REGENERATIVE HERITAGE

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RE-INTEGRATED LIVELY HERITAGE

KEY DEFINITIONS

HERITAGE

Heritage represents the history, traditions, environment and historic buildings of a country or area, seen as something to be passed on in good condition to future generations (Bateman et al., 2005). The term heritage is usually associated with unique natural features and areas, as well as buildings of significant historical and/or architectural value. However, in the recent period even industrial buildings, often associated with workers' settlements, have been largely observed as heritage. Hence, the process of selection of historical elements that will be represented as heritage is always related to construction, reconstruction and deconstruction of memory and identity (McDowell, 2008).

Conservation - all the processes of looking after a place so as to retain its cultural significance. It includes maintenance, and according to circumstance may include preservation, restoration, reconstruction and adaptation and will be commonly a combination of more than one of these.

Maintenance - the continuous protective care of the fabric, contents and setting of a place are to be distinguished from repair. Repair involves restoration and reconstruction, and it should be treated accordingly.

Preservation - maintaining the fabric of a place in its existing state and retarding deterioration.

Restoration - returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.

Reconstruction - returning a place nearly as possible to a known earlier state and is distinguished by the introduction of materials (new or old) into the fabric.

Re-use - Re-using the building, continuing its original function despite its technology

Re-vitalizing - Re-using the structure while instating a new function.

PLACE

Site - places, area, building or other work, group of buildings or other works together with associated contents and surrounds.

Location – a particular position on Earth defined by absolute or relative references. Absolute location is represented by geographical (latitude and longitude) or projected coordinates or street addresses. Relative location is defined in relation to other features in the area (e.g. distance from a certain object).

Place – refers to the physical and human aspects of a certain area. It can vary from a precise location (site) to a rather large area that is sometimes difficult to define. It includes various geographical characteristics of the location (relief, hydrology, climate, vegetation, human settlements, culture, economy, way of life etc.) (World Atlas, 2017), which makes every place unique and different from other places, giving it its identity. People that live or reside in a place can develop place attachment, which means that they associate their memories, feelings, experiences and perception with the place.

Sense of place is a social phenomenon that exists independently of any one individual's perceptions or experiences, yet is dependent on human engagement for its existence (Ng, 2013). It is often used in relation to those characteristics that make a place special or unique, as well as to those that foster a sense of authentic human attachment and belonging (Knox and Marston, 2017). Such a feeling is often made up of a mix of natural and cultural features in the landscape, and generally includes the people who occupy the place (Convery et al., 2012).

Cultural significance - aesthetic, historic, scientific or social value for the past, present or future generations.

SOIL

Soil, the biologically active, porous medium that has developed in the uppermost layer of the Earth's crust. Soil is one of the principal substrata of life on Earth, serving as a reservoir of water and nutrients, as a medium for the filtration and breakdown of injurious wastes, and as a participant in the cycling of carbon and other elements through the global ecosystem. It has evolved through weathering processes driven by biological, climatic, geologic, and topographic influences (Encyclopaedia Britannica, 2018).

RESTORATIVE HERITAGE

RESTORATIVE SUSTAINABILITY pursues to restore the capability of social and ecological systems (Brown 2016). Thereby RESTORATIVE HERITAGE can be recovered by increasing the accessibility, its flexibility and the hybridization of functions that can be developed within it. Adaptive reuse should be the preferred strategy for restorative heritage when no other reuse option is available and should always be favored over demolition and redevelopment.

REGENERATIVE HERITAGE

REGENERATIVE SUSTAINABILITY is seen as a future level where social and ecological systems are enabled to continuously regenerate and evolve (Brown 2016). The final output of a REGENERATIVE HERITAGE approach should be the creation of a space that is able to revitalize the surroundings and the context where it is placed.

INTRODUCTION

Understanding a regenerative, sustainable future for our built environment necessitates a deep understanding of our existing heritage as living buildings. Our living heritage buildings are sharing memories of place from the past and providing us with lessons for the future. **Preservation, Restoration, Reconstruction, Reuse and Re-vitalizing** as explored within this paper, are vital approaches to ensuring our living heritage maintains its cultural richness whilst ensuring an ecologically sound and socially just future.

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The theoretical approach to sustainability and cultural heritage starts from the concept of **RE-USE.** First, not every corner can be an urbanized land, because it goes against modern theories of sustainable urbanization, which underline the fact that by 2050, 80% of the world population will be concentrated in cities. This will be followed by overcrowding and shortage of fertile surfaces. So re - use of buildings in this regard is meaningful.

RE-VITALIZATION is another valuable theoretical concept. Certainly the establishment of some new functions associated and activities within the former heritage site would give another dimension to the area, the dimension of public realm, space and social life.

With **SUSTAINABILITY**, we mean revitalization and readapting, the use of flexible and eco-friendly materials in the process of giving the adequate image and role to these very important and full of history areas of the city. Another important aspect of sustainability is the urban design, mobility and landscape of abandoned spaces. We can use so many good and efficient examples in terms of sustainability and conservation.

The subordinate approach, based on restorative or regenerative sustainability (Brown 2016), is **REGENERATIVE HERITAGE**. The idea is to go beyond existing standards of reducing negative impacts, and to move from standardized solutions to locally, culturally and environmentally integrated built environments. Thereby **RESTORATIVE SUSTAINABILITY** pursues to restore the capability of social and ecological systems, while **REGENERATIVE SUSTAINABILITY** is seen as a future level where social and ecological systems are enabled to continuously regenerate and evolve.

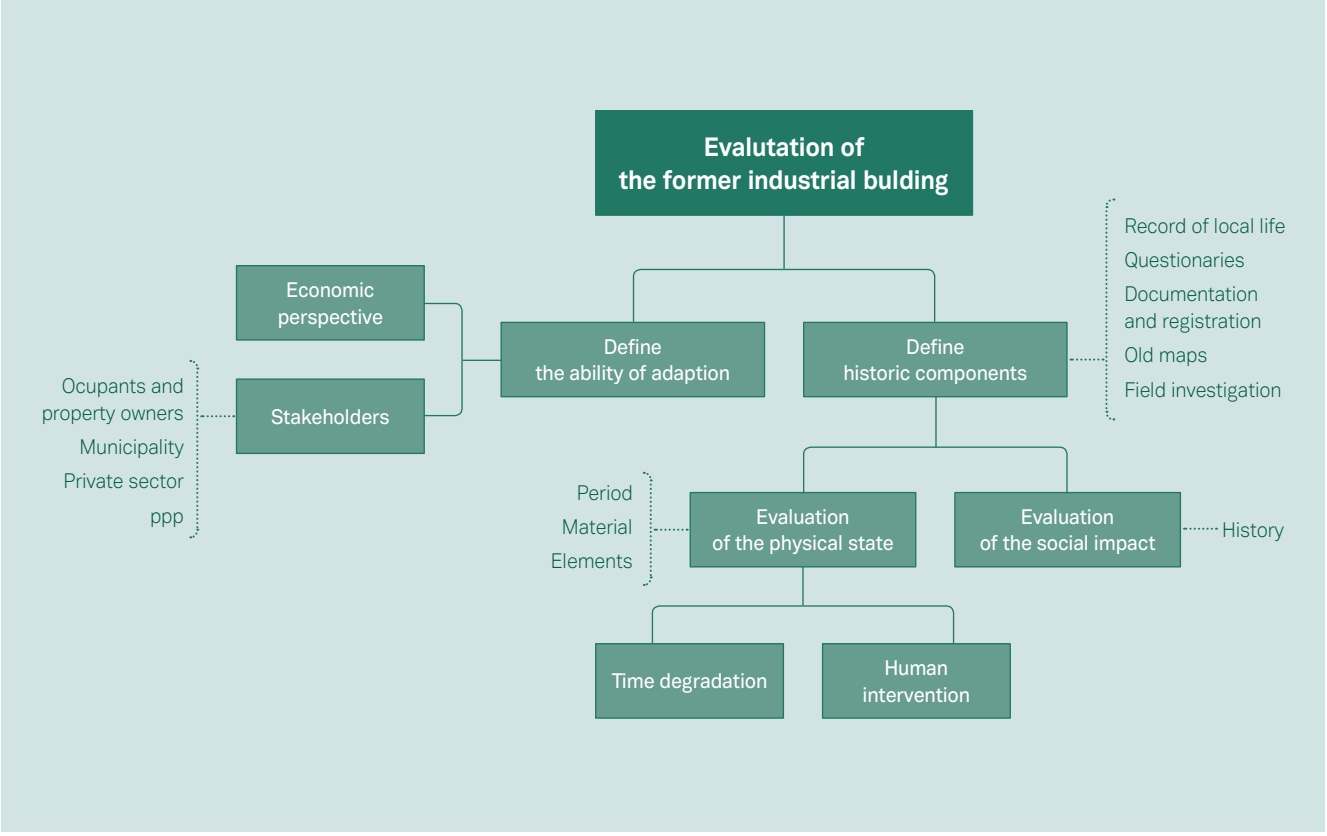
VISION – Where we want to go!

LIVING HERITAGE, INCREASE HERITAGE CONSCIOUSNESS, RESTORATIVE, REGENERATIVE REGENERATIVE HERITAGE with sustainable function, materials and accessibility, integrated into the environment and creating catalyst effects for regenerative sustainability

- (New) Catalyst function of Regenerative Heritage
- Approach to assess heritage / abandoned industrial structures/areas (use, functions and socio-economic processes)
- Significant re-use and revitalization strategies related to the local context and residents
- Reflect approaches for urban regeneration of heritage sites: Re-development, Rehabilitation, Integration

RESTORATIVE HERITAGE can be recovered by increasing the accessibility, its flexibility and the hybridization of functions that can be developed within it. The final output should be the creation of a space that is able to revitalize the surroundings and the context where it is placed. Adaptive reuse should be the preferred strategy for restorative heritage when no other reuse option is available and should always be favored over demolition and redevelopment.

This vision can be applied after an assessment is done and after the consciousness for such heritage is raised. The steps to be followed for heritage site regeneration are shown at the example of industrial buildings (Luca 2017).



APPROACHES FOR URBAN REGENERATION OF HERITAGE SITES

a) Re-development
Redevelopment, known as demolition of existing buildings and re-use of cleared land for the implementation of new projects. This approach is applicable to cases in which objects are in seriously deteriorated condition and not worth preserving and could not provide satisfactory living conditions.

b) Rehabilitation
Rehabilitation, preservation or conservation as it is often called, can be defined as the opposite of redevelopment. It is based on maintaining, repairing and restoring the natural environment and man-made one in existing neighborhoods. Rehabilitation is applicable in areas where buildings are generally in good structural condition, but are deteriorating due to neglect maintenance. Rehabilitation fits well with the emerging Circular Economy.

c) Integration
The third approach to urban regeneration, known as integration, this concept sees rehabilitation and redevelopment as complementary forces and combines the best aspects of both approaches (Zhu Zixuan 1981)

Our Vision for Sustainable Development: 'The recognition, mainstreaming and effective contribution of cultural heritage as a driver and enabler of sustainable development in the process of implementing the United Nations Agenda 2030 and Sustainable Development Goals." (ICOMOS Action Plan 2017, p. 4)

(graphic)

KEY TOPICS AND VISIONS FOR REGENERATIVE HERITAGE

PLACE: Visual, social, cultural, economical (i.e. tourism) catalyst for the community
ENERGY: Learn from the past (i.e. low tech), Local / Renewable Energy sources
CARBON: Reduction / Avoidance through re-use / re-utilization
WATER: Sustainable water / sewage system (i.e. Re-use, water collection ...)
RESOURCES: Heritage as a resource itself, Local resources, materials, techniques
WELLBEING: Elimination of unhealthy materials, ensure quality of air, light, comfort
EQUITY: Improve accessibility, Integrate into the living city
EDUCATION: Learn from the past / history, Heritage mediates history

STATE OF THE ART FOR REGENERATIVE HERITAGE – Where we are!

The State of the art regarding existing building stock is considered to be "non sustainable" in terms of use, materials, function, accessibility and regeneration.

We derived this conclusion by analyzing the following key topics using the example of industrial buildings: Place, Energy and carbon, Water and Resources, Wellbeing, Equity and Education

Place – low accessibility to the zone (i. e. suburban or restricted zones of industrial settlements), pollution of the area, visual degradation of the landscape, occupation of central areas that could benefit from other functions, urban growth of the city where the heritage is located, problems of ownership, lower prices of real estates in the surrounding areas, insecurity. Heritage is often considered as a barrier to (more rapid) urban development. People attribute memories related to a heritage area with no real architectonic or historical value and resist to any transformation of the area.

- Industrial heritage is often located in suburban or restricted zones of the city, remote from the city center, and therefore, with lower accessibility to the zone.
- Unused or abandoned former industrial facilities, especially those non-maintained and left to decay, degrade visually the landscape, contributing to lower prices of real estates in the surrounding areas and the impression of insecure areas. Beside visual degradation, abandoned industrial sites can cause pollution of air, surface and ground water.
- Former industrial buildings in the cities occupy attractive areas that could benefit from other functions and they are often considered as a barrier to (more rapid) urban development. Beside ownership problems, that often disable any changes in development of former industrial sites, local residents very often attribute memories related to a heritage area or even to an area with no real architectonic or historical value and resist to any transformation.
- Integration of the renewed heritage sites into the city often do not achieve success due to lack of quality urban planning (site planning vs. integral planning).
- In real or potential tourism areas there is a tendency of converting historical sites into museums (musealization), instead of adding another function that would give the wider area a character of a living city. Beside the positive side of revitalization of heritage, that process has a negative side – those areas are often used only in the tourist season and in the rest of the year, they are empty.

Energy and carbon – there is no relationship between renewable energy and historic buildings, lack of aesthetic adaptation, lack of insulation and ventilation, LCA impact in terms of construction and transportation, carbon impact, contradictory between energy efficiency measures and protection of monuments (i. e. aesthetic changes due to insulation), historic building concepts specifically addressing industrial use (i. e. no heating or only residual heat of the industrial production) can only be adapted to other uses (for example living) with great effort.

There is a growing awareness that new constructions, generating more energy than they use, (for example as Living Building Challenge projects do) can assist in providing energy to heritage buildings that are unable to generate renewable energy themselves.

Water and resources –heritage is not considered as an economic resource by itself. There is the opportunity however to view heritage buildings and their components through the lens of the circular economy. As an alternative to demolition, building components can be transplanted into other or new constructions and so preserve memories and cultural from the original building.

The Ellen MacArthur Foundation sees cities where '*Components of buildings will be maintained and renewed when needed, while buildings will be used where possible to generate, rather than consume, power and food by facilitating closed loops of water, nutrients, materials, and energy, to mimic natural cycles*" (Ellen MacArthur Foundation 2017, Cities in the Circular Economy).

Wellbeing – new forms of gathering, indoor air quality, participation, rehabilitation in terms of structure and energy, sustainability of the city and the buildings (use and value), memory

Equity – heritage buildings have been generally designed and constructed without todays view on equity, human access for all and building user health & wellness consideration. It is essential that equity is seen as a core imperative in heritage building reuse and revitalization.

Education – continuing knowledge, memory awareness and recognition (people and government), heritage is a vital element of sustainability, not to be excluded from ambitious restorative approaches

The actions that should be taken after analyzing the state of the art of former industrial buildings focus on Conservation of the memory in terms of people, place and buildings. Recognition from both public and private sector to conserve memory in continual use is a key element in the regeneration process.

- Through re-vitalizing heritage buildings, we can ensure buildings and cities make a positive contribution to their community, place and the Sustainable Development Goals, not just making buildings 'less bad'
- The heritage per se is excluded from energy standards, but these buildings should be included in the energy efficiency regulation.
- They are becoming threats for new buildings because in some cases they become a barrier to development because of the ownership issues, hence the government should facilitate and regulate all the ownership issues.

GAP ANALYSIS – What we need!

In order to overcome the state of the art as described for industrial heritage in the previous chapter and to propose the right vision we have to conduct a gap analysis.

Assessment to increase the consciousness on heritage and to valorize it through restorative regeneration.

The assessment should pass through the following elements:

- The surrounding environment and environmental conditions (place).
- The vicinity to the urbanized area (the accessibility of the zone).
- The existing conditions of the former industrial building.
- The current function of the former industrial zone (in some cases is partially existing industrial zone).

We need to increase the awareness of the young generation through educational programs (university courses, high schools) with multidisciplinary approach (history, architecture, civil engineering, geography, sociology). Afterwards we need the creation of a general platform with all the information about heritage, recognition and promotion. The final outcome of such inpute should be the shift from conservation point of view to regeneration and to put into function (keep real) after the consult with professionals and locals.

The government and the private sector should think about the wellbeing for the heritage, buildings and people. This can be done through the introduction of new public areas, flexibility of functions, wellbeing, activities, buildings and surrounding areas. The heritage itself should be considered as a catalyst of functions and activities, not only for the surroundings but for the whole city.

The process of rehabilitation should take into consideration the sustainability of the use and of the building. The heritage should be considered as a resource itself in terms of economy (green profit), in terms of construction materials and land, in terms of Palimpsest (conserving the footprint).

In terms of bringing back the memory of industrial heritage one of the most important things to be done is to increase the accessibility in terms of information and physical connection. This can be done through:

- the enrichment and restructuring of the heritage landscape,
- cleaning the zone from the physical and chemical pollution that can transform a brownfield area into a new appealing urban space that can affect positively surrounding zones.

The major challenge that rose from our gap analysis was the management of change and the integration process. People many times resist to changes, so in order to overcome this obstacle we should give to the industrial heritage flexible function but we should keep elements of the history. In order to bridge the gap two important conditions, have to be met: (1) ownership issues and (2) urban and regional planning.

Lack of investment into industrial brownfield areas is often caused by ownership problems, whose solving represents the most important pre-condition for any kind of development. Those problems can be solved only in coordination with local and national government. Quality spatial planning has the role of analysis and proposing the most adequate use and function of a building or an area in order to achieve the highest economic, social, cultural and environmental benefits.

LITERATURE / REFERENCES

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CASE STUDIES

NAME
Miller Hull Seattle Studio

LOCATION
Seattle, WA, USA (incl GPS or Lat Lonso we can map)

CLIENT / OWNER
The Miller Hull Partnership

PROJECT TEAM: ARCHITECT, CONTRACTOR , etc.
DESIGN: Ron Rochon, Margaret Sprug, Kristin Kelsey, Matt Kikosicki, Becky Roberts, Christine Traber

ARCHITECT: The Miller Hull Partnership

CONTRACTOR: Turner Construction Company

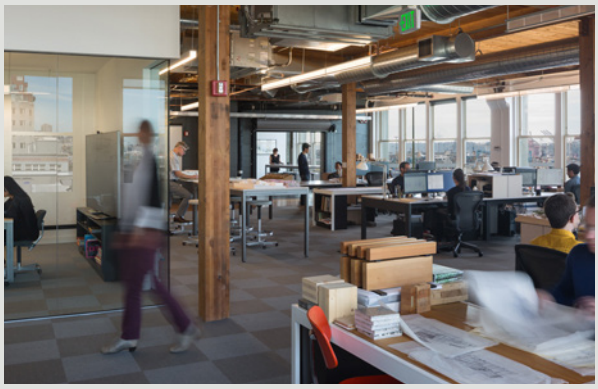
THEME / TYPOGRAPHY
HERITAGE, Office, commercial

CONSTRUCTION / COMPLETION YEAR
2016

BUILDING
"Built on the values and principles of sustainability, forty years ago Dave Miller and Bob Hull founded a firm that has led the way in creating architecture that responds to and respects its natural surroundings. (...) When it came time for Miller Hull to renovate its own studio, the Living Building Challenge was the right path to represent firm values. (...) The goal of the project was to create a flexible open workplace that fosters collaboration and innovation, reflects the highest environmental design standards, highlights the site's unique attributes, is timeless, and provides a place where Miller Hull's diverse clientele can be inspired to collaboratively create unique solutions that are specific to their needs and a reflection of who they are.
The design is simple and allows for unencumbered design thinking by avoiding large-scale gestures, playful lounge zones, or ad-hoc décor. Instead, the design enhances the outstanding features of the space, such as open perimeter workstations that preserve views and natural light. This allows the project to make their only achievement in the Health & Happiness Petal with the Civilized Environment Imperative. New skylights bring daylight to the center of the space where existing walls could not be changed. Existing exposed heavy timber structure and salvaged wood floors combine with a neutral color palette to ground the space in nature." (https://living-future.org/lbc/case-studies/miller-hull-seattle-office-ti/; 2018-01-12)

Project website: http://millerhull.com/project/miller-hull-office-renovation/

FOTOS



Miller Hull Seattle Studio: Photos: Courtesy of Lara Swimmer Photography, http://millerhull.com/project/miller-hull-studio-renovation/

REGENERATIVE SUSTAINABILITY
(Source: LBC,https://living-future.org/lbc/case-studies/miller-hull-seattle-office-ti/)

Place: This project is a renovation of the sixth floor of an historic building in downtown Seattle's Pioneer Square neighborhood. (...) Miller Hull is proud to have preserved and restored a piece of Seattle's history for continued use.

Energy: Between lighting reduction, occupancy sensors, and new energy efficient systems, the team reduced the EUI of the space from 55 to 45 (88% savings in lighting electricity use, 25% savings in plug load electricity use, 22% overall savings in electricity use, 19% overall savings in energy use)

RESSOURCES & CARBON
Materials: First, a list was created of building products and furniture that the team planned to reuse. Some of these major items included wood flooring,

ductwork, some furniture and equipment. Second, the team's design aesthetic had the benefit of using few finish materials. (...) The team made a diligent effort to ensure the majority of materials originated near the site.

Embodied Carbon Footprint: Apart from a few unavoidable metal studs, the majority of the structural members were extremely low-carbon glue-laminated beams or columns. Minimal use of gypsum board and other finishes helped to keep the overall carbon footprint low.

Net Positive Waste: Miller Hull took great care and effort to salvage the majority of the existing finishes, equipment and furniture from the existing space prior to demolition. To do this, an extensive audit was completed that catalogued each item for reuse.

Wellbeing: Each workstation, meeting, gathering, and collaborating space is directly, naturally lit, enhancing wellbeing and productivity. In order to encourage healthy movement throughout the workday; storage, supplies, printers, copiers, and design and materials libraries are centralized. Counter height collaboration tables allow people to reposition how they work. The old galley kitchen was buried in the middle of the space without natural light or a place to sit. The new kitchen was enlarged and relocated to the perimeter to provide everyone access to the best views in the studio.

Equity: Just Organizations: The Miller Hull Partnership has a JUST label; a voluntary and transparent social equity disclosure program.
Education: "We hope this project has served as an educational effort for all involved and a reminder to our staff while we strive for ecologically-minded work in all that we do."

AWARDS / CERTIFICATES
LBC Petal Certified

LINK
https://living-future.org/lbc/case-studies/miller-hull-seattle-office-ti/