

## WHAT ABOUT INDUSTRIAL BUILDINGS? THE STATUS OF THEIR CONSERVATION, REBUILDING OR DEMOLITION

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### ABSTRACT.

Industrial buildings exist under a higher threat of demolition than other types of buildings for four main reasons: (1) *Change of function*. Older residential buildings retain their original function, keeping their architectural values despite the renovation of their interiors and some smaller extensions. Original industrial buildings, on the other hand, have special needs for their production, and as production methods change, many buildings lose their function and are demolished, while new buildings, in turn, are erected, often in disarray with the original plant. (2) *Change happens quickly*. The life span of production buildings is shorter than for other types of buildings because of the dynamics of industry. (3) *Hidden from the public*. Most modern industrial buildings since the 1950s are located in dedicated areas far away from town centres and the public's attention. Their qualities are not obvious to the public. (4) *Abstract production*. While old craft-based industry was clearly understandable at first glance, contemporary industrial production is mechanized and a background and extensive knowledge of industry is an almost abstract activity not suited for industrial museums or similar purveyors of history.

The strategy for their preservation needs to be revised according to these considerations. Compared to other types of buildings, industrial sites should be evaluated when they are very young—probably below 50 years. A system similar to the Danish SAVE evaluation could be fruitful. The evaluation should lead to an early preservation effort. This could be a "listing-lite" policy based on local awareness where local authorities include the recommendation of preservation in local plans. Local awareness should be supported by nationwide campaigns and organizations.

### 1. INTRODUCTION

We are taking care of many old buildings. Most are residential and recreational buildings. This is not strange because they dominate the building stock in both numbers and living space. But what about buildings designed for industrial production? Are we taking care of them, and should we be, to the same extent?

Based on the status of a representative selection of industrial buildings in Denmark, this paper describes the situation and discusses the future of preservation of buildings for production.<sup>1</sup>

### 2. PRODUCTION BUILDINGS AND PRESERVATION

#### 2.1. Listed Modernistic Buildings

The system for preserving buildings in Denmark follows international norms: selected valuable buildings are listed. Hereafter they have a special legal status, with restrictions on renovation but with economic compensations as well.

An analysis of all Danish listed buildings provides a picture of the future of saved buildings. In 2019, a total of 7,347 buildings in 3,869 building complexes were listed.<sup>2</sup> A subjective evaluation of the architectural style shows only 131 of these buildings were built in 1930 or later in a modernistic architectural style. This number does not include building complexes from an earlier period with an extension in a modernistic style.

Here is a breakdown of types of listed modernistic buildings according to use:

| Type                       | Number | Share |
|----------------------------|--------|-------|
| Single-family house        | 33     | 25%   |
| Apartment house            | 30     | 23%   |
| Holiday cottage            | 6      | 5%    |
| School                     | 9      | 7%    |
| Public institution         | 29     | 22%   |
| Office building            | 2      | 2%    |
| Traffic and infrastructure | 12     | 9%    |
| Shop/private service       | 3      | 2%    |
| Industrial building        | 6      | 5%    |

Only six industrial buildings are strong representatives of modernism (Fig. 1).<sup>3</sup> The number is small and it can be discussed as it gives an adequate picture of the diversity.

#### 2.2. Evaluation of Conservation-worthy Buildings

The preservation of buildings depends on broad public understanding and local initiatives through preservation associations. In principle, Danish law gives local authorities a strong tool to preserve buildings. Since 1997, the concept of *conservation-worthy buildings* has been used to save the visual look of those buildings. Buildings judged to be members of this group are not allowed to be demolished, reconstructed or otherwise changed. The precondition is that the municipalities must have mentioned a building in an official local preservation plan.

The municipalities have an evaluation tool known as the Survey of Architectural Values in the Environment (SAVE) to use in making their judgement. A building is evaluated according to five different criteria: (1) architectural value (proportions, harmony of the composition, outstanding work of



Fig. 1. Irma Kafferisteri (coffee roasting factory) in Rødovre, designed by architects Bent Mackeprang and Thorkel Klerk in 1968, is one of the few listed modernistic factories. Others include a plastic products factory from 1934, the Vasebæk dairy from 1930, Den Hvide Købby ('White Meat Village') in the middle of Copenhagen from 1934, built by the city architect Poul Holsøe and a smaller machine factory C.A.C. Motorrenovering in Aalborg by Arne Jacobsen in 1956. Photo: © Kulturstyrelsen, 2014.

a certain architect), (2) cultural-historical value (evidence of social functions, evidence of evolution in craftsmanship or technology), (3) environmental value (degree of harmony with the environment), (4) originality (degree of original exterior preserve; possibility of rehabilitation), and (5) technical state (whether in good or bad repair).<sup>4</sup>

For the evaluations, we used a 9-step scale with 1 as the highest step. Buildings with a score of 1–4 are worth preserving.

#### 2.3. Production Buildings Evaluated

Evaluating with the SAVE tool started in medieval towns, with a focus on their oldest buildings. Since then, the focus has become broader and most contemporary buildings can now be included. Local authorities decide on the

conservation policy, which results in big differences amongst them. A look at the policy shows this. Today, 408,023 buildings have been evaluated and 126,808 have been judged as worth saving, according to the Ministry of Culture.<sup>5</sup> Only a small fraction of the buildings are industrial buildings with a modernistic architecture. A qualified estimation is that there are fewer than 100 such buildings and most are older ones.

While houses in towns in many municipalities are evaluated, buildings for industrial production have never gained the same awareness. They may have been included if they were situated next to central areas. However, if they were located in a specific industrial area, they were likely overlooked. This is important because town planning since the 1940s has pushed industry to specific areas far away from



Fig. 2. The shipbuilding halls, built in the early 1960s for the now-defunct B&W shipyard in Copenhagen, are among the 25 buildings nominated by the Ministry of Culture for being worthy complexes for Danish industrial culture. Photo: © Politikeren, Wikipedia, 2013.

residential and leisure areas. A closer look at those areas in the suburbs of the Danish capital Copenhagen shows the low priority of industrial buildings. None of the municipalities have made a complete register of industrial areas and most municipalities have not evaluated any industrial buildings at all.

#### 2.4. An Exemplary Project

We have no experience with the NASE evaluation of industrial areas because of the aforementioned priority of residential buildings. One exception is a study of the small area Kirkebjerg in Brøndby, a suburb of Copenhagen.<sup>6</sup> Since 1945, this area was planned to be devoted solely to industry and for around the next 15 years, new industries were established there. Today the municipality plans to redevelop the area for residential use, placing the original buildings under threat.

Based on a survey of a little more than thirty plants, the local museum has designated eight units for future preservation. They each represent the important history of Danish

industrialisation after World War II. For instance, the Larsen & Nielsen factory is important because of its production of precast concrete elements for many modernistic buildings.

Some of the buildings are recommended to be saved *in toto* and others have worthy elements. The survey was made based on the attitude that through preservation, the past can be embedded in the future in a natural way. This can give the future residential area a unique identity. However, one conclusion of the project was that saving one or two buildings would not be enough to keep the identity of the area as a former industrial zone.

#### 2.5. Focus on Industrial Heritage

The low priority of making our industrial heritage accessible eventually became noticeable, and as a result, museums and municipalities conducted a campaign in 2003–2007 for a representative sample of industries and industrial landscapes to be investigated and disseminated. This initiative should secure their future.

As a result of the campaign, the Ministry of Culture nomi-



Fig. 3. The photo shows the part of the Industriparken in Ballerup, where pharmaceutical company LEO Pharma is situated. It is another of the 25 industrial complexes nominated by the government. After more than 33 expansions, it covers the left half of the picture. The architecture of the new extensions has changed according to the current mode. Photo: © Ballerup Kommune, 2011.

nated 25 national industrial heritage sites together with 161 regional ones. Together they populate the map of Danish industrial history (Fig. 2).<sup>7</sup>

There was a hope that local authorities would include them in their municipal plans. The ministry published a sample of good examples of how former industrial or harbour areas could be converted and developed. As mentioned, the focus was not only on architecture but also on the historical significance and local culture.<sup>8</sup> Preserving heritage sites has not been easy. Since 2007, some of the buildings on the list have already met their fate and been demolished or converted to an unfamiliar use, as has happened with some large grain silos in Copenhagen harbour and at the Carlsberg brewery.

#### 2.6. The Life Course of an Industrial Building

Residential houses retain their original mission as shelter over the life of their inhabitants. Apartment houses are often the same in their whole lifetime. Single-family homes will often have a minor extension when the family grows or the owner can afford a winter garden. Major renovations can take place in the shape of energy retrofitting and the external structure of a house can be changed because of

this. The architect's original vision with the architecture can be changed—sometimes for the worse—but most of the original building will remain the same. A residential house is almost the same throughout its lifetime.

The lifespan of buildings is long. We have no evidence, but the public building research institute estimates a lifetime of 120 years for single-family houses and 80 years for office buildings.<sup>9</sup> How does this compare with the life course of an industrial building? In the absence of research on this topic, a study of a typical industrial area can give an indication. Here we have chosen the industrial area Industriparken in Ballerup, a suburb of Copenhagen.<sup>10</sup> This area was established in 1948–1964 and was designed for the installation of around 50 plants (Fig. 3).

The situation 70 years later is that only two of their original owners are still active. The rest of the companies have either ceased their activities or have moved away. A small handful of the buildings were so specialized that they couldn't be reused and were therefore demolished. New companies have moved into the old buildings after some minor and often more extensive reconstruction of the structures.

The need for industrial buildings is no longer as pressing



Fig. 4. The buildings in Ballerup, erected in 1961 by architect Arne Jacobsen, have an exemplary faith. The chocolate factory Toms still occupies them and each new extension is built in accord with and respect to the original architecture. Photo: © Arne Jacobsen, 1961.

as it was before. Therefore, many buildings have been rebuilt for another purpose than the one for which they were originally constructed. The demand for office buildings and space for leisure activities are rising. The local plan from the municipality was partly changed from an area of industry to an area with taller offices and educational buildings.<sup>11</sup>

Almost all of the original complexes have been expanded with additional buildings. The most successful company has made more than 33 large additions to its original buildings. The average number is much lower, but most have had two or more extensions that have changed the original architectural appearance.

The industrial area was originally planned with broad roads and a requirement for extensive landscaping to give a positive visual impression. The landscaping caused the buildings to be indirectly hidden, even though some of the buildings were planned and drawn up by leading architects in the country. Nowadays architects at the municipality can see those values and (unsystematically) advise levelling the landscaping in front of the well-preserved building complexes, while recommending more intense landscaping in front of worn-down plants.

### 3. DISCUSSION

Industry is a dynamic business that often requires a rapid change of production facilities. The average lifetime for industrial buildings is considerably shorter than for residential buildings. This need for flexibility presents special

challenges for conservationists. Industrial buildings need to be evaluated a shorter time after construction than do residential buildings—at least 50 years should be the norm.

The Danish system for preserving buildings functions relatively well, and at least some modernist industry buildings have been saved. The addition of local awareness and recommendations for preservation through the SAVE system is fine, in theory. But currently no municipalities have made a detailed register of their local industrial physical assets. This is a tedious task for conservation associations to inform the local opinion and politicians to prioritise doing so. Industrial buildings are often huge and situated in special areas. If the dominant usage of such an area changes, it is difficult to maintain the buildings' original function. If such a building complex should be preserved, it is necessary to reuse as much of the original as possible, but often only the façade can be saved. Many compromises are needed when the budget is tight. A rich literature shows the importance of this issue.<sup>12</sup>

There can be a contradiction between the preservation of the original architecture and the preservation of the cultural-historical values of industrial structures. The cultural history involves more than the exterior and includes evidence of industrial processes, machinery, and the related energy and transport infrastructures. This complex assemblage of components is stated in the joint ICOMOS-TICCIH principles—also known as the Dublin Principles—for the conservation of industrial heritage sites, structures, areas and landscapes.<sup>13</sup> From a cultural history approach, not only

is the original building important, but also the later extensions, regardless of their architectural style (Fig. 4).

The threat to industrial buildings is particularly significant for complexes of one-level industrial blocks. These sites are spread over a larger area with tanks, cranes and other installations needed for industrial production. In total, those components form the industrial landscape. This is in contrast to older production buildings in high-rise buildings in metropolitan cities, where at least the buildings' structures can often be preserved while the interiors are put to other uses.

Only a minority of the modern movement's production buildings are listed. It is, therefore, necessary to discuss a strategy for their cultural heritage. Many structures are no longer in use and are perceived as a kind of old-fashioned ruins. Localization in an industrial area will restrict their reuse for cultural purposes, such as museums, libraries and exhibition spaces. Among other things, a location in an industrial district far from urban life means that attention is limited and groups other than the usual environmentally conscious circles must be activated. For structures still intact, we need to advise owners on the future preservation of value.

### NOTES

- 1 The article was written during the Corona crisis. The theme has been adjusted according to the lack of access to archives, museums and libraries.
- 2 The list is from a database used for #HACK-4DK from the Danish Ministry of Culture, November 2019. The ministry's online FBB Database shows only 7,101 buildings. The 3,869 building complexes have their architecture style evaluated based on the written description and on accessible photos.
- 3 Two more industrial buildings are lime plant kilns with technical facilities only.
- 4 Allan Tønnesen, *InterSAVE*, Copenhagen, Skov- og Naturstyrelsen.
- 5 FBB registry at Slots- og Kulturstyrelsen, accessed on 5th of April 2020, <https://www.kulturarv.dk/fbb/index.htm>.
- 6 Grethe Pontoppidan, Poul Sverrild, & Lisbeth Hollesen, *Kirkebjerg Industriklarter. Bevaring og potentiale*, Rødovre, Forstads Museet, 2018; A similar study is Camilla Frelsen, Darius Monfared, & Mette Tapdrup Mortensen, *Kulturarv i industrilandskaberne i Albertslund Kommune*, Albertslund, Kroppedal Museum, 2012.
- 7 Caspar Jørgensen & Morten Pedersen (eds.), *Industrial Heritage in Denmark. Landscapes, environments and historical archaeology*, Copenhagen, Kulturstyrelsen, 2014.
- 8 The lists are published by the Ministry of Culture (accessed 10 April 2020).
- 9 Freja Nygaard Rasmussen & Harpa Birgisdóttir, *Bygningens livscyklus. Identifikation af væsentlige bygningsdele, materialegrupper og faser i en miljømæssig vurdering*, Statens Byggeforskningsinstitut, Aalborg Universitet 2015.
- 10 A study of the area is presented in Jørgen Burchardt, "Industribyen Ballerup — da arbejdspladserne kom til Industriparken", *Byhornet* (during release).
- 11 Nine possibilities for future use are listed in Mats Isacson, "The reuse of large-scale industrial areas", Miia Hinnerichsen (ed.), *Reusing the industrial past by the Tammerkoski Rapids. Discussions on the value of industrial heritage*, Tampere, City of Tampere, 2011, 53–60.
- 12 Some of the literature are referenced in Donghwan Kim, *Adaptive Reuse of Industrial Buildings for Sustainability: Analysis of Sustainability and Social Values of Industrial Facades*, 2018, thesis, University of Texas; Austin. Evan Sugden, *The Adaptive Reuse of Industrial Heritage Buildings: A Multi-Case Studies Approach*, thesis, University of Waterloo, Ontario, 2017; Myroslav Šykora et al., *Handbook on structural assessment of industrial heritage buildings*, Prague/Aas, 2010.
- 13 ICOMOS, *Joint ICOMOS-TICCIH principles for the conservation of industrial heritage sites, structures, areas and landscapes*, 2011, Paris; Stephen Hughes, "TICCIH, ICOMOS & the world heritage", Sonja Ilko & Marko Stokin, *Protection and reuse of industrial heritage: Dilemmas, problems*, examples, 2017, Lubljani, ICOMOS Slovenija, 83–100.