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EDICIONES COMPLUTENSE

Spaces and roles of contemporary art in industrial and technological ruins[1]

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Abstract. This article proposes some potential contributions of contemporary art to industrial and technological heritage discussions. The paper analyses the relationships between art, industrial ruins, technological trash, heritage and society from an archaeological perspective, and this viewpoint is compared to and complemented with those of art and art history. First, the text examines how industrial sites and technological artefacts from the recent past are transformed for/by the artists. In doing so, it offers a preliminary basic typology of art-obsolescence interactions, illustrated with cases from Europe, Asia and the Americas. Four major kinds of interactions are introduced: the conversion of abandoned industrial buildings into art galleries and museums; the transformation of larger obsolete industrial/technological areas into creative hubs; the intervention of artists in industrial ruins; and the creative recycling of technological waste. Second, the text infers from the examples provided in the typology three possible functions of art regarding heritage: revelation/addition of value; mediation between the public and dark heritages; and recognition in technological and industrial history. Finally, the paper defends the role of art in the making of industrial and technological heritages, as well as in reconnecting them to society.
Keywords: Art spaces; upcycling art; industrial heritage; adaptive reuse.

[es] Espacios y roles del arte contemporáneo en las ruinas de la industria y la tecnología

Resumen. Este artículo propone algunas contribuciones potenciales del arte contemporáneo a los debates sobre patrimonio industrial y tecnológico. El trabajo analiza las relaciones entre arte, ruinas industriales, basura tecnológica, patrimonio y sociedad en perspectiva arqueológica, aunque este punto de vista es comparado y completado con aquellos del arte y la historia del arte. En primer lugar, el texto expone cómo los sitios industriales y los artefactos tecnológicos del pasado reciente son transformados por/para los artistas. Para tal, ofrece una tipología básica y preliminar de relaciones entre arte y obsolescencia ilustrada con casos de Europa, Asia y las Américas. Se presentan cuatro tipos diferentes de intervenciones: la conversión de edificios industriales abandonados en galerías y museos de arte; la transformación de parques industriales/tecnológicos obsoletos en centros de creación; la intervención de artistas en ruinas industriales; y el reciclado creativo de basura tecnológica. En segundo lugar, el texto infiere a partir de los ejemplos ofrecidos en la tipología tres posibles funciones del arte en relación con el patrimonio: revelación/adición de valor; mediación entre el público y los patrimonios oscuros; y reconocimiento en las historias de la tecnología y de la industria. Finalmente, el artículo defiende el

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papel del arte en la construcción del patrimonio industrial y tecnológico, así como en su reconexión con la sociedad.
Palabras clave: Espacios artísticos; arte supra-reciclado; patrimonio industrial; reutilización.

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1. Introduction

1.1. Scope and aims

This article reflects on some possible contributions of contemporary art to heritage debates focusing on industrial and technological patrimonies. Its approach to cultural heritage is mostly archaeological and desacralized. The matter of tangible heritage is understood as a document in which contemporary artistic interventions are layers from the present integrating a multi-temporal and multi-cultural stratigraphy (González-Ruibal, 2016; Harrison and Breithoff, 2017; Schofield, 2006). This understanding gives plenty of freedom to the artistic transformation of places and objects from the past. At the same time, it can vindicate the functions of art in the heritage-making process of industrial sites and technological objects. The text has two main objectives.

First, it aims to set a tentative and non-exhaustive typology of interactions between contemporary art and obsolete industrial and technological materials. The text takes a bifurcated approach to this obsolete materiality: on one side (main topic), spaces strongly linked to technology utilisation or production, mostly in the realm of industry. On the other (secondary topic), technological objects. In other words: derelict production spaces and modern technological trash. More specifically, it is analysed how these sites and objects are reoccupied and re-signified with artistic purposes in a post-modern deindustrialised context. The study includes the occupation and reutilisation of old industrial spaces by art galleries and museums, artists, and creative communities, as well as how industrial and technological ruins are reshaped into artworks.

Second, and grounded on the typology and cases described in the first part, the paper seeks to discuss three possible functions of art in the field of industrial and technological heritage: revelation and/or addition of value; mediation with the public; and individual/social recognition. In doing so, a series of questions are provocatively set out, among them: does contemporary art enhance or diminish the significance of industrial and technological heritages? Can art bring society and industrial and technological ruins closer? Can art facilitate encounters between the past industrial society and the present post-industrial one?

In brief, the objective of this article is to evaluate the potential roles of contemporary art in industrial and technological heritage-making by questioning its power to add value, to bridge gaps with unacknowledged or conflictive pasts,

and to produce alternative approaches to the materiality of obsolete industries and technologies.

1.2. Methodological and theoretical frameworks

The methods of this research comprise international bibliographic review; fieldwork in industrial sites based on free adaptations of the Situationist *dérive* (Lopez-Rodríguez, 2005) and participant observation; and study visits to physical and virtual art galleries, museums and exhibitions. An important part of the methodology consisted on debating with art historian J. A. Vigara and media-artist S. López, which allowed the research to incorporate their viewpoints as art specialists. Discussion was built on structured brainstorm and some tools from the photovoice method (Gubrium and Harper, 2016). These interdisciplinary experiences also encompassed an experimental field activity in Peñarroya-Pueblonuevo (Córdoba, Spain) in the summer of 2020, which aimed to contrast and interrelate the disciplinary (art history, art and archaeology) perceptions and representations of modern industrial ruins (Fig. 1). The methods described were selectively applied to 12 main case studies, chosen to represent the diversity and heterogeneity of the subject area. That is, the cases were selected using flexible criteria that allowed to include different kinds of heritage (landscapes, architecture, objects, and intangible matters), art production and consumption practices, artistic languages (street art, land art, media art, light art, sound art, architecture, photography, installations, performative actions), and status (popular and marginal places, professional and amateur artists, celebrated and criticised interventions). Diversity was further reinforced by incorporating examples from different countries (Brazil, China, Germany, Spain, the United Kingdom, and the United States of America).

Figure 1. *El Cerco* (Peñarroya, Spain) in the eyes of an art historian (left), a media artist (centre) and an archaeologist (right). (Courtesy of J. A. Vigara [left] and S. López [centre]; author's own photographs [right]).

The research is theoretically framed in heritage debates. More specifically, it questions what industrial sites and technological objects can be considered patrimony. Industrial heritage is commonly defined as the remains of the industrial society (or

of the culture of work, in a diachronic sense) that have a series of values, such as technological, scientific, social, historical, cultural or artistic ones, among others (Liu, Zhao and Yang, 2018; Sobrino and Sanz, 2019; The International Committee for the Conservation of the Industrial Heritage [TICCIH], 2003). However, defining and recognising such values in practice is troublesome. This has led to an inflation of the term, which is frequently used to refer to all the material and immaterial remains of industry (or of work), regardless their values or significance. As it is stated in *The Nizhny Tagil charter for the industrial heritage* (TICCIH, 2003), it is necessary to develop specific theories, methods and guides that assist us to identify the values that justify the selection of those elements that deserve preservation. In spite of some attempts (Affelt, 2015; Douet, 2012; Liu, Zhao and Yang, 2018), this has not yet been completely achieved. In partial bridge to this gap, this paper argues to what extent art might help to decide what industrial and technological vestiges are worthy of heritage status.

Creative and artistic approaches to the past and its materiality have grown noticeably in recent years within heritage studies (López-Reus and Jaime, 2017; Shimko, 2019) archaeology (Gheorghiu, 2020; Russell and Cochrane, 2014), and art (Roelstraete, 2013). Some scholars (Baley, 2017; Gheorghiu and Barth, 2019; Graves-Brown, Harrison and Piccini, 2013) have claimed the need for interaction between archaeology and art to better understand both past and present, while others (Shanks, 2012; González-Ruibal, 2014) have made their own attempts to use pure creativity as an innovative way of dealing with the past in the present. There is an ongoing dialogue between art and archaeology (Dixon, 2011; Schofield, 2006) that can be seen both in the work by artists who borrow and restructure methods from archaeology (Finn, 2014), and in the work by archaeologists related to the fields of art (Dixon, 2012). However, much of this interaction has been limited – particularly from an archaeological perspective (Bailey, 2017), though this situation is starting to change (Thomas et al., 2017).

Some authors have paid attention to emotions and perceptions in industrial ruins (Edensor, 2005), or to the artistic recycling of electronic waste (Köksal, 2019), among other themes. The literature on art in industrial heritage sites has also grown in the 21st century (Antić, 2009; Marjanić, 2011; Walczak, 2016), although most of it is focused on the conservation and reutilisation/regeneration of industrial architecture. Thus, more research on the functions of art in the *patrimonialisation* of industrial and technological vestiges is needed. In view of the foregoing, the contribution of contemporary art to the building of narratives and heritages in the histories of technology and industry needs to gain more traction.

2. Art, industrial sites and technological objects

This section proposes a rough typology of interactions between art and industrial/technological ruins, including both spaces (three categories) and objects (one category). The typology is based on short case studies and is descriptive in nature. A more critical analysis of the practices included is offered in the discussion section.

Contemporary art can relate to derelict industrial sites in several ways. This article selects three based on their prominence and on the many examples available: industrial sites as art museums and galleries (art containers); quarters for art

communities (creative hubs); and inspirational spaces (landscapes of imagination). This classification, which is not comprehensive, is flexible and permeable. Most of the cases presented below fit in more than one category.

The research also observes the relations between art and obsolete devices (e-waste reloaded). In this case, the text focuses on outdated media components and the work of Solimán López. Media components are chosen as a case study because they reflect better than any other object the pace and nature of technological obsolescence in our time. Moreover, López's contributions to media art has been prominent in the last decade, as it is demonstrated by his presence in international events such as FAD, Digital Art Festival (Brazil, 2018); ISEA, International Symposium on Electronic Art (South Korea, 2018); Nemo Biennale (France, 2018); or *Open Codes* (ZKM Karlsruhe, Germany, 2019), among others.

2.1. Art containers

The reuse of abandoned industrial spaces as art containers has been internationally popular since the end of the 20th century. From high-profile museums, such as the *Musée d'Orsay* in Paris, to small and humble galleries, there are many examples around the world. Here the Tate Modern (London, UK) and *Bombas Gens Centre d'Art* are considered (Valencia, Spain).

The Tate Modern occupies the former Bankside power station, which provided electricity to the City of London and to northern Southwark from 1891 to 1981. The building that can be seen today is the result of a series of major reforms and rebuilds that took place from the late 1940s to the early 1960s (Murray, 2010 and 2018). After the production of electricity ceased, and in spite of its architectonic values and some campaigns championing protection, Bankside power station was at risk of demolition for several years. However, it was finally bought by the Tate Gallery in 1994. A competition was opened to transform the building into a new, modern and contemporary art museum. Herzog & de Meuron was the chosen firm for the conversion, which concluded in 2000. The opening of the Tate Modern, in conjunction with new infrastructures such as the Millennium Bridge, brought fresh life to the area, which was revitalised with a dramatic increase in visitors and jobs thanks to careful planning and engagement between the institution and the local community (Dean, Donnellan and Pratt, 2010; Eisinger, 2017). Demonstrative of its success, in 2018 the Tate Modern, with nearly 5.9 million visitors, was the most visited attraction in the United Kingdom (Association of Leading Visitor Attractions [ALVA], 2019).

While the benefits of this operation from the social, cultural, touristic and economic points of view are undeniable, the heritage angle is more debatable. Only very few examples of technology were preserved, while other footprints of work and energy production were sanitised. Yet the "rough, industrial feel" (as it can be read at the Tate's website [https://www.tate.org.uk/visit/tate-modern/tanks]) was retained in The Tanks – a space originally used to store oil that was added to the museum in 2012. There are some boards explaining the original functions and equipment of some spaces, but this is a secondary, almost anecdotic theme in the museum. Through the lens of this article, the most interesting space is the Turbine Hall. One of the most discussed art installations designed for this room was *Shibboleth* (2007), by Doris Salcedo. This was a direct intervention on the building. More specifically, a 167m

crack on the floor. A scar on the architecture of power (in a literal sense) revealing hidden layers of society (in a figurative one), such as the immigrant workers attracted by industry. Due to its spatial characteristics, the Turbine Hall hosts installations and sculptures that are normally limited to open air exhibitions. Anish Kapoor, for example, created in collaboration with Cecil Balmond a 150m long and 10-store high piece called *Marsyas* to be exhibited here in 2003. However, this piece did not speak to the technological-industrial past of the building, nor to its heritage values. This is also the case with the museum's collection and exhibitions. In other words, with very few exception (such as *Shibboleth*) there is no interaction between the artistic creations exhibited in the present and the past of the building. In that sense, the power station is an art container that has limited power on its content (Fig. 2).

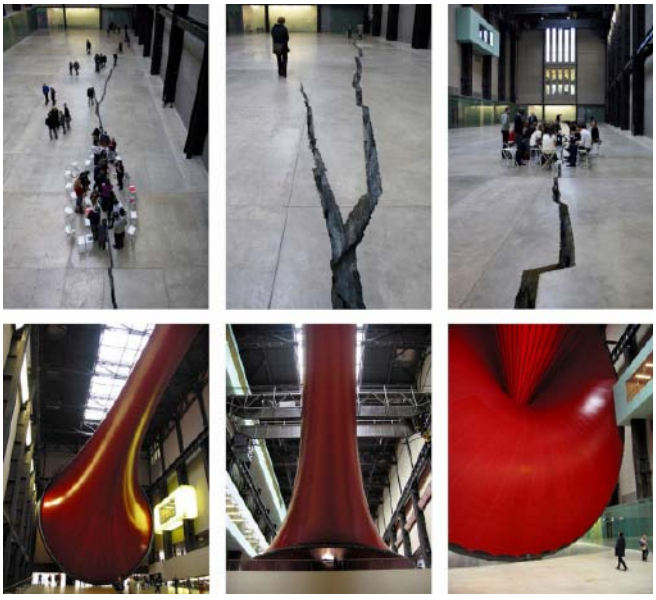

Figure 2. *Shibboleth*, by Salcedo (above), and *Marsyas*, by Kapoor and Baldmon (below), in the Turbine Hall. (Above: Ted and Jen, photos posted at Flickr [https://flic.kr/p/4dZiGB] under a license CC BY 2.0. Below: Matt Hobbs, photos posted at Flickr [https://flic.kr/p/kUmDD] under a license CC BY-NC-ND 2.0).

The second case, *Bombas Gens Centre d'Art*, occupies a small industrial complex built (as *Bombas Geyda*) in 1930 for manufacturing hydraulic pumps. Production ceased in 1991 and the site languished for several years. Finally, a private family foundation, *Fundació Per Amor a l'Art*, was created to acquire it in 2014 and to convert it into the headquarters for its activities (Berrocal, 2019; Soler and Lloret, 2019).

In contrast to the case of the Tate Modern, and to the majority of examples around the world, the refurbishment works of *Bombas Gens* were preceded by an archaeological intervention directed by P. Berrocal (see Berrocal and Enguita, 2019). Thanks to that intervention and to other related researches, which included archival investigation, oral surveys and a photographic campaign carried out by F. Gómez, the past of the complex is well known today. It is also remarkable that the transfer

of this knowledge to society has always been a priority (Soler and Lloret, 2019). Although all of this should come naturally in the cultural repurpose of a historic industrial site with heritage values (*Bombas Gens* is listed at the local level), it is indeed exceptional.

In spite of these important efforts to preserve and transfer the industrial memory of the place, the architectonic intervention limited the chances of the artists and the public to connect with the past of the sheds transformed into galleries. New floorings, new plastered white walls, and a fully-refurbished roof-structure (although 60% of the original ceramic tiles were reused) make the galleries look as clean as new (Fig. 3). Most of the footprints of technology (such as the bridge cranes and their supporting pillars) were removed, and new compartmentations were introduced in the spaces. All of which makes it difficult to establish a dialogue between the artistic new uses and the former industrial ones. As a result, the artworks exhibited in these rooms have no connection to the place. Once again, here we find a cultural spot in which the content is disconnected to the container. This is a common challenge with the industrial facilities repurposed into art galleries or museums across the globe. In any case, this is an observation, not a critique. Old technological or industrial sites can have new creative lives beyond discussing the legacies of industry or technology.

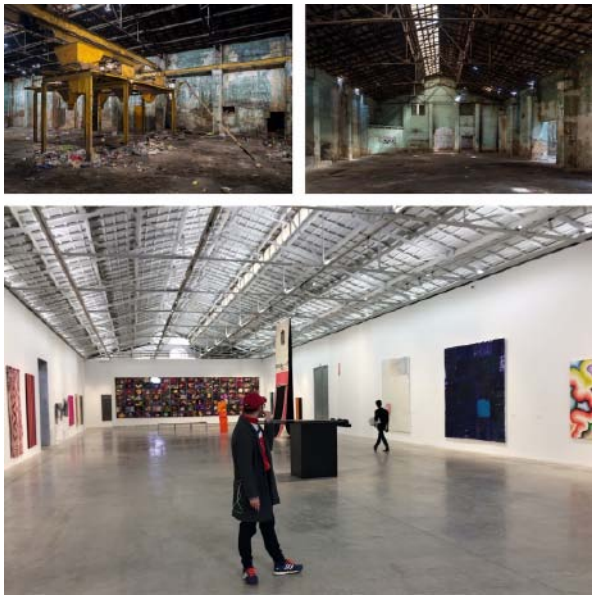

Figure 3. Sheds before (above) and after (below) the reconversion. (Above: courtesy of Frank Gómez / *Fundació Per Amor a l'Art*. Below: author's own photograph).

2.2. Creative hubs

While in many countries the recognition and regeneration of industrial heritage was developed by engineers, architects and archaeologists, in China the first step was taken by artists and creative entrepreneurs (Wang and Wang, 2018, p. 79; Xu, 2012, p. 114). This might explain why the transformation of abandoned industrial estates

into creative hubs has been a major trend (though not the only one) in that country (see Botti, Bruno and Pavani, 2016; Wang and Wang, 2018; Yang, 2019; Lu, Liu and Wang, 2020). Due to the high number of examples, their large scale and their general high rate of success, the Chinese case is used to discuss this practice.

The background of the Chinese industrial heritage creative parks can be traced to the 1980s, when major renovation and development plans related to the Reform and Opening-Up policies, among other circumstances, changed the industrial landscapes of many cities. Urban, ecological and economic factors also motivated the relocation of large-scale industries to the outskirts of the cities, or to less developed provinces within the country. At the same time, the service sector grew. As a consequence of all of these reasons, several urban industrial areas underwent dramatic changes in occupation and function. This caused the abandonment and often demolition of many obsolete industrial estates. In other cases, adaptive reuse saved the complexes (Botti, Bruno and Pavani, 2016, p. 62; Yin et al., 2014). In this second case, the pledge for development of creative industries made by the Chinese government in its 11th Five-Year Plan (2006–2010) helped to transform several of these areas into creative parks, as explained by technology historian L. Lei (personal communication, August 2020).

The oldest and most popular creative hub of this kind is 798 Art Zone in Beijing, which is part of a larger site that includes 751 Design Park too (see Cano-Sanchiz, Wang and Lei, 2020). 798 and 751 occupy a portion of the plot of the former 718 Joint Factory, which was dedicated to the production of radio and electronic equipment. The complex was designed in the early 1950s with technical assistance from the German Democratic Republic, which integrated a characteristic Bauhaus style in its architecture. A multifaceted crisis hit the estate from the late 1980s and led to progressive abandonment. At the turn of the 21st century, several artists settled in the old sheds, which presented ideal spatial configurations to be used as ateliers. Since 2006, the site benefited from a special fund launched by Beijing's government for the development of cultural and creative industries, as informed by L. Lei (personal communication, August 2020). With this support, 798 represented the transformations in the cultural sector of China and became a major engine for the creative industries of its capital. More recently, the success of 798 attracted high-profile galleries, multinational corporations and international tourists, all of which made the complex lose some authenticity and originality to globalisation (Dai, Huang and Zhu, 2015, p. 5288–5297; Xu, 2012, p. 116–117; Yin et al., 2014, p. 151–154; Zhou, 2012).

In addition to 798, many other examples can be mentioned, such as Redtory in Guangzhou; M50 Creative Park, 1933 Shanghai, and the Cool Docks in Shanghai; 1895 Cultural and Creative Industrial Park in Nantong; 77 Creative and Cultural Park in Beijing; or 699 Cultural Creativity Park, and 791 Art District in Nanchang. Many of these examples were inspired by the success of 798 or the model of M50, the pioneers. However, L. Lei (personal communication, August 2020) points out that there is an important difference among them: while the transformation of 798 and M50 was started by the artists themselves, in the rest of the cases it was planned by the Chinese public administration. Nevertheless, and in spite of the singularities of each case, it is possible to identify some common patterns.

In general terms, these creative parks work well social and economically. 798 is today a major touristic attraction in a city that counts on seven World Heritage Sites. Its magnetism resides in its wide offer, which combines popular art centres (Ullens

Center for Contemporary Art, 798 Space), fashion shows, high-budget launching events, and a chic environment for prestige shopping and leisure. M50 also hosts many activities, renowned exhibitions, and visitors all along the year. Other parks in smaller cities, such as 1895 in Nantong, count on much less visitors, although the reactivation of the old buildings is likewise guaranteed by the creative industries established there. In short, the Chinese formula for preserving abandoned industrial heritage sites by transforming them into creative hubs is achieving good results. However, many of these examples are very recent, so it is still to be seen whether the formula will work in the long term, once the initial boost and public investment are over.

The technological and industrial pasts of these parks are often present from a material point of view, but somehow silent. The preserved industrial and technological elements create a dramatic scenography that provides a suggestive post-modern atmosphere for highlighting the aesthetics of contemporary art and the role of the creative industries in the regeneration of post-industrial cities. However, in general terms neither the spaces nor their pasts inspire the present artworks. There are few site-specific creations, while most of the pieces showed in the galleries located in these parks do not relate to the spaces where they are.

In any case, there are significant differences (beyond scale) between the Chinese creatives hubs and the art containers described in the previous section. First, in several cases (Beijing, Shanghai) the artists themselves started, supported or participated in the transformation of the complexes – sometimes even developing campaigns to save them from demolition, as it was the case with the Reconstructing 798 Movement in 2003 (Yin et al., 2014, p. 153). Second, these heritage sites are not just containers for art exhibitions, but ecosystems of creative industries, generation of wealth, production and consumption united under a brand image linked to the space and its former industrial identity (Fig. 4).

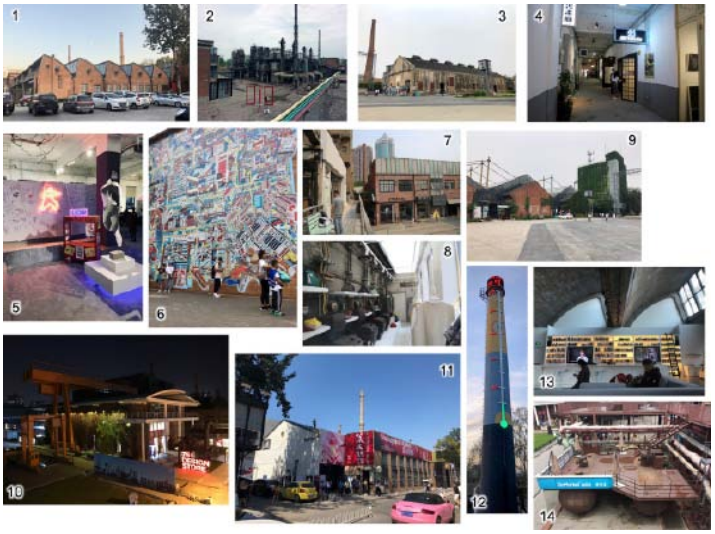

Figure 4. Chinese creative hubs in former industrial estates: 798 (1, 6, 11, 13), 751-D (2, 10, 14) and 77 (5, 12) in Beijing; M50 in Shanghai (4, 7, 8); and 1895 in Nantong (3, 9). (Author's own photographs).

2.3. Landscapes of imagination

Modern ruins generate feelings of attraction and rejection, sometimes even simultaneously. Both archaeologists (Burström 2011; Olsen and Pétursdóttir 2014) and art historians (Somhegyi, 2020) have paid attention to these derelict spaces undergoing transformation. The aesthetics of the industrial ruins (see Edensor, 2005) and their potential to inspire or to be reshaped into artworks have also caught the attention of many artists. This subheading explores different kinds of artistic creations in, on, with and about industrial ruins.

On the landscape scale, one of the most significant cases is the Ruhr area in Germany, which constitutes an international model for industrial heritage preservation and reutilisation. The artistic programme of the *Ruhrgebiet*, which includes museums, galleries, installations and events, is extensive and has counted on some big names such as Richard Serra, Christo and Jeanne-Claude, among others (Lange, 2009; Mämpel, Zuuring and Vinken, 2009). Several view-point pieces integrated in the Ruhr's landscape give visibility and acknowledgment to the industrial past of the territory. Good examples of this are the 30m high *Miner's Lamp* created by Otto Pienne in Moers, or *The Tetraeder* in Bottrop, by architect Wolfang Christ. Both of them are on the top of mining waste heaps, which allow visitors to enjoy the views of the industrial landscape (Lange, 2009, p. 63; Orange, 2018). In this sense, the Ruhr is also interesting for creating new perceptions of the landscape at night by installing lightworks on their industrial buildings and structures. Light art in the Ruhr has been recently discussed from a symbolic perspective by Orange (2020). From her point of view, the lightworks succeed in attracting the public, engaging with the community and representing part of the history of steel production. But at the same time, she argues, the lights and colours might be hiding behind a shining spectacle the dark side of these sites' memory, which includes pollution, social conflict and the tensions of deindustrialisation.

Street art has also proved to be an important agent in the transformation of the urban landscape (Allepuz-García, 2013). In 2014, after several years of abandonment, a railway station in Assis (São Paulo, Brazil) built in 1926 was painted with vibrant colours. This was an action of appropriation. The station, which features exogenous architectonic forms and foreign building materials, was translated into something closer to the Brazilian sense of aesthetics – in this case, something colourful with references to endogenous nature and culture. The painting of the station was related to its use as a cultural space (*Parada das Artes*, Arts Station) that included a small railway museum too. Nevertheless, the graffiti was criticised by several sectors of society, especially railway fans and heritage specialists (Anhesim, 2015). In 2018, the city council decided to clean it "to recover the dignity of the building and also of the local citizens" (Assis City, 2018; author's translation), and to establish there the headquarters of the Municipal Office of Culture and a new bus terminal. Paradoxically, the rails of the station were covered under asphalt to allow this reconversion, which makes more difficult to understand the original function of the construction.

A similar intervention occurred in 2019 in rural Spain on a larger scale, although with very different results. In Ciudad Real province, the project *Titanes* (Titans) intervened in a number of grain silos of dramatic proportions in relation to their urban environments. This project is especially interesting for its social value. The

artworks were produced on a collaborative basis by street artists and around 500 people having mental disabilities or disorders (see Gutiérrez, 2020). One of the popular names involved in the project was Okuda San Miguel. Interestingly enough, Okuda developed in 2020 a project with similar plastic characteristics on a lighthouse from 1930 (reconstructed in 1980) in Bareyo (Cantabria, Spain), which found strong opposition from cultural and industrial heritage specialists (Riaño, 2020). These examples from Brazil and Spain reveal an unsolved discussion about whether this kind of interventions add a new layer of value to the industrial buildings or, on the contrary, damage some of their values (authenticity, integrity) as pieces of heritage (Fig. 5).

Figure 5. Above: Assis railway station in 2015, before been re-painted. Below: silos from the *Titanes* project; from left to right: *Herencia* (Fintan Magee), *Malagón* (Hell'o Collective) and *Legends from La Mancha* (Okuda San Miguel). (Above: author's own photographs. Below: Laborvalía, published in Gutiérrez, 2020).

To explore further, Scott Hocking's works with industrial ruins in Detroit (USA) offer a very different insight on these debates (see Geist, 2019). Hocking uses the materials he finds in Detroit's modern ruins to create new things that discuss, and seek to change, the relationships among people, waste, decay and abandonment. Many of his sculptures and installations exist in or around the ruins only, such as *The Egg and Michigan Central Train Station* (2007–2013) (Fig. 6) or *Bone Black* (2019). This forces the public to leave the comfort zone of the galleries to explore these more *hostile* environments. Alternatively, the artworks can be appreciated through the photographs shot by Hocking as part of the artistic process. These photographs are often the only remains of his interventions, since ruination is not stopped and eventually the works disappear or are destroyed. That is, Hocking's interventions in modern ruins do not arrest decay nor time, in the sense defined by archaeologists Burström (2011) or Olsen and Pétursdóttir (2014).

Figure 6. Scott Hocking's *The Egg and MCTS*, from the site-specific installation and photography project The Egg and Michigan Central Train Station: #4764 (left, 2012) and #9036 (right, 2011). (Courtesy of the artist and David Klein Gallery, Detroit).

Beyond materiality, other creative approaches to obsolete industrial sites have used sound to reflect on memory and place. In Cuenca (Spain), a group of artists and researchers from University of Castilla-La Mancha documented the soundscapes of the old central railway station and its surroundings when a new high-speed one was inaugurated in the outskirts of the city (see Ariza-Pomareta, 2015). Also in Spain, the Royal Artillery Factory of Seville has been the object of interesting interventions. The project *Voces* (Voices), developed in 2019 by Playmodes Studio and ZEMOS98 with the support of the city council, created an immersive experience in the old factory combining lights and the voices of eight citizens discussing the city's present and future. Furthermore, the multidisciplinary team led by art historian and industrial heritage expert Sobrino has also explored this factory's potential as a space for memory and affection, proposing relations with the industrial ruin that are not just historical or patrimonial, but also sensorial, emotional and creative (Sobrino, Larive and Segura, 2011).

As can be seen, artists and heritage scholars have creatively worked with obsolete industrial places in many different ways. Most of the interventions mentioned have one thing in common: they relate to space, and often to memory too. In contrast to the art containers and creative hubs examined above, site-specific artworks are commonplace among artistic interventions in industrial ruins. Not only because the artworks use or interact with the matter and heritage values of these spaces, but also because the spaces' pasts and presents are sources of artistic imagination.

2.4. E-waste reloaded

The technologies of our time have proven to be a fertile field for the creation of new artistic languages (net.art, digital art…). Besides, the characteristic acceleration of modernity has increased the paces of technological obsolescence, which has produced more raw materials for the artists to research. Köksal (2019) has discussed the artistic afterlife of electronic waste approaching it through a multidisciplinary lens that combines art and environmental issues with theories by Deleuze, Guattari, Bradotti and Parikka. In her opinion, the works by Grégory Chatonsky, Benjamin Gaulon or Yuma Fujimaki, among other artists, redefine obsolete electronics. Through art, these materials detach from their waste condition and become something new and functional (at least, artistically).

Köksal's ideas are traceable in many works by media artist Solimán López (Spain, 1981), including *Plenty* (2011) or the *Harddiskmuseum*. As a matter of fact, López interacts with the technologies of (post-)modernity in the two senses mentioned above. On one hand, through the creation of new languages based on the rapid advance of digital technologies. On the other, through the artistic re-functionalisation of obsolete devices. In both cases, López discusses the theoretical, social and cultural challenges placed by technology in contemporary times. His production in these fields is extensive, but this sub-heading focuses on three works: *Videoataques*, *Guttenberg Discontinuity* and the *Harddiskmuseum*.

Videoataques (Videoattacks, 2010) was a performance that happened in *Cuevas del Pino*, which is a repurposed former industrial space in Córdoba (Spain): a quarry from the Middle Ages that later hosted agriculture and farming activities. The performance reflected on the collision of old and new video technologies by literally making them collide. López projected a computer-produced video on the walls of the quarry and threw and destroyed against them old VHS tapes provided by the public. The tapes contained some memories of the participants (such as home videos or the films and TV series watched in the childhood), which were no longer accessible after the fall into obsolescence of the VHS player caused by the arrival of DVD, Blu-ray, streaming and other means of digital reproduction. Thus, the performance discussed the *imposition* of new technologies and some of its consequences, such as oblivion (Fig. 7).

Figure 7. *Videoataques*. (Courtesy of Paco Polo).

Guttenberg discontinuity is a project developed since 2013 in collaboration with Rubén Tortosa, Miguel Sánchez and Nilo Casares. It discusses the confrontation between physical and digital, and the ideas of authenticity, digital identity and reproducibility. In doing so, *Guttenberg discontinuity* uses an old computer's hard disk, which is buried during a performance. The work is articulated in several phases that occur in different times and places. First, the hard disk is scanned using photogrammetry. Second, the model is 3D printed and the geographical coordinates of the place chosen for the *digital funeral* are included on its surface. Third, during the performative action all the content in the original hardware is deleted, exception made of one single file: the .obj containing the 3D model, which happens to be the only copy available. Finally, the original hard disk containing the unique 3D file is buried. Thus, the only survivor on the surface is a plastic version of the hard disk, which is exhibited as a reproducible object that cannot be repeated. To date, *Guttenberg Discontinuity* has generated six hard disk burials in Spain (four), Greece (one) and Brazil (one). Interestingly, the one in Brazil was looted some weeks after the performance, which adds an extra layer of archaeological interest to the project (Fig. 8).

Figure. 8. *Guttenberg Discontinuity*, performances in Brazil (left, Assis, 2016) and Spain (right, Córdoba, 2013). (Author's own photographs).

The *Harddiskmuseum* (HDDM) was created by López in 2015 at the ESAT LAB (Valencia, Spain). This project also works with a hard disk, but with different methods and aims. In this case, there is only one hard disk that has been transformed both into an artwork and into an art container. The HDDM is a museum of digital art storing static and motion pictures, txt, webart, 3D, code and any other artwork created as a digital file. In spite of its short life, the museum has experience intense evolution. The HDDM was originally offline, which let López examine the tensions material-immaterial, hardware-software, and physical-digital. Artists were instructed to physically send unique works to López in small pieces of hardware such as micro-SD cards or USB memory sticks, which López destroyed (sometimes by eating them) after uploading their files into the museum. This happened during a performative action, which was the only chance for the public to access the contents of the HDDM. Thus, the artist acted as a mediator between the digital (works) and material (public) worlds. On a second stage, the museum was adapted to use VR,

which provided the public with a more immersive experience. In 2020, due to the *new normal* imposed by the COVID-19 and the restrictions to perform with public, López uploaded the HDDM on the Internet (https://harddiskmuseum.com). A last step of evolution has been completed in 2021: the HDDM has been synthetized in DNA, which demonstrates that the project continues to reflect on the interactions among physical and digital, natural and technological, and the human position in all these relations and confrontations (Fig. 9).

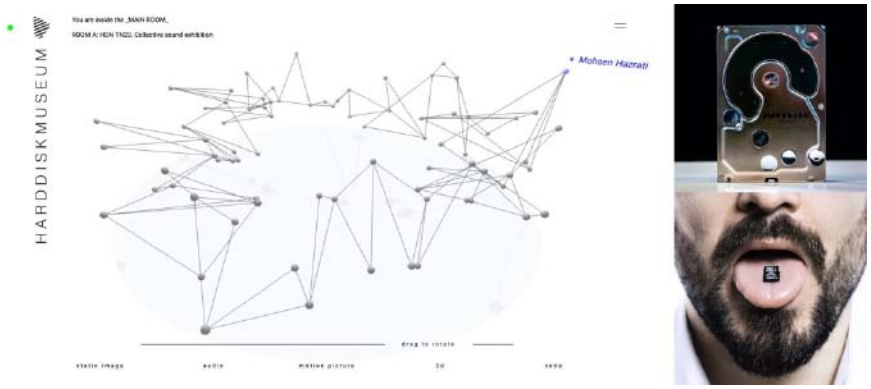

Figure 9. The HDDM, intangible inside (left, interface developed by A. Roca and A. Díaz) and material outside: the hard disk (right-above) and López eating a SD card containing a digital artwork (right-below). (Courtesy of Solimán López).

3. Discussion

The previous section attempted to give clear examples of the considerable diversity of artistic approaches to obsolete industrial sites and technological artefacts, as well as of the different outcomes they can produce. This diversity suggests a number of debates, out of which this text selects two main themes: industrial and technological patrimonies; and the potential roles of art regarding such heritage categories. In addressing these themes, three ideas are discussed: value, mediation, and recognition (Table 1). The preservation of industrial heritage through adaptive reuse (see Bottero, D'Alpaos and Oppio, 2019; Botti, Bruno and Pavani, 2016; Cordeiro, 2009; Douet, 2012; Hay, 2011) is beyond the aims of this discussion. In any case, the adaptive reutilisation of industrial heritage can only achieve the most desirable results when two conditions exist: a proper recording preceding the reconversion works; and balance between new uses and heritage values. Nevertheless, this article does not take the heritage status of every obsolete industrial site and technological object for granted. Thus, what it is argued is to what extent art can play a role in the recognition of these sites and objects as heritage, and in their relationship with the public.

Table 1. Case studies and their most prominent roles in industrial and technological heritage-making and discussions. (Author).

Case	Artistic language	Modified object	Role discussed
Tate Modern	Architecture	Architecture: power station	Value
Bombas Gens	Architecture	Architecture: factory	Value
Chinese creative hubs	Urbanism, Architecture	Urban landscape: industrial estates	Value. Mediation
Ruhr area	Architecture, land art, light art, installations, others	Landscapes and buildings: mines, factories, others	Value. Mediation
Assis railway station	Street art (graffiti)	Architecture: railway station	Mediation
Titanes	Street art (graffiti)	Architecture: grain silos	Value
The Egg and MCTS Bone Black	Sculpture, installation, photography	Architecture: railway station, offices and warehouses	Mediation. Recognition
Cuenca old railway station's soundscape	Sound art	Soundscape	Recognition
Voces	Multi-media installation	Architecture: factory	Value. Mediation. Recognition
Videoataques	Performative action	Site: quarry Technological artefacts: VHS tapes	Mediation. Recognition
Guttenberg discontinuity	Performative action, media art	Technological artefacts: hard disks	Value. Recognition
Harddiskmuseum	Media art, digital art, performative action	Technological artefacts: hard disk	Value. Mediation. Recognition

Firstly, defining the values of industrial and technological heritage is an unfinished task. As stated in the introduction, there have been several attempts to create a system to fulfil this goal, but more work is needed. The question is not trivial, since the identification of values is one of our main tools to decide what is heritage and what is not. In this sense, the proposal of this article is to include art in these negotiations. The key question is whether art adds or subtracts value, which depends to a great extent on each case.

On one hand, to modify *original* places or objects with artistic purposes can affect negatively their *authenticity*, as it can be seen in the examples described as art containers. However, to what extent authenticity should be a prevailing value? Or better said: which authenticity should prevail? From an archaeological perspective, an assessment of heritage that focuses on one phase only (construction, fabrication) might fail to acknowledge the complexity and evolution of sites and objects, the way in which human and nature modify them through time (Olsen et al., 2012). A strong emphasis on authenticity may limit their value as palimpsests. That is, as material documents that inform us about different peoples and times, including ourselves and

our own time. This article does not aim to solve the complex debate about freezing heritage (Pétursdóttir and Olsen, 2014). Rather than that, it points out contemporary artistic interventions as a way of keeping alive, evolving and fully contemporary obsolete industrial sites and technological artefacts.

On the other hand, industry is characterised by standardisation and repetition. Beyond some specificities, production spaces and consumption objects were homogenised by the processes of globalisation attached to industrialisation. Apart from first examples and last survivors, many industrial sites and objects lack singularity. In this sense, contemporary art can make a positive contribution. For example, in Spain there are almost 1,000 silos and granaries with similar characteristics, although there are different typologies and architectonic variations (see https://silosygraneros.es/mapa/). Nonetheless, those transformed by the *Titanes* project are certainly singular. In this case, singularity comes from an artistic intervention in the 21st century, rather than from the original construction. As for technological artefacts, the role of art can be even more determining. It is very unlikely that we can consider a hard disk made in the 2000s a piece of technological heritage that deserve preservation, among other reasons because there are still millions of them, obsolete or in use. However, the hard disks used by Solimán López are unique pieces, both those that now integrate the archaeological record (*Guttenberg Discontinuity*) or the one transformed into a museum (HDDM). In short, art can add another layer of value to obsolete industrial places and technological objects that may also be pondered when assessing such places and objects as potential pieces of heritage – not as physical testimonies frozen in the time that their heritage-making process seeks to highlight, but as materials from our own time that condense different temporalities.

This archaeological approach to the subject can be compared to the ideas shared by media artist S. López and art historian J. A. Vigara in the photovoice exercise developed in this research. For both of them, the revelation of pre-existing values may work with site-specific creations and other kind of artworks produced in context, especially when there is a sense of harmony with the ruins. In López's opinion, the art container category is more limited in these regards. However, even in that case art can emphasise the scales, textures and feelings of the industrial place. The problems arise when the reconversion of the spaces implies the destruction of the footprints of their pasts. In this sense, Vigara shows a more pragmatic position. He argues that the art container model can regenerate *spoiled* spaces, although that implies the transmutation of their original industrial values. On the other hand, both are critical with street art in old industrial buildings. López describes these interventions as style colonisations that hide the industrial aesthetics, while Vigara thinks that graffiti can make these building more visible, but at the expense of their authenticity. López is more positive when discussing non-material art. For him, the performances can build conceptual relations between the spaces/objects and the symbolic actions developed by the artists, which can help to reveal the past and its significance. For the art historian, that might be true, but only when enough context is provided. In conclusion, while López and Vigara argue that the revelation of pre-existing values depends to a great extent on each case, they agree that art can create new layers of value.

Secondly, the relationship between the public and industrial and technological heritage is not always easy. Thus, mediation is needed. Art historian Vigara manifested himself surprised strolling *El Cerco* in Peñarroya because part of the

community was starting to see the industrial ruins in the town as its most important heritage. His surprise came from the fact that these ruins are not the physical remains of local entrepreneurship, but of French economic colonialization. Furthermore, they are a reminder of serious problems, such as pollution, fatalities and the economic crisis that followed deindustrialisation. In spite of being a dark heritage, a new vision is growing in the local community, who has chosen *El Cerco* for auto-representation. However, *El Cerco* is still abandoned and deserted. This situation is very different from the case of the Ruhr, where a regeneration programme based on cultural industries transformed the territory, in some cases by literally shedding new light on dark areas. The same can be said about the Chinese creative hubs, which represent a successful example of repopulation of deindustrialised zones based on creative industries that integrate the industrial past in their contemporary identity.

Furthermore, art can facilitate the social appropriation of unused industrial sites by transforming hostile or alien places into community ones. The railway station in Assis (Brazil) is a good example of this, although it was controversial and divided the public opinion. There, graffiti mediated to make the forgotten present. Whether the intervention was good or not, the truth is that the graffiti rescued the station from oblivion. From one day to another, the station became a big conversation in the city, to the point of making the city council to plan its restoration and reuse. In short, it can be discussed if art on these abandoned sites and objects (the intervention in Assis involved a locomotive too) constitutes an act of construction or destruction. But it is undeniable that art has power to bring visibility and public acknowledgment to these obsolete and forgotten places and things, as well as to make people come back to them.

Regarding mediation, López and Vigara expressed during the photovoice exercise that they believe in the potential of art to intercede in the relation among the public and industrial and technological heritages. However, for the art historian this can only succeed when the intervention is designed considering the community. Both of them think art can connect people to obsolete spaces and objects by contemporising and re-functionalising them. López adds that in the case of architecture, industrial sites, which were originally restricted to the industrial workers, can be transformed into conciliatory and comfortable public spaces. However, Vigara argues that bringing people back to the old industrial places frequently involves cleaning the industrial past, as he sees in the art containers. Besides, in López's opinion mediation works better when art is more ornamental than conceptual, as he perceives in the Chinese creative hubs. Both López and Vigara agree that the urban aesthetics popularise, and help to populate, the obsolete industrial sites. However, regarding the graffiti on Fig. 5 both of them warn that art can also generate a confusing iconography that separates the public from the past. As for non-material art, the media artist defends that the performances and sound art can experientially activate abandoned industrial buildings and technological objects, making contemporary people and industrial/technological pasts to meet in a direct, first-person experience. For the art historian, this might work for a limited and specific public.

Thirdly, art has capability to create recognition in the sense defined by González-Ruibal (2018). For him, contemporary archaeology can go beyond the traditional production of positive knowledge and generate an alternative way of learning: cognition as recognition. That is, an acknowledgment of existence based on a sensorial relation with the materiality of the past. From this research's standpoint

(which is inspired by González-Ruibal), art can make converge the past of industrial and technological heritages with present personal experiences. It can generate a recognition of places and objects that were already known, but were idealised, mythicized, demonised or forgotten. The works by Hocking, for example, reveal matter and its multiple temporalities in an attempt to stablish a new relationship between deindustrialisation, decay and people. In a related but different sense, López gives materiality to the digital and creates physical recognition of the virtual world in the material one.

4. Conclusion

The typology of relations between contemporary art and obsolete industrial sites and technologies presented in this article shows that the creative approaches to these places and objects are wide in nature, techniques, aims and results. The freedom to adapt, recycle or modify them resides to a great extent in the fact that in many cases their heritage values are undefined or unclear. In spite of the existing charters and international recommendations (see Cordeiro, 2009), the interventions on modern industrial or technological remains enjoy much more flexibility than in the case of sites and objects from earlier chronologies. Besides, the relation with the public occurs in different parameters. While *ancient* sites and artefacts frequently have their heritage status ensured, the *old* ones (such as recently abandoned factories) generally need to campaign to gain social acknowledgment and protection, as was the case with Bankside power station in London, or 798 in Beijing. Furthermore, the remains of recent industries and its associated technologies often fall into the category of dark heritage, since they are frequently related to colonialism, environmental issues, the economic implications of deindustrialisation, and social tension – factors which feature prominently in *El Cerco* (Peñarroya-Pueblonuevo), for example.

To address this situation, this paper has suggested two possible roles of contemporary art in heritage-making: the generation or revelation of values; and mediation in the complex relationship between industrial/technological heritage and society. The different cases presented show that there is a multiplicity of possible outcomes for these practices, whose results depends on the type and context of each intervention. In regards of the first role mentioned, works such as *Titanes* or those developed in the Royal Artillery Factory of Seville demonstrate that art can enhance the present social value of past industrial buildings. From an archaeological perspective, art-related interventions on the materiality of obsolete industrial sites and technological objects add new strata and chronological density to them, which increases their value as living and multi-temporal documents. However, these transformations may imply destruction too. *Bombas Gens* in Valencia illustrates the complexity of the problem: although the site was approached as a material document and its data salvaged through an exemplary (and exceptional) pre-refurbishment recording and research campaign, the refurbishment itself removed several features that were important to understand and reveal the industrial past of the building. Finally, there is an evident economic value in many of these interventions. It has been shown time and again they can revitalise abandoned spaces and resources with new economic activities – the Chinese creative hubs are primary evidence for this. As for mediation, art can reconnect people to forgotten (Detroit modern ruins revisited by

Hocking) or conflictive (landscapes of deindustrialisation in the Ruhr) spaces, as well as build bridges between society and heritages whose technical complexity makes them difficult to understand (e.g. Solimán López' works with post-modern obsolete technologies). More importantly, art can facilitate other practices in heritage-making beyond the value-based approach. For example, singularity and others conventional values might not be relevant when art creates emotional bonds between the sites/objects and the community, as can be seen in the Assis railway station.

In addition to this, it has been defended the potential of art as a different approach (recognition), more phenomenological, to the evolution of technology and its cultural consequences. Creativity, emotion, expression and affection can produce an alternative account to the traditional narratives of the history of technology and the authorised industrial heritage discourses.

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