Revitalization of cities and urban development
- transforming derelict fields

Paper title:

Brown fields from abandonment to engagement -
transforming derelict Ruins from deteriorating to revitalizing
elements in cities scape: Analytical case studies: Emscher Park –
Germany & Azhar Park - Egypt

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**Brown fields from abandonment to engagement** - transforming derelict Ruins from deteriorating to revitalizing elements in citiescape.
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Abstract:

Contemporary approaches to abandoned and derelict sites are mostly driven by the idea of reclaiming space for a variety of uses, for example the reuse of derelict postindustrial and landfill sites to a conversion into housing or a park.
Main purpose of this paper is to deal with the problematic of brown fields as decay points in or around the cities.
Through analytical study of two selective cases - Landschaftspark Duisburg-Nord, Duisburg, Germany and El-Azhar park – Cairo, Egypt - as representative for unique examples from international and national experiences for revitalization process of urban regions. It will be elaborated the different approaches of development strategies of abandoned and derelict sites. As well as necessitate for responsive design solutions that take into account the history of both in its physical remnants and in its socio-cultural and economic contexts, to transform them from deteriorating pockets to livable socio-cultural centers in the cityscape.
Brownfields and other postindustrial sites seem particularly suited to create public open space that allows for a variety of uses and activities, and could potentially support the understanding of landscape not just as a product, but as an agency for ecological, cultural and social change.

**Keywords:** abandoned and derelict sites; brownfield reclamation; revitalization; development strategies; responsive design; socio-cultural and economic contexts; the cityscape
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1. Introduction
The redevelopment of derelict brownfields¹ areas has received a lot of attention in the
past few years and has become a major landscape related problem. Since the mid-
1980s, policy makers and planners have been paying significantly more attention to
sustainable development and improve the quality of life in urban areas. The
redevelopment of derelict brownfield sites, which are often located in the core
sections of urban areas or sites of high ecological value are prime targets for urban
revitalization [10]. The transformation of derelict sites into parks and public spaces
represents a significant enhancement to the quality of life and land use, and at the
same time marks a new commitment to the transformation of once derelict sites to
new cultural, programmatic and environmental uses.

Study problematic - Derelict sites represent big challenges for the momentous
environmental problems (eg. soil contamination). This study demonstrate
revitalization of derelict sites, focusing on those that incorporate a significant amount
of public open space, throughout international and national two cases (Emscher
Landschaftspark, Germany and Azhar Park, Cairo, Egypt). These cases could be
prototypical for other renewal and revitalization projects and redesign of public or
mixed-use open spaces that "allowing for the interpretation of landscape …… as an
agent of social, cultural, ecological and technological change" (eg Corner 2000) [9].

Objectives and Methodology – Main objective of this study is to investigate design
strategies, which used in the reclamation of derelict areas of case studies and to show
how ‘livable spaces’ can be produced from ‘spoiled places’ [2]. Both case studies
adopted design strategies, which minimize the environmental impact assuring a
harmonious reclamation of the natural and built environments. They signify strategies
that reinforce the socioeconomic character, the naturalist and environmental character
and finally the historic and cultural character.

2. Design strategies for sustainable landscape reclamation
For creation a successful and sustainable reclamation design it is important to
understand how "landscape ecology and design can invent alternative forms of
relationships between people, place and cosmos so that landscape architectural
projects become more about invention and programs than the merely corrective
measures of restoration” [11]. Even in derelict and degraded areas can be created with

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¹ The term brownfields first came into use on June 28, 1992, at a U.S. congressional field hearing hosted by
the Northeast Midwest Congressional Coalition. They have been defined by Cabernet as sites: that have
been affected by former uses of the site or surrounding land that are derelict or underused, are mainly in fully
or partly developed urban areas, that require intervention to bring them back to beneficial use, and may have
real or perceived contamination problems [2]. Derelict land is defined as “land so damaged by previous
industrial or other development that it is incapable of beneficial use without treatment”. The land may be
contaminated by low concentrations of hazardous waste or pollution, and has the potential to be reused once
it is cleaned up [4].
a new spirit and can be made worth living by keeping visible the spirit of existing site, by applying design strategies that contribute to economic prosperity, social cohesion and environmental quality [11].

2.1 Restrictions and beneficiaries of sustainable reclamation
Many contaminated brownfield sites sit unused for decades because the cost of cleaning them to safe standards could be more than land value after redevelopment. Especially when unexpected circumstances arise, the cost for clean-up increases, and as a result, the cleanup work may be delayed or stopped entirely [20]. Although the key Challenges in Brownfields Redevelopment include: Environmental, Financial Barriers, Cleanup Considerations and Reuse Planning [3]. In one hand Development of brownfield sites must be restricted to some particular uses in order to minimize exposure to leftover contaminants on-site after the cleanup is completed. In the other hand the redevelopment of brownfield sites is a significant part of new urbanism, while most of them are left as green spaces for recreational uses. For historical reasons, many brownfield sites are close to important thoroughfares; their reclamation can consequently be a major asset to a city. Therefor the following fundamentals should be integrated in Sustainable reclamation design:
1. Perform well the functions for which they are redesigned;
2. Be long lasting and adaptable to new uses;
3. Respond well to their surroundings and enhance their context;
4. Have a visual coherence and create ‘delight’ for users and passers-by;
5. Be sustainable - nonpolluting, energy efficient, easily accessible and have a minimal environmental impact [20].

<table>
<thead>
<tr>
<th>Environmental benefits</th>
<th>Social benefits</th>
<th>Economic benefits</th>
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</thead>
<tbody>
<tr>
<td>Reduction of development pressure on greenfield sites</td>
<td>Renewal of urban areas</td>
<td>Attraction of domestic and foreign investment</td>
</tr>
<tr>
<td>Protection of public health and safety</td>
<td>Elimination of stigma attached to communities residing in affected areas</td>
<td>Development of remediation/decontamination technologies</td>
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<td>Protection and recycling of soil resources</td>
<td>Reduction of community fear (ill health, environmental damage and reduction in property values)</td>
<td>Increasing land values in inner city areas</td>
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<tr>
<td>Protection of groundwater resources</td>
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Source: Adapted from Sousa (2001)

Table 1: sustainable benefits of brownfield redevelopment. [2]

2.2 Development Process of brownfields
Brownfields redevelopment often relies on strong coordination among stakeholders (local community, local authorities, state, private parties; and NGO). Successful development of brownfields can be enabled or accelerated when these stakeholders work together. The redevelopment process generally follows four steps: 1st Pre-development; 2nd Securing the Deal; 3rd Cleanup and Development; and 4th Property Management. Within each of these steps, there are multiple activities that may occur, and the order of these activities may vary. There are typically three scenarios for redevelopment of brownfields may to follow one of them: 1st private-led, 2nd public-private partnership, or 3rd public-led [3].
3. Case studies:

The following case studies represent the most well-known and biggest recent cases on the international and national levels of reclamation derelict brownfields:

3.1 Emscher Park, Germany

3.1.1 Regional background

In the 19th century, the Emscher basin in Ruhrgebiet (Ruhr region) was a major center for European industry produced high levels of pollution and disfigured the region’s landscape. Restructuring since 60s and over 30 years has led to abandoning of the iron industry and of the mines, leaving high levels of unemployment, the fear of pollution and the specters of the great steel plants. This Situation was the regional background; challenged the state government and decided to repair the environmental impacts of the past, while planning for the urban community of tomorrow [1].

3.1.2 Integrated Regional Development towards sustainability

In 1989 the regional state established "IBA - Internationale Bauausstellung Emscher Park GmbH" (the International Building Exhibition Emscher Park Ltd). The core of IBA’s mission is to coordinate development, including brownfields, on a regional basis under the theme "Integrated Regional Development" (IRD). The project area was 75 km long and 10 km wide between Duisberg in the West and Dortmund in the East. IBA has embraced the idea that building and site design are critical components of an environmental, social, and economic regeneration strategy. The planning strategy has been concluded in the following fundamental key points [5]:

- Re-utilizing land to prevent additional exploitation of "Greenfields", or previously undeveloped land.
- Employing maintenance, modernization, and re-use of existing buildings to extend the life of these buildings.
- Incorporating ecologically-sound construction practices for both new buildings and adaptive reuse.
- Transforming the region's production structure towards environmentally friendly production methods.

The main theme became Emscher Landscape Park, a heritage park around the cities that unified the industrial culture with ecological parkland. The IBA published six objectives for the project to fulfill [13]:
1. Emscher Landscape Park: unifying the region through green space;
2. Ecological regeneration of the Emscher River;
3. Working in the park: redeveloping brownfield sites for mixed employment and landscaped park use;
4. Housing and integrated urban development: improving existing housing;
5. New uses for industrial buildings and industrial monuments: preserving industrial heritage and providing cultural facilities; and
6. Social initiatives, employment and training: promoting social sustainability.

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2 The Emscher is a small river in the north of the Ruhr region, which was for decades the main industrial drain of the area and its most polluted element.
3 For a long time, the Ruhr Region - named after the river “Ruhr” in the southern part of the area – was known as one of the “old” industrial regions in the world [15].
4 The Term “International Building Exhibition” referred to the German tradition of building exhibitions. Since the 1920ies, German municipalities have organized these “exhibitions” to find good solutions for architectural or urban demands by inviting international architects and presenting the solutions to the public [15].
A central focus of the IBA strategic plan was environmental enhancement, which has come not only from brownfields cleanup, but also from innovative planning components. The IBA from 1989 marked the starting signal for the development of seven regional green belts (Fig. 1) in a north-south axis and the "New Emscher Valley" (east-west) [7]. The main goals included returning many brownfields to green-fields and creating parks and recreational green-spaces, surrounding 10,000 new and rehabilitated housing units, which 75 percent are to be social housing, also included a series of business and technology parks as part of the “Working in the Park”. IBA Emscher Park invested about $2 billion to transform the ecology of derelict landscapes, rejuvenate the Emscher River, convert brownfields into exhibits of industrial heritage, promote architecturally outstanding ideas, and promote cultural heritage and the arts to enhance the environment and create new jobs [14].

- Green Space A: Oberhausen, Mülheim, Duisburg
- Green Space B: Oberhausen, Bottrop, Mülheim
- Green Space C: Gladbeck, Bottrop, Essen, Gelsenkirchen
- Green Space D: Gelsenkirchen, Herne, Herten, Recklinghausen, Bochum
- Green Space E: Recklinghausen, Bochum, Herne, Castrop-Rauxel
- Green Space F: Waltrop, Castrop-Rauxel, Dortmund
- Green Space G: Lünen, Bergkamen, Kamen, Kreis Unna, Dortmund

Figure 1: planning structure of Emscher Landscape Park

Based on the IBA-related tradition of coordinated regional action the region has developed the “Concept Ruhr” as the new fundament for urban and regional sustainable development in the next decade [15]. In 2001 the state commissioned a master plan for the Emscher Park to take forward the work of the IBA. The Master plan Emscher Landschaftspark 2010 (Emscher Landscape Park Master Plan 2010) was published in 2006 and endorsed by the state and all the cities in the region. The current park plan incorporates a variety of design elements [5]:

- A water park based on the ecological regeneration of Emscher Canal system;
- Promenades and parks along railway lines that connect adjoining cities;
- Gardens that serve as a testimony to the area’s industrial history;
- Buffer zones between the parks which can be used by local residents for a variety of recreational activities;
- Preservation of the steelworks as an active museum of the smelting process and technical history of the blast furnace.

All these elements create a central attraction, which will be the route of industrial heritage through the Emscher Park that links all the industrial heritage sites, now converted to museums and other cultural uses [13].

3.1.3 Heritage character – New uses for old industrial buildings

Instead of creating a completely new landscape, the proposed design strategy attempts to celebrate the area’s industrial past by integrating vegetation and industry, promoting sustainable development and maintaining the spirit of the place. In this industrial landscape nearly everything has been reused in some manner, playing with the distinctions between natural and artificial [11].
Duisburg Nord Park (Figure 2) represents only a small portion of the effort that has been made to reuse old industrial areas in the Ruhr river basin. In Duisberg-Nord the former steel works was completely integrated in a New City Park and have been preserved as part of a recreation park called “Landschaftspark” Landscape Park [15]. The young and old can climb giant blast furnaces, practice rock climbing, or slide down a chute. A former iron pit and steel works provide outdoor theaters, concert halls, discotheques, restaurants, and cafes. A large gas tank or “gasometer” has been filled with water and a sunken ship is used for scuba diving. Also part of the overall program, the inner harbor in Duisberg is being rehabilitated as a mixed use and mixed income residential, commercial, and recreational project. In Essen another giant industrial works, previously known as the Zeche Zollverein⁵, has been readapted as the Design Zentrum Nordrhein Westfalen, an art and industrial park. The park includes an exhibition hall of industrial design located in a former boiler house that was remodeled by Sir Norman Foster. The park also offers a gourmet restaurant within one of the preserved Bauhaus buildings. Other buildings in the coal complex have been readapted as artist studios, with space for design offices and workshops. In Oberhausen the largest gasometer in the world been converted to another exhibition hall. The mammoth structure allows the contemplation of art whether that art is exhibited within, or painted on the exterior of, the gasometer. In Gelsenkirchen the IBA’s headquarters is located within the buildings of an abandoned coal company. In addition to rehabilitating the beautiful brick structures, the redesign includes preservation of various features of the prior use that now constitute land art [8].

Figure 2: reuse old industrial plants as recreational, cultural and sport facilities

⁵ The former worldwide largest coalmine “Zollverein” in Essen has meanwhile been announced as “World Cultural Heritage” [15].
3.2 Case study - Al-Azhar Park project

3.2.1 Historical background
The origins of the Al-Azhar Park project date to 1984, when the Aga Khan Award for Architecture organized a conference on the subject of The Expanding Metropolis: Coping with the Urban Growth of Cairo. On this occasion the Aga Khan announced his decision to finance the creation of a park for the citizens of the Egyptian capital. The only central location which was of suitable scale was the derelict Darassa site. The 30hc hilly site, formed by debris accumulated over centuries. It is surrounded by significant historic districts of Islamic Cairo, provides elevated view-points that dominate the city and offer a spectacular 360° panorama over the townscape of historic Cairo. This, in turn, fostered the idea of utilizing the Park project not only as public green space but also as a panoramic platform, to view and re-interpret the built heritage of Old Cairo. The status of the site thus shifted from a neglected and derelict condition to a strategic resource for the surrounding neighbourhoods and the entire metropolis. The Park project was therefore intended to be a case study for a variety of development challenges, ranging from environmental rehabilitation to cultural restoration.

3.2.2 From a derelict site into a park
In 1990 a protocol was signed between the Aga Khan Trust for Culture and the Governorate of Cairo. By 1996, when the Trust took over the site from the Cairo Governorate, the Historic Cities Support Programme had developed a more comprehensive approach to urban rehabilitation. Thus gradually extended to include the rehabilitation of the fringe of the adjacent Darb al-Ahmar district. The construction of the Park is acting as a catalyst for a whole range of associated rehabilitation projects in its surroundings. The Trust was fortunate to find other donors, such as the Egyptian-Swiss Development Fund and the Ford Foundation, who subscribed to the combined physical and socio-economic rehabilitation and are generously supporting the current activities.

Figure 3: the site situation before the reclamation process

The Azhar Park project has coincided with a recent phase of significant research and development projects involving desert reclamation, the introduction and application of new irrigation techniques and the expansion of commercial farming in Egypt. The Park project presented a special horticultural case in which highly unusual, man-made environmental conditions were superimposed over the normal constraints found on

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6 The amount of green space per inhabitant in Cairo is roughly equivalent to the size of a footprint. It is one of the lowest proportions in the world.

7 The site was 500-year-old mound of rubble in the inner city, between the eastern edge of the 12th Century Ayyubid city and the 15th Century Mamluk “City of the Dead”. 
arid climate sites. Accordingly, the task of greening the site posed unique questions and challenges to the landscape architecture and the horticultural team [16].

![Figure 4: reclaiming the site and constructing the Park](image)

Due to size and centrality, the Azhar Park is expected to fulfill a vital function in expanding park and green space available to the public in Greater Cairo. The Park's conceptual design as developed by the consultant, Sites International, Cairo, sought to make maximum and skillful use of the site location, elevated topography and unique vistas overlooking historic Cairo. During the course of the development of the Park, a number of important architectural features and facilities were included to cater to the needs of all types of visitors. Their design involved the search for a creative relationship between the key architectural features -the hilltop restaurant, the lakeside cafe, and various plazas - and the architecture of old Cairo [16].

3.2.3 Uncovering and restoring the ayyubid city wall

When the Park project began in the mid-1990s, only the crenellations of a buried wall were visible. When the wall was excavated to a depth of 15 m, a 1.5 km section of the historic Ayyubid wall and towers from Bab al-Wazir to al-Azhar Street, forming the boundary between the Darb al-Ahmar district and the Park was revealed in its entire splendor (Fig. : 5). Pedestrian access and circulation along the western side of the Park has been designed to enhance the perception of the Historic Wall as a dynamic edge and meeting point rather than as a barrier between the community and the Park. The proposed access and circulation system identifies the locations of the former city gates as the natural and historically appropriate connections between the Park and Darb al-Ahmar. All of these links are conceived as meeting points to foster visitor and community interaction and sustain carefully planned venues into the daily life of the Darb al-Ahmar area [17].

![Figure 5: uncovering and restoring the city wall adjusting to the Park](image)
3.2.4 The development of Darb al-Ahmar
The project for socio-economic development of the neighbourhood was conceived with the idea that the removal of the former rubble dump and its metamorphosis into a park would have a catalytic effect on the general improvement of the district. However, to ensure this result, the project’s scope had to encompass the cultural monuments in the neighbourhood and the people of this area. This approach took the form of an integrated urban area development plan containing a series of pilot interventions aimed not only at the restoration of landmark buildings, but at wide-based socioeconomic development [19].

3.2.5 Socioeconomic support for local society

Employment - During the peak of the park construction phase, approximately 400 workers were on site daily, involving. The Ayyubid wall project involves more than 200 workers and training positions which have gone primarily to the people from Darb al-Ahmar community. In addition, most of the materials used in the restoration of the historic wall come from the local market.

Training - The project has offered over 120 training positions in activities such as stone carving, masonry work and materials conservation. Park construction has also stimulated the rediscovery of lost skills, such as the restoration of the intricate traditional windows (mashrabiyya). Because the project hires most of its staff members from the Darb al-Ahmar community, by the end of project the local staff will be technically and administratively able to carry out the activities and direct the project [19].

Figure 6: many local workers has been trained and offered jobs by the project

4. Discussions, Results and Conclusion:

4.1.1 Sustainable design strategies for reclamation

"Sustainable design strategies for reclamation of derelict areas should integrate five fundamental principles: perform well the functions for which they are redesigned; be long lasting and adaptable to new uses; respond well to their surroundings and enhance their context; have a visual coherence and create ‘delight’ for users and passers-by; be sustainable - nonpolluting, energy efficient, easily accessible and have a minimal environmental impact.” [11]

New design strategies to reclaim derelict sites have been devised in recent years, focusing on the sustainability, quality and multi-functionality of the space, with attention to historic, socioeconomic and cultural aspects. Derelict areas can be filled with a new spirit and can be made worth living by keeping visible the spirit of existing site, by applying design strategies that contribute to economic prosperity, social cohesion and environmental quality [10]. Brownfields sites seem particularly
suited to create public open space that allows for a variety of uses and activities, and could potentially support the understanding of landscape not just as a product, but as an agency for ecological, cultural and social change [9].

4.1.2 Sustainable landscape reclamation
The two case studies introduce evidence for sustainable reclamation of derelict brownfields areas that necessitate design solutions that take into account their history, both in its physical remnants and in its socio-cultural and economic contexts. The case studies make it obvious that the redevelopment of brownfield sites constitutes a valuable opportunity for increasing green spaces in urban areas and, bringing about benefits such as soil quality improvement, habitat creation, recreational opportunity enhancement and economic revitalization of neighbourhoods. It can be also concluded that the involvement of communities in the whole redevelopment process is crucial, in both the short and long term [10].

4.1.3 Framework for successful regeneration
The two case studies demonstrate the key elements of programme management that can be brought to bear to help deliver ambitious regeneration programmes.

- A clear shared vision
- Clear and strong leadership
- A clear implementation plan
- A network of partners eager to deliver
- Marshaling of the resources needed
- Central supports for partners
- Monitoring of progress and assessment of impact [13]

5. Recommendations:
The reclamation projects of derelict areas should follow design principles that promote sustainability, reduce negative environmental impacts, and foment economic prosperity social inclusion and a better quality of life.
In order to achieve sustainable development reclamation projects should reinforce landscape character taking into consideration the spirit of the place and integrating the pre-existence in the new landscape [11].
In order to achieve sustainable development must be making environmental protection and ecological function an integral part of the designing process. "This is why it is necessary to develop new design strategies to reclaim these sites, focusing on the sustainability, quality and multi-functionality of the space, with attention to historic, socioeconomic and cultural aspects. Future reclamation activities may be in consultation with a global land-use planning and design agenda for climatic stability, sustainable food sources, renewable natural resources and protection of the globe's biological inhabitants [I]" [11]
These tow case studies offer adaptable examples of urban revitalization and a promise of hope for the most neglected of neighborhoods.

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