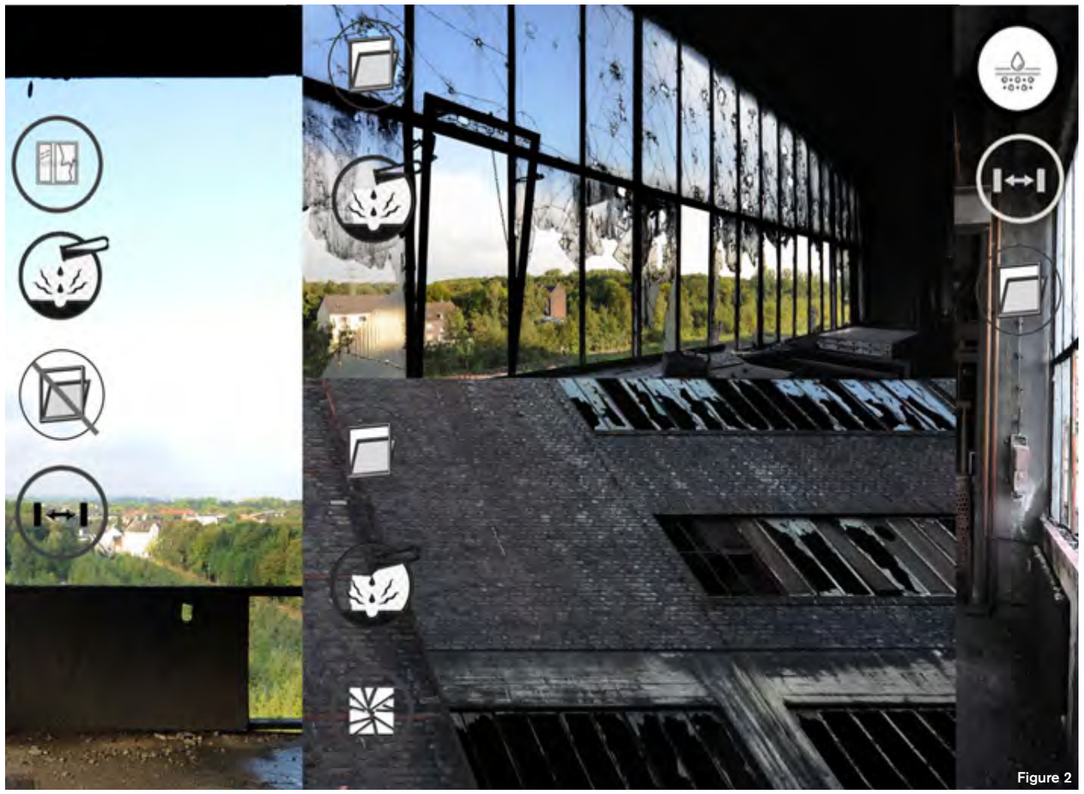

Figure 2

At the same time first industrial heritage site was inscribed as UNESCO World Heritage in 1978 (Poland), the first modern industrial site to be inscribed was the Zollverein Coal Mine Industrial Complex in Essen (Germany) in 2001.

Definitions of industrial heritage and industrial archeology were finally fixed in *The Nizhny Tagil Charter for Industrial Heritage* (ICOMOS-TICCIH, 2003, p.1) after recognizing *The International Committee For The Conservation Of The Industrial Heritage* (TICCIH) as a consultant of the *International Council on Monuments and Sites* (ICOMOS):

Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.
Industrial archaeology is an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes [2], created for or by industrial processes.

Later in 2011 the so-called *"The Dublin Principles"* as *Joint ICOMOS-TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes* were published and ackknowledged the importance of conservation and re-use and their relevance for a sustainable urban development (ICOMOS-TICCIH, 2011, p.1 and 2):

Besides the tangible heritage associated with industrial technology and processes, engineering, architecture and town-planning, it includes many intangible dimensions embodied in the skills, memories and social life of workers and their communities. [...] and [...] *Yet, by extending the life-cycle of existing structures and their embodied energy, conservation of the built industrial heritage, can contribute to achieving the goals of sustainable development at the local, national and international levels. It touches the social as well as the physical and environmental aspects of development and should be acknowledged as such.*

This coincides with *The Paris Declaration. On heritage as a driver of development* (ICOMOS, 2011) formalizing and fostering the role of heritage in general and of cultural and built heritage in particular within the discussion on sustainable development. It also expressed the need of practical guidelines to implement projects (Douet, 2013) and to showcase successful conservation projects with the network of the *European Route of Industrial Heritage* (ERIH) founded in 2014 as the tourism information network of industrial heritage in Europe (ERIH, 2021). Main approach in Europe since then has been the re-use for cultural and touristic purposes which has also increased the apprecіation of industrial sites and architecture within the population. This approach also reflects the socio-economic changes in Europe since the 1970s towards cleaner industries and digitisation, known as third and fourth industrial revolutions. While Central-Europe looks back to more than 40 years of experience in the transformation of industrial sites other parts of Europe and other continents have only started a decade or two ago to re-use their industrial sites (e.g. South-East and East Europe, Asia). In South-East and East Europe industries only broke down after the 1990s and Ifko & Stokin (2017) state in their preface „that changes affecting industrial heritage and its role in society require new responses and innovative solutions". This also relates to the fact that in Eastern Euro pe large industrial sites are often directly linked with workers' settlements as industrial planned cities which can be seen as as specific form of cultural heritage (Flierl, 2019). And, outside Europe this change usually happenes under the pressure of growing populations and rapid urban growth, dealing directly with urgent housing issues in the city centers as expressed by (Frazier, 2019, p.73) related to the former textile mills in Mumbai and Shanghai:

This discussion of the mill districts as sites of built heritage also suggests a more nuanced and contextualised understanding of the global process of gentrification and housing dispossession.

Perception and Appreciation of Modern Industrial Heritage

Facing rapid globalisation, and triggered by new means of communication, transportation and digitisation have shaped the built einvornment of the 20th century worldwide. ICOMOS together with the Getty Conservation Institute (GCI) has presented *The Twentieth-Century Historic Thematic Framework* (Marsden & Spearritt, 2021) as a tool to identify those new typologies of buildings, sites and landscapes. Those new typloogies also include industries and industrial sites which were not only characterized by more efficient mechanical and digital processes but also by corporate, functional and rational architecture—among them also the Zollverein Coal Mine Industrial Complex in Essen (Germany) built by the architects Schupp and Kremmer from 1928-31.

Being listed as UNESCO World Heritage site in 2001 as the first entirely modern industrial site it was complementing two other German industrial World Heritage Sites: the Völklingen Ironworks (Völklinger Hütte) and the Rammelsberg Visitor Mine (both listed in 1992) – in Rammelsberg the architects Schupp and Kremmer also designed the surface buildings in 1936. Only later two other modern industrial sites were inscribed as World Heritage in Germany: the Fagus Factory in Alfeld in 2011, and in 2015 the Speicherstadt and Kontorhaus District with Chilehaus in Hamburg. Another prominent example is the Van Nelle Factory in Rotterdam (The Netherlands), inscribed in 2014. Still industrial heritage—and in particular modern sites—is underrepresented among national and international monument listings, as well as are non-European sites in general.

As already mentioned before listed industrial heritage sites are most often developed for cultural and tourism purposes and the challenges of a suitable re-use and redevelopment are described in different studies (Quist & Stroux, 2016). The Van Nelle Factory has been redeveloped as a creative factory hosting design firms and offices as part of the creative industries. This can be seen as an exemplary approach to guarantee the future of modern industrial heritage, as also formulated by Chilingaryan (2014, p. 172):

The qualitative evolution of industrial heritage gradually affected the perception of industrial aesthetic, modifying it and establishing a new image that is linked with the contemporary culture, post-industrial lifestyles and the idea of a creative environment. New forms of work and leisure, the centrality of consumption culture in the socio-cultural structure of the post-industrial societies–these are all crucial factors that affect the ways that (industrial) heritage is being managed today.

While many modern storage and factory buildings offer suitable, large and flexible spaces to be redesigned with spatial quality and adapted to contemporary needs, other modern industrial heritage typologies are contested and intensively debated. ICOMOS Germany has published the discussion on nuclear power plants as industrial heritage (Brandt & Dame, 2019, 9) and concludes:

While in 1997 the first German research reactor, the 'Atomic Egg' in Garching, was placed under protection as a monument, an investigation and discussion regarding the possible preservation of a large-scale industrial nuclear power plant are still pending in Germany today.

In the same publication Bastgen (2019, 68) reflected on the perception and societal value of the preservation of such contested sites and identified possible positive aspects in it:

Only the identification as nuclear power plant can trigger the variety of associations and emotions related to the controversy in each viewer, therefore construction is of special meaning. A nuclear power plant could function as intended monument for the movement and as a memorial for underground nuclear waste at the same time.

These current discussions reveal the complexity of perception, appreciation and conservation of modern industrial buildings and sites which at the same time bear huge potentials for as sustainable preservation and redevelopment. Edensor (2005, 172, 51) envisions industrial ruins as "a host of alternative forms of public space", "helping to confound the binaries between urban-human and rural-'natural'".

These aspects were all reflected in the introductory session in which students were grouped according to the thematic focus of their indidvidual abstracts from the pre-semester. They were asked to identify and discuss the main themes and concerns adressed in their abstracts which dealt with different buildings, sites or heritage aspects. Each group should agree on five to seven keywords to describe these main themes and concerns and that are seen as relevant for the future documentation, conservation and re-use. The main themes and concerns could be clustered as follows:

- embedded energy, sustainable materials and energy efficiency, cradle to cradle, CO2,
- redevelopment and sustainable renovation,
- biodiversity and landscape,
- aesthetics, building analysis, H-BIM,
- forgotten heritage, learning from heritage,
- open source repository, data accessibility,
- digital display, 3D-model ineractive,
- preservation through AR and VR,
- commemorating, community engagement.

In a next step the themes were further narrowed down and specified to be elaborated and prepared for dissemination by the students using digital tools and technologies. Tools and technologies identified by the students were: websites, apps, short movies, films, as well as applications of 360-degree images, augmented and virtual reality and online platforms to display their exhibits in a virtual exhibition. In this catalogue the exhibits are presented in two thematic blcoks:

- re-use, biodiversity, embodied and renewable energy and
- documentation, visualisation, digitisation and gamification.

Students in the first block aimed to raise public awareness on sustainable aspects of re-used industrial sites based on their research findings: e.g. clarifying typologies and re-use (Industrial Heritage Quartett), the embodied energy and re-use potential of certain Zollverein buildings (Fig. 2) or the sustainable refurbishment of the Sanaa-Cube, finally the biodiversity at the Zollverein site and a documentation of the first solar plant in Egypt.

Students of the second block were analyzing the mechanical mechanisms (Fig. 3) originally used industrial buildings and aesthetics of industrial architecture, here the Fagus Factory and Zollverein Shaft XII. Another group was focusing on the digital reproduction of industrial heritage sites through photo-

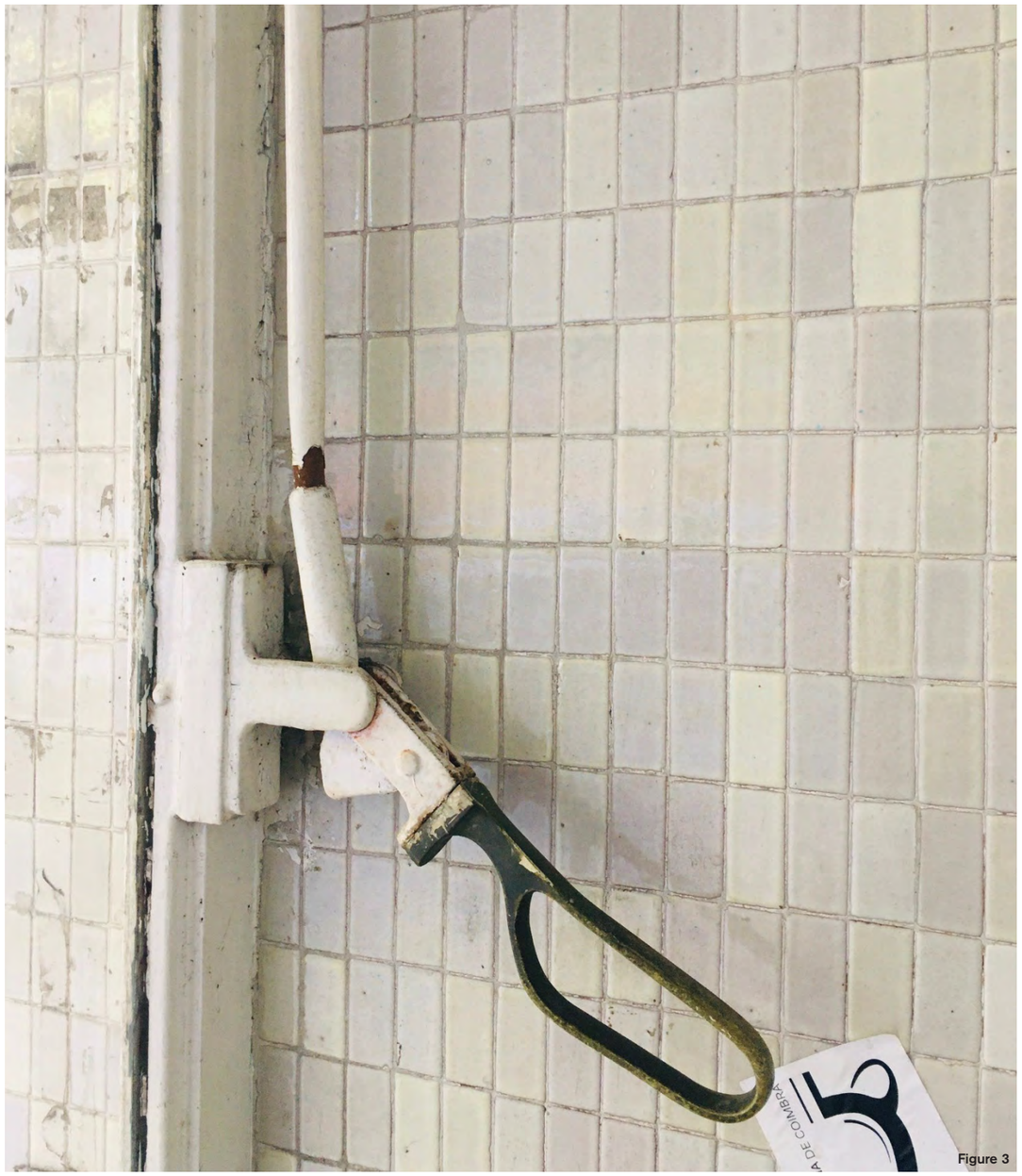

Figure 3

grammetry in an open source repository, and the visualization of industrial heritage sites in games to raise awareness and disseminate knowlegde about the Zollverein and the Mumbai Mills (India).

Outlook

The exhibits highlight the potential of creative and innovative ways of visualisation and dissemination that can help to increase the visibility of academic research and of the potential of industrial remains to larger professional audiences, lay people and society. At the same time the ConCom course has raised the awareness of the students about the current discussions, policies and tools used in the heritage context and discourse. It will enable them to take part in the ongoing European dialogue on cultural heritage and built environmment (Veldpaus, Fava, Brodowicz et al., 2019).

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