The production of industrial heritage and the heritage in industrial production – Working order as model for heritage practices

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Abstract

A recollection of the formation process in Sweden of industrial heritage as a branch within heritage practices during the latter part of the 20th century and the presentation of two examples on this process, forms the base for a discussion in this paper on how different perspectives on heritage values results in consequences for how the operative results of the heritage processes are designed. The paper argues for more flexible and dynamic heritage practices able to integrate emotively and cognitively based perspectives. The turn-over of an industrial site into heritage therefore might be seen as a statement with the potential to address a number of contemporary issues and thus fulfil important tasks in the continued development of society.

Introduction

In 1979 the Swedish industrial historian Marie Nisser wrote that the future for industrial heritage [in Sweden] is very uncertain and at the best a continued maintenance of already preserved heritage sites might be achieved. All in all she is very pessimistic on the possibilities to expand the realms of industrial heritage, at that time mostly resting on the capabilities of private non-profit associations, or municipalities victimized by industrial dereliction and unemployment.1

Some ten years previously, in 1968, she had together with the architect Gunnar Sillén organized a meeting at the Tekniska Museet (Museum of Technology) in Stockholm in order to initiate a broad inventory of buildings and sites of the working life. The raw model was British and the industrial archaeologist Kenneth Hudson participated in the Stockholm meeting.2 In spite of the generally felt pessimism of the 1970s, industrial remains grow in importance as heritage assets for community development throughout the western world, and in the new millennium it is seldom a questioned issue nowadays for the heritage field to be concerned with preservation topics of industrial sites. In this evolving recognition of industries and its environments as heritage, a similar growing understanding of this heritage as contemporary has been established. It is not only the ruined remains of 19th century that are worthy of historical narratives and preservation measures, but also still functioning industrial buildings and sometimes also the local infrastructure they are part of, i.e. the local community. Simultaneously the traditional view of cultural heritage as material historical testimony is constantly challenged. Earlier, the purpose as voiced by the authoritative heritage discourse can simply be said to have been to preserve a supposedly objective cultural heritage for posterity. Today, cultural heritage is to a growing degree instead understood as a living dynamic phenomenon and the “preservation procedure” in regards to material structures such as buildings, often means change, redevelopment, redesign, reconstruction, or even construction. However, the fundament for the practice is still often based on a fixed, excluding, non-discussed historical image of more or less superficial nature, where the instrumental qualities of heritage for achieving local development, mostly based on tourism and other trades are increasingly put into practice. Heritage work therefore to a more obvious degree stems from more or less formulated needs within present society where the production of a past is as imagined as the apprehension of a certain condition in the future.3

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3 cf. Ashworth et al., 2007
Concerning the industrial heritage the perspective is broad and the results are diverse, ranging from archaeologically/scholarly based story telling to redesigned “disneyficated” history into perceived contemporary sentiments and commercial opportunities. There are several possible perspectives on derelict, reused or deserted industrial sites which could be subjects for far-reaching research within a number of different disciplines. This paper however, is based within the discourse of professional heritage practice and the need and possibilities for its revising and renewal. A central concept is “working order” or usability which indeed has different meanings and interpretations, and the objective here is to come closer to a conceptual understanding of relevance for the heritage profession. The paper is structured in the following parts: an initial overview presents how industrial sites have developed from an earlier status as questioned and ugly into important assets for heritage and regional development, while there is at the same time a tendency towards a fixed heritage attitude on questions of preservation and reuse. It is followed by a section presenting two examples of preservation and regeneration of two industrial sites in Sweden. The third and last part discusses the examples in relation to how heritage is and could be valued as part of the professional heritage practice, thus providing consequences for how strategies can be formulated for the continued reuse and redevelopment of built environments in general and industrial sites specifically.

The Swedish case: Industrial history formed into a field of heritage practice

The idea of directing scientifically/scholarly studies on industrial remains through methodological approaches, was more or less created by UK archaeologists during the 1950s and 60s, focusing their academic interest towards industrial remains, primarily from the 19th century or older. Although, in Sweden earlier attempts to preserve representatives of the industrial history primarily linked to the iron production, was organized from the turn of the century 1900 and onwards. This early development has been described for example by Nisser and Isacson.

Mining and iron production as symbols for the Swedish industrial heritage was further strengthened when Jernkontoret in 1966 established Bergshistoriska utskottet. The objective was to support research in the area and provide dissemination of its results, with emphasis on archaeological and historical documentations and research as well as conservation practices, concerning work with metals and foremost iron in primarily a Nordic context. By the end of the 1960s and early 70s, a number of restoration projects took place on sites such as the Falu Copper Mine, Engelsberg Works, Løa blast furnace and Moviken blast furnace, all representatives of mining and metallurgy and traditionally situated in the countryside. The restoration projects were managed through governmental funding targeting the organization of unemployed people into different kind of activities, in this case restoration of industrial heritage.

During this period Nisser and Sillén organized the Stockholm meeting in 1968 and a couple of years later Nisser was one of the founders when TICCIH was created at First International Conference for the Conservation of the Industrial Heritage in Ironbridge, UK, in 1973. Nisser and Sillén saw a rapidly changing industrial society where the global consequences of industrialization became apparent, such as: management by distance, ownership through economic optimization, and local traditions and competences became redundant. The increasing number of derelict industries, and the large number of unemployed people forced to move to the major urban areas, created a vision of diminishing local communities in the countryside, i.e. a disappearing modern heritage not yet recognized as heritage. Here was the motivation for making inventories and documentations, although

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4 c.f. Kennedy, Kingcome, 1998
5 Palmer and Neaverson, 1998
6 Industriminnen, 1979
7 Isacson, 2003
8 The Swedish Steel Producers’ Association
9 The Historical Metallurgy Group
11 Industriminnen, 1979
12 http://www.mnactec.cat/ticcih/congresses.php
– as was stated – the industrial buildings were not easily valued and preserved, since it could not be done on aesthetical grounds. Nisser wrote in 1979:

“Similar to how we today search for material that provide us with information on the industrial revolution, future generations will look for descriptions and images of the development of today. It is therefore important to record the changes of the physical properties that are taken place today as detailed as possible. One main objective for such documentation is to gain a better understanding of our fellow human being and her living conditions of today and yesterday. An argument for the preservation of industrial sites and worker’s housing, is that heritage work ought to provide a more balanced image of our historical past than what has been done previously in regards to preserved castles, manors, churches and agricultural sites. The sites and environments of the industrialized society can however not be preserved out of aesthetical principles. Factories are not pleasant or inviting environments, nor are the workers housings of the 19th century industrial breakthrough.”

As with the apprehension of a disappearing agricultural society during the 19th century motivated earlier generations of curators and preservationists to substantial documentation tasks, the large structural changes within the industry in the 1960s and 70s provided the same sense of urgency in capturing the industrial historical narrative before it was to late. The increasing interest for the history of industrial sites coincides with the third industrial revolution, i.e. the hierarchical fixed production systems established from 1910 and onwards where to a large extent exchanged in the western world to more flexible specialisations with increased automation and a steadily decreased amount of industrial workers. The establishment of a more generally spread conservation practice of industrial heritage would however wait for a couple of decades until in the 1990s when it was a natural integrated part of the formal public governed conservation of built environments. The delay could possibly, as Nisser suggests above, be explained by how buildings and built environments in general have been assigned heritage values by the heritage profession, based on their aesthetic qualities rather than the historical properties. We will return to the value issue in the third part of this paper.

In spite of the industrial sites failing to meet the general aesthetic norm and the pessimistic outlook from Nisser in 1979, three key ingredients evolving during the 1980s are here suggested to have been the driving forces for establishing industries as general accepted heritage.

- **Research relation.** Research within history of technology became a concern during the 1980s for the universities of technology in Sweden, with Svante Lindqvist as the first PhD with a dissertation on the Triewalds steam engine from 1726 at the Dannemora mine. Lindqvist had the first chair in History of Technology in Sweden, and some years later in 1992 Marie Nisser received a chair in Industrial history. Both professors were installed at the Royal Institute of Technology in Stockholm. The Nisser professorship resulted in several things, notably a Nordic PhD-course on “The industrial heritage of the Nordic countries” given on three occasions, where the participants today are renowned researchers or practitioners in industrial heritage.

An overview of the research field of industrial history – industrial heritage, results apart from such

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14 Isacson & Morell, 2002; Isacson, 2007

15 Lindqvist, 1984

16 Industriminnen i Norden, 1996
studies that describes and analyzes heritage work in a broader societal context, in a possibility to arrange research in the following themes:

A) Studies explaining the historical qualities of an industrial site through scholarly and archaeological methods.

B) Studies which are based on the scholarly-archaeological material, but focusing on the interdisciplinary problems – often of material nature – endangering a successful preservation.

C) Studies who problematizes the preservation concept and the intermixed historical qualities, with the objective to discuss the future reuse where the industrial site is understood in terms of a heritage in a local/regional context, filtered by economical, cultural and social perspectives.

Depending on theme the industrial remain could end up as preserved following A, conserved as a result of B, or conserved and redeveloped as a consequence of C.

- **Working life museums.** A specific form of museological interpretation were established in connection with preserved industrial sites and structures, and were developed from the need to document and maintain a technological know-how associated to a certain site or process. The conserved or reconstructed machinery or technical equipment is a prerequisite for this kind of museum. The initiators have usually their background in the original industrial site or structure, and the general problem normally concerns competence transfer to new generations of museum workers, or even to attract younger people to join the working force of such museums. In Sweden today there are some 1400 working life museums, and since 1998 they cooperate within the network ArbetSam. A common quality for these museums is their firm base as idealistic, non-profit organizations reflecting in total a very diverse image of industrialized society.

Often the growth of working life museums have been interlinked with a stricter focus on the history of technology rather than an urge to present narratives on industrial history. The importance of understanding preserved machinery and how it should be worked has, however, slowly spread to conservators, restorers and other professions of the formal heritage area as a growing recognition of its significance for the society’s ability to generate certain industrial sites, communities, crafts or traditions.

- **The instrumental qualities of derelict industrial sites.** The working life museums have in several cases played an important role for redeveloping local economy in the communities of their former glory. However, a broader and more flexible quality in this respect were presented by such industrial sites were all machinery and technical equipment had been dismantled and in the normal case sold to industrialists of the third world. In these sites the empty halls of former industrial production presented unlimited possibilities for reuse as e.g. office areas, schools, shopping centres, facilities for small enterprises in craft, industrial production or trade and business. An obvious example in Sweden of this process would be the textile industries of 19th and early 20th centuries in and around the city of Borås, redeveloped to facilities for offices, schools, restaurants and new generations of cloths and fashion enterprises.

In 1993 the National Board of Antiquities (since the last decade renamed in English to the National Heritage Board) were commissioned to investigate the long term management of the industrial heritage sites within the country, and in 1997 the commission were completed with the instruction to produce a list of the ten most important sites. Eventually by the year 2002 a program was presented describing twelve industrial heritage sites. Naturally a list of this kind is deemed to be criticized due to the fact that the problems of producing it would reasonably exceeds the possible positive outcomes of such a list. The obvious question would be how twelve sites could possibly represent the industrial history of the country.

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17 See for example Storm, 2008.
19 Hjelm, 1996
20 Pettersson, 2006
A broader perspective was presented by Hofrén and Jönsson in their public inquiry of 1999, *Questions to the industrialized society*. One result of their inquiry was the establishment of *The Delegation for the cultural heritage of the industrialized society*, with the guiding principles to act as an operative authority under the Secretary of Culture and to perform, follow up and evaluate governmental initiatives within the industrial heritage. One important task was to support a number of projects with governmental funding and during the period from 1999 to 2002 a total of 46 million SEK was distributed to 49 different projects, mostly focused on documentation tasks and establishing of networks. The important effects of the activities of The Delegation was the realisation that heritage work also concern the present society, that heritage work is a potential force for inclusive societal processes, and that the heritage concept in relation to a preserved object could problematize the object’s history, possible interpretations and future use.

**Figure 1. Heritage practice as traditionally object-oriented sub-systems**

**Conclusion: problematizing industrial heritage production**

It could be stated that the industrial history and its remains has developed into a non-controversial issue for the heritage practice of today. As such it could be associated with the same problems as the heritage field faces from a general perspective. This could be illustrated as in Figure 1.

Principally, natural and cultural heritage practices are performed, as other operative measures, through different strategies, regulations, organization forms, occupational groups and so on which in many situations independently take decisions and measures within their own field. These practices have in several cases been developed depending on what sort of object is in focus for the activities, and in a very general sense the field could be divided according to “typical” cultural heritage objects which can be understood in terms of different social systems or contexts, which are exemplified by the boxes in Figure 1. The activities within one box might have positive or negative effects in the other

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21 *Frågor till det industriella samhället*, SOU 1999:18
22 *Industrisamhällets kulturarv*, SOU 2002:67
23 After van Gigch et al., 1996; Lagerqvist, 1996
Industrial heritage could be found at least within the four inner boxes. The artefacts could be the production results of a certain industry but also the machinery and technical equipment necessary for the production process, or the random but poignant evidence of human activities and life in abandoned industries. Industrial buildings has since long been recognized by the heritage profession for its historical qualities. Built environments and cultural landscapes, created and shaped by industrial processes are gaining recognition as important aspects of industrial heritage. The success of these activities in a broader societal context are dependent on more general attitudes to concepts such as preservation, recycling or resource-economizing, and these attitudes are in turn the consequences of ongoing socio-cultural processes in society.

Our need to rethink heritage practice could start with an identification of these boxes as interlinked sub-systems that are depending on what attitude society as a whole takes, in this case, toward preservation and how this concept are formed and reformed through socio-cultural processes. Or, concerning industrial heritage, the central concepts could be conflicting narratives and representations of industrial production. In this way the sub-systems form one system – the field of heritage practices – that is continually integrated in a wider perspective with co-operating and competitive systems, where the production results of the field become resources or obstacles to the practices of these systems.

Furthermore, a third dimension could be added in each box as a sub-system and in the system as a whole, which concerns a scale shifting from an individual level to a global sphere, comprising individual remembrances as well as the consequences of industrialization for both the western world and the developing countries. Imposing such a complex system would measures the capability of the natural and cultural heritage field to identify, examine, preserve, make accessible and develop the natural and cultural heritage.

A second problem of industrial heritage production concerns how it coincided with the third industrial revolution resulting in sites available for heritage reuse in the western hemisphere, while a large number of countries outside that hemisphere have rapidly turned into economies for industrial production. At the same time is the industrial heritage of the western hemisphere growing into a resource for reindustrialization within the fastest growing branch of today – the tourism industry. An industry which, in turn, provides the base for economizing the maintaining of competences and tacit knowledge required for demonstrating historical techniques, crafts and production processes which, in turn, might form the base for innovative entrepreneurship and new industries. This process put increased requirements on the heritage profession to be able to balance a number of diverse perspectives on the heritage in question:

- Material and structural problems/possibilities (the traditional westernized valuation of material authenticity, e.g. the Venice Charter).
- Aesthetical values and other emotively based qualities or otherwise intangible properties.
- Different and sometimes conflicting historical interpretations.
- Local usability, i.e. the availability of local economy or engagement in other ways, or the need to revitalize the foundations of the local society (identity, economy, empowerment).
- Usability for the tourism industry or for continued production oriented activities or a combination of both.
- The global impact, e.g. economy, aesthetics, codes of practice, the ongoing history

Two examples

The small communities of Forsvik and Fengersfors in Region Västra Götaland in the western parts of Sweden have some similarities; they are situated some two hours by car from the urban region of Gothenburg, they have been developed for some centuries around industrial – or as in the case of Forsvik, pre-industrial – activities, they have been subjects for several previous reorientations of industrial production in order to maintain competitiveness, the industries of both communities went bankrupt in the second half of the 1970s with depopulation of the communities, the industrial sites have been defined as heritage and needed measures within conservation and redevelopment have had to be financed by governmental or other means of funding.

24 Palmer & Neaverson, 1998; Perspectives in industrial archaeology, 2000
Forsvik became known in history when the noble daughter Cecilia Jonsdotter Roos in 1410 donated to the monastery in Vadstena her inheritance from her father, the homestead of Forsvik including a stream with a flour mill. The development of the Works from that period up to the bankruptcy in 1977 has been described by Juhlin in his book on the history of Forsvik.\textsuperscript{25} In short the history of Forsvik Works consists of long periods as an ironworks which was redeveloped in the mid 19\textsuperscript{th} century to a foundry with mechanical engineering. Centuries of bar iron production was thus replaced by the manufacturing of plows, pipes, pumps, lampposts, etc., and in the beginning of the 20\textsuperscript{th} century the production of the hot bulb engine “Fenix” begun. Eventually the Works became a subcontractor to one of the big wharfs in Gothenburg and was consequently drawn into its bankruptcy in the mid 1970s.

The site today presents an image of a crucial period of the growth and conversion of the Swedish industrial society, from the late 19\textsuperscript{th} century and onwards.

During the 1970s a growing recognition of the historical qualities of the site was established, but after 1977 and some years with governmental aid funds which failed to bring on any substantial replacement activities, the site gradually degenerated. The development of the site into a ruin could have continued, if not the municipality of Karlsborg together with the county council and county board of Skaraborg, formed a foundation in 1987 with the objective to preserve the industrial remains. The ownership of the different buildings within the site was at that time not fully transparent, and the primary objective for the foundation was to acquire the buildings and in connection with that restore roofs, walls and windows into functioning protection against precipitation – the so-called “raincoat period”. The municipality of Karlsborg became formal property owners, and one person – Lars

\textsuperscript{25} Juhlin, 2004
Bergström – was appointed in 1993 with a two year commission to formulate a plan for the future use of the site. The attitude of Bergström towards the redevelopment of the site could be summarized as:

- Prioritize repair in front of restoration
- Forsvik Works back to working order

In 1993 Bergström was the only person working at the site, and just over a decade later the number had grown to a level corresponding to 15 to 20 AWU. The importance of the hospitality industry for the development of the site is reflected in e.g. museologically formed narratives of the industrial history of the site, scenes for music and theatre, youth hostel, facilities and resources for conferences and meetings. Integrated and parallel to these activities are the reconstruction of a steam paddler from 1836, two small enterprises working with bronze casting, restoration of a number of steam engines and the creation of a steam activity centre for children, and the restoration of the former company truck from the 1930s. All activities are publicly available and fulfil important functions in maintaining attractiveness for visitors to go to Forsvik Works and in that respect contribute to the economy of the site as well as the economy of the local community. The only non-public activity of the site is performed in the former office building of the Works, where the administration of the site is placed together with industrial historians/conservators working with the industrial history and narratives of the site, as well as on regional commission with industrial heritage elsewhere.

The whole site was in 2005 declared as listed building following the Heritage Act, where the continued use of buildings and equipment within the traditions of the site, is defined as a requirement for the preservation. The future use does not only need to be within a museological context, but could also concern commercially based activities as casting, forging, mechanical workshop, or wharf – all examples on the previous activities of Forsvik Works.

The reconstruction project of the steam paddler has created good conditions for continued functions within ship and boat restoration including the preservation and development of craft skills needed in such restoration projects. In cooperation with other regional and national actors a Centre for Maritime Craft is therefore in preparation at Forsvik Works, with the objective to develop sustainable methods for restoration, craft skills, and models for documentation of the heritage a float. Forsvik Works will in such manner develop into a resource for education, training, research and development within historical crafts and competences for industrial production, thus moving the idealism of working life museums into the realms local economic development and industrial regeneration.

The conversion of Forsvik Works has developed into an industrial history success story out of a tragic industrial closure, following a number of principles:

- No conscious aesthetical adjustments.
- Future usability outside the heritage area.
- It is necessary to see the heritage in the industrial production and in Forsvik this concerns the preservation and development of traditional craft procedures in industrial production.
- The local community needs to be integrated in the conversion process.
- Governmental funding is important as investments in order to achieve refund on a broader societal level.
- The hospitality industry provides a base for the continued use but it has to be submitted to local conditions.

**Fengersfors Works**

At 1795 an application was granted by Bergskollegium to let Christoffer Sahlin establish an iron works at the Knarrby stream, with a yearly production rate of ca 59 to 61 ton. The Works were named Lisefors after Sahlin’s wife Elisabet. During the 1820s the Works were developed with a new larger hammer forge and shortly after completed with yet another one, as well as a head saw, a couple

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26 Bergström, 2002
27 Personal experience from working at Forsvik Works, between 2004 to 2008.
28 Bergskollegium: an organisation with mandate on national level to decide on issues concerning mining and related production sites
29 The historical recollection of the development of Lisefors Works and later Fengersfors Works is based on: Freding, 1992; Resa till Fengersfors, 1950; Sandström, 1997; Lagerqvist, 2004
of new buildings and a watermill with two pair of millstones for grinding barley. Living quarters for blacksmiths containing 14 rooms and school facilities were built in the 1930s.

During the later half of the 19th century the iron production in Sweden were subject to severe structural changes, resulting in a close-down of almost all small to medium seized works and an expansion of the large ones. Three options were possible for the concerned industrialists: a) turn the iron works into a foundry with a mechanical workshop (e.g. Forsvik Works), b) use the plant for something altogether different than within iron and metals, or c) leave everything as it stands, lock the doors and hope on market changes providing possibilities to reopen the works later. Fengersfors Works is an example of the b-option, when the Works in the 1880s were turned into a pulp mill manufacturing fibre board by a mechanical process. Later in 1895 the Works reorganised into a new company producing cellulose and kraft paper.

The Sahlin family owned the Works to the turn of the century, but was in dept to the exporter of cellulose in Göteborg to such a degree, that he did choose to take over the Works rather than be part of its closure and loose the possibilities to reclaim advanced funds. The exporter and new owner, Johan Fenger-Krogh, reorganised the Works in 1901 to Fengersfors Works Ltd, and invested in new buildings and reconstructions which, however, were totally destroyed in a big fire 1906. Within a year the whole site were reconstructed on the older foundations.

Fenger-Krogh went to England in 1913 and studied the production of a new water resistant paper, which he called “ocean paper”. It was composed of two layers of kraft paper with a layer of bitumen between them. He brought the technology with him back home, and made Ocean paper a well known product from Fengersfors.

In the 1920s investments in the power supply were made resulting in a steam engine, boiler and generators producing electricity for the Works. Bleached paper was introduced in 1931 and the production was divided equally in ocean paper and bleached paper. This was followed by further investments in constructions and equipment for the bleaching process and production of the bleaching agent, hypochlorite. After the Second World War, with strong hopes on the future, a daring investment was made in the worlds first continuous pulp boiler resulting, amongst other effects, in several study trips from paper industries abroad. The process was composed of a 19 m high boiler with input of splinter through a pocket into a lying cylinder, where the splinter was heated by steam, and under addition of lye pumped to the top of the boiler. Eventually the completed pulp was brought out through the bottom and under pressure the lye was reduced from the pulp. The splinter was produced by the Works own resources and was transported to the top of the boiler building by the newly constructed conveyor belt. In 1968 the production was closed down and the site was overtaken by K J Enderlein, who reorganised the company and focused the production on fine paper. In 1977 the company became insolvent and paper production at Fengersfors came to an end 1978.

The Waterworks were established in one of the buildings on the site in the 1980s by the local community administration of Åmål, with the objective to run a fish hatchery and link a high school education on fish cultivation to it. The fish hatchery is today a successful business providing game fish to be planted out in different waters in the southern parts of Sweden, although the education is no longer running.

The Works were left more or less unattended until the mid 1990s, when local initiatives showed interest for the facilities resulting in the establishment of an architect office and business premises for reused building materials.

Under the leadership of the present owners Enderlein & Co Ltd together with a group named Not Quite, consisting of artisans and craftsmen, a vision for the future focusing on the site as options for renewed production possibilities, as an environment for experiences and artistic performance, and as an industrial /technological historical document. The former Works store is reused as a sale facility for Not Quite, and through their activities there is sufficient base for running a café, later to be completed by a restaurant. The stimulation for reusing the industrial environment in Fengersfors created by the artisans and craftsmen has increased the attraction for small firm owners to establish themselves on the site. Thus a jeans design company is situated in the former Works office, and a carpenter’s workshop is placed in an industrial hall from the 1950s.

In 2004 and 2006 a thorough documentation of the premises, particularly those not reused, was performed by conservators and architects, resulting in a proposed strategy for needed restorations.
site is not among listed buildings but deemed represent such historical qualities enabling the restoration works to be supported by governmental funding, although to a lesser degree.

The reuse of the site has been directed to the emptied parts, corresponding roughly to 60% of the total building stock, where production equipment and other concrete traces of the former industrial activities are no longer evident. In the remaining parts we find some key topics in the development of paper milling, such as pulping stones, a couple of Hollanders, a paper machine from 1906, one of the first paper bleachers in Sweden, and the 19 meters high continuous pulp boiler from 1948. There is also an illustrative representation of power production in industrial plants by a steam engine, boiler and D.C. and A.C. generators, all installed in the 1920s. It is also these parts of the Works containing the historical qualities, which are or have been in the worst technical condition. The emptied, rentable parts have provided possibilities to generate incomes from tenants to finance maintenance and restorations, while at the technological and historical significant areas a corresponding option for incomes has not been a reality. The public funding together with the owner’s own investment will be strategic for – as compared with Forsvik Works – achieve the “raincoat period”. The continued use and reuse of these premises will have to combine the historical narratives of the industrial production in a museum context, with tenants representing activities that could co-exist with or even benefit on the historical properties.

Memory or resource
Parallel with the inclusion of industrial history into the general heritage practice, the concept of heritage value was discussed. During the 1970s in Sweden the positions were ranging between the ideas that all buildings could be attributed with historical significance on one hand, and on the other that only some buildings could be described as composed of high historical value as they would be subject for governmental funding supporting their preservation. The latter viewpoint became more successful and in 1979 the strategy for attributing heritage values was formulated:

- Systematic inventories form the base.
- The building should be of an age that permits a historical perspective to be applied.
- The building should have a documentary value.
- The dichotomies rarity – representativity, originality – change, object – environment, are important for the assessment of the values of the building in relation to national and regional/local levels.

In spite of this, the selection of buildings judged to be of historical value could to a large degree be explained by their abilities to meet prevailing aesthetical norms. The art historian Alois Riegl wrote a classical study in 1903 on the concepts of heritage values and their relation to art history and aesthetics. Among several issues he discusses the differences between on one hand “age value” where the traces of time passing and the evidently old becomes valuables, and on the other hand the “historical value” where a specific occurrence or phenomenon in history becomes the valuable quality. In the latter case could the consequences of time passing result in negative effects of the perceived historical value. Riegl identifies the dynamic relation between the modern and its “newsvalue” and that which is not modern but worn and decayed and thus worthless, but might later gain age value as antique or charming pieces of old objects. An explanation to society’s ability to make culturally based value statements on both new and older phenomenon is depending on how these relates to contemporary aesthetical norms or “kunstwollen” as Riegl phrases it.

Older industrial buildings have normally when constructed been subject for conscious architectural design goals, and the following several decades of industrial and societal development have resulted in numerous additions and conversions with rapidly decreasing design ambitions. In a preservation process it normally therefore becomes tempting to take away all later parts that might “disturb” – in their ugliness – the experience of the original architecture, i.e. the industry is solely valued as

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30 As exemplified by two governmental investigative reports, SOU 1973:27 and SOU 1979:17
31 SOU 1979:17
32 Riegl
architectural expression and not as industrial production process. In comparison with what Nisser stated in 1979 on the difficulties for preserving industrial sites due to their lack of aesthetic qualities, a shift has taken place since then in the fact that industrial buildings are part of normal heritage work today. But at the same time we could see that the actual preservation of industrial sites often have meant a complete redesign project where all later additions and conversions have been erased in favour for an almost stylized harmless framing for new activities. Is there any “right” or “wrong” in this? someone might ask. A “cleansed” industrial site reused for a school, might inspire the learning processes in more creative directions by its divergent architecture and interpretable traces of previous activities. A totally abandoned site on the other hand that has not been through a heritage process and been given a specific historical narrative, could be an important asset for peoples curiosity, joy of discovery and history, and possibilities for individual meaning making. At the conversion of Forsvik Works during the 1990s, one important base for the decisions to come was to avoid aesthetical adjustments, therefore less attractive buildings and additions in corrugated sheets have been kept as narrators of important steps in the development of the Works.

In a study of the small community of Gullholmen in the archipelago of West Sweden in 1975 the concepts of User value and Experience value were introduced as tools to complete Documentary value and thus improve the outcome of attributing heritage values. The user value has since then become increasingly important, and can be understood partly as the significance of concerned people to be engaged and participating, and partly the ability of those concerned to actually preserve, conserve, reuse and develop the heritage object.

Looking at the two examples presented in this paper it is obvious that differences in how the heritage values have been defined provides different conditions for conservation decisions and consequently for a long term sustainable reuse. In the case of Forsvik Works the heritage values are based in the documentary qualities for providing a narrative on 19th and 20th centuries industrial development, which also narrows the possibilities for reusing the different buildings. Each new use should be possible to motivate in relation to the historical narrative and a complete reuse of the whole site therefore need to be developed under a relatively long time period. This requires an owner of the facilities with no immediate aspirations on economic return from activities on the property, and who also have the resources to finance restoration and maintenance. The latter perspective is of strategic importance since the perceived authenticity of the site motivates the preservation and reuse of it as a heritage site. Concerning Fengersfors Works on the other hand large parts of the facilities have been reused by activities that do not contribute to the historical narrative of the site. The fish hatchery, the artisans, the cabinet makers, the jeans design company and the café have all very little in common with how the former ironworks were transformed into a paper works with ground-braking technological development in the 1930s to 1950s. These activities do however give income that enables the maintenance of the facilities they are housed into. They affect to a small degree the experience of the site as industrial heritage in terms of façades and external spaces, and at the same time they influence to a very large degree the experience of the Works as a vivid work place that most probably stimulate other entrepreneurs to establish themselves on the premises. A reuse strategy that provides each new tenant with possibilities to alter the interior to meet their demands, qualifies for a faster development into a situation where the whole site is reused. An interesting aspect of Fengersfors Works is the possibility to establish an historical narrative carried, as in Forsviks Works, by the material remains from the previous industrial era. And as in the case of Forsvik, the facilities for such narrative require a much prolonged phase to achieve reuse, comprising conservation, restoration and definition of possible activities for those premises. In Forsvik the heritage value is mainly oriented towards the ability to link the authentic history to the material remains. In Fengersfors is the heritage value apart from this quality, also oriented towards the fact that the premises are resources for different entrepreneurs of the surrounding society. When such facilities are situated in a geographical area implying low rents, the potential competitiveness in relation to similar facilities in urban areas is strong.

For both Forsvik and Fengersfors the goal is not to develop the sites into museums, the objective is instead back to working order. One perspective of the concept concerns the heritage problem of

33 See for example Storm, 2008 or William, 2008.
34 Bergqvist et al., 1975
machinery and technical equipment, i.e. the problems in maintaining the technical competences on long term basis. The problem is valid for all working life museums and concerns how the machinery can be operated, whether there is someone competent to operate it, if one can afford to operate it, and in what ways a sustainable system for competence transfer can be formulated. The problems technical museums and working life museums are facing regarding the transfer of such tacit knowledge is shared with contemporary industrial production where numerous examples of the importance of tacit knowledge can be identified as an informal intangible asset in the technological profile of a production oriented firm. Working order is in this context understood as a requirement for the reusability of machinery, equipment and in a larger perspective the full production process, where the ability to maintain the tacit knowledge could be instrumental for the preservation of industrial heritage as well as the possibilities for innovative and competitive development of new production sites built on local and regional traditions. The other perspective on working order concerns the site of the Works as a dynamic place for a number of evolving activities where the definition of industrial history could be discussed in terms of a) a working place for different professional groups, b) a production site that is constantly altered following the changes of the surrounding society, c) a place that contributes to the local economy, and d) activities that carries their own costs. Working order in this context tells more about the ability of an industrial heritage site to continue fulfilling the role as the economic activity base for the local community.

The goal for heritage practices could thus be seen as the ability to balance different conditions and possibilities in a closed industrial site, and also in other examples on buildings and built environments, but within industries the technological remains presents a significant asset as well as specific problems in sustaining the knowledge required to maintain these assets. By emphasizing the working order perspective, an industrial site could be used parallel as:

- narratives on previous activities and people in a museums setting,
- a centre for transfer of knowledge and skills for specific productions or crafts,
- a working place for activities that builds on the local tradition,
- a working place for activities where the facilities constitutes valuable resources.

Figure 3. Activity fields and perspectives in heritage practices

The heritage site thus becomes a vivid place with its significance in the present for the people that uses the site or are concerned by it. In the figure below the need or aspirations for changing the

35 Bergström, 2003
36 Howells, 1996; Lawson and Lorenz, 1999
heritage practice is outlined. At least two dimensions can be identified in relation to a closed industrial site, one concerns the dynamic between the knowledge based and the emotionally experienced and the other goes from the theories, ideas and thoughts to operative actions. The thoughts and the operative actions could be driven by the feelings we sense as well as the knowledge we possess and by putting this into a structure thereby creating four activity fields, different processes, possibilities and conflicts could be discussed.

All the boxes from Figure 1 could be found in the lower right field of Figure 3 as the results of activities flowing from the lower left hand field. Traditional heritage practices strive to remain there and not, consciously, to integrate feelings or sentiments as part of a creative design process into the definition of a heritage site. On the other hand the sustainability of an historical environment is often based on people’s actions represented by a flow of activities going from the upper left field to the upper right field where it is possible to define e.g. user values. The activities here are described as only going from left to right, but other more complex movements are certainly possible to outline and might also be in play when heritage is produced.

The reusability of historically interesting industrial sites as part of heritage processes could therefore be dependent on the ability within the heritage profession to combine a number of perspectives and processes by expanding the practices outside traditional boxes of thought, as exemplified in Figure 3. The heritage production within the domains of industrial and technical history is thus dynamic processes which could benefit on:

- a better integration between cognitively based respectively emotively based activities;
- improved cooperative links between contemporary production industry and industrial heritage sites regarding tacit knowledge, innovative entrepreneurship stemming from industrial and crafts traditions, and possibilities for regenerating local economies

**Why and why not preserve industrial heritage**

The questions on what should be preserved and how it should be preserved, and the answers in the shape of operative and tangible outcomes, are dependent on the principle question on why we choose to do this within a societal context. Some of the answers might result in problems of more or less severe nature for the heritage profession and the long term consequences of its operative activities:

- There is a need to challenge one-sided industrial historical narrative represented by the material remains of a specific plant.
- Industrial heritage as cleansed ‘cool’ framings for new activities must always be debated.
- Industrial remains preserved as societally isolated heritage alienates us from history.
- Continued industrial production could mean continued hardship, environmental pollution and devastation of natural resources.
- The industrial development is characterized by three industrial revolutions where the recent development results in a growing number of derelict industrial plants, which are increasingly subjects for “reindustrialization” by the tourism industry. Is this the fourth industrial revolution and what is the role for the heritage profession in this process of change?

But if we consider that the designation of industrial heritage is a process based on present contexts within the society, the production of heritage might be seen as a statement where the industrial heritage has a potential strength to:

- Discuss inequality through historical and contemporary narratives.
- Debate environmental pollution through cases from the industrial history up to the present.
- Challenge swift trends in global economy by focusing on local conditions, needs and possibilities, in collaboration with the industry as well as the area of trade and business.
- Provide resources for individual and collective meaning making, knowledge development, and entrepreneurship through preserved and developed facilities.

Hence ruination of industrial sites means ruination of resources – material as well as intangible – and needs to be avoided for the benefit of using heritage as a resource for the continued development of society.
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